

**Educating for the Creative
Workforce:
Rethinking Arts and Education**

**ARC Centre of Excellence
for Creative Industries and Innovation**

in partnership with the Australia Council for the Arts

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About the Centre of Excellence for Creative Industries and Innovation

The ARC Centre of Excellence for Creative Industries and Innovation (CCI) (www.cci.edu.au) is the first Centre of Excellence whose lead disciplines are based outside the science, engineering and technology sectors. We are excited by the opportunity the Centre provides for demonstrating the value to Australia of the humanities, creative arts and social sciences expertise we have assembled around the theme of creative industries and innovation. The CCI is established through the generous funding of the Australian Research Council.

CCI offers a coherent plan to address a set of definable gaps and problems in the national innovation system. Essentially, this complex national problem is: How does Australia build a 'creative' economy and society suited to the conditions for content creation, business sustainability, employment, vocation, identity and social structure and communication emerging across the globe in the 21st century? The basic value proposition of the Centre is that Australia, we believe, needs to build an innovation system customized to support a creative economy and society.

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Executive Summary

- Business literature and economic policy are increasingly calling for enhanced 'creativity' in the workplace. Whilst no definitive definition is in current usage, 'creativity' embodies generic attributes including communication, team-work, problem solving, cultural understanding, and decision-making skills.
- Recent work on innovation across the economy suggests that it is precisely the habits associated with artistic creativity that are a vital, if neglected, element of current innovation policy. Lester and Piore's work on leading US firms, suggests that innovation depends on two processes; analysis and interpretation, and the skills associated with interpretation are highly developed in many forms of artistic practice.
- Overall competitiveness may be compromised if the coupling of analysis and interpretation is unbalanced. Creativity, in its form within artistic practice, may address this imbalance.
- The argument that studying the arts boosts academic achievements in other subjects has been the subject of extensive research and the consensus view could be summed up as 'not proven'. There is stronger evidence for the relationship between arts education and a variety of social or 'non cognitive' skills, from self-confidence to communication skills.
- Non-cognitive skills are more valued by some employers than particular technical skill sets. These skills, which include stability and dependability, will be in increasing demand in an economy with a growing service sector.
- Public policy can stimulate the development of non-cognitive skills. As these skills are more easily improved during adolescence, public intervention within and outside of school, has a role in addressing the extant imbalance between the acquisition of skill sets and the development of non-cognitive skills.
- The extrinsic benefits of the arts (including the development of non-cognitive skills) are brought about by a prolonged or habitual interaction with the arts.
- Existing research is predominantly associational. Large scale empirical and longitudinal studies examining:
 - causal links between studying the arts and academic and personal development
 - involvement with/in the arts
 - behaviours in pursuing enjoyment of the arts
 - notions of creativity of those trained in the arts and those trained in other disciplineswould assist in addressing the imbalance between the body of associational evidence and empirical research papers.
- In concentrating research on the development of creativity through arts education at the school level, there has been a concentration on the supply side of the equation. Attention should be refocussed on the demand side, with research undertaken examining the needs of the evolving workplace.

1. Introduction

This research was commissioned by the Australia Council as part of its research partnership with the ARC Centre of Excellence for Creative Industries and Innovation.

The objectives of the research are to:

- analyse the claims for the arts in education, concentrating on research studies which have gathered robust empirical data on arts in education programs and their claimed beneficial outcomes
- identify the research strategies and methods used by arts in education researchers
- provide an assessment of the rigour of the research and the research culture of arts in education
- draw together the action strategies and operational priorities which have been identified in the many reports/reviews about arts in education and related areas
- provide a strategic overview of how this literature connects, or needs to connect, to contemporary approaches to education for a creative workforce and creative entrepreneurship.

The aim of the report is to provide a narrative literature review designed to inform policy, provide evidence, and identify major gaps in the existing literature. It is not a 'systematic review' of all the literature in the field of arts education. Thus, it is less about complete coverage (analysing as many documents as possible) and more about assessing and analysing the major findings of the literature and its relevance to the subject of the research.

Whilst the report focuses on empirical research studies in the evidence section of the report (Section 3), the type of literature consulted in the policy context is wider. It includes consultancy reports, project evaluations and 'grey literature' - an ill-defined but increasingly used term - that traditionally refers to literature without an ISBN number (so 'unpublished' but is often used to refer to literature not fully in the public domain).

There is a huge literature on the benefits of the arts in education (Winner & Hetland, 2000; Harland *et al*, 2000), much of which informs this report. The starting point of this report is what the literature addressing the benefits of the arts in education (both formal and informal) can tell us about the development both of creative entrepreneurship and the creative workforce.

Having said this, if we were to confine the study to empirical research on the transferability of arts education into the workforce it would be very short indeed. There is very little longitudinal research in this area in general, and none that tracks cohorts of children through formal education and into the workforce. What we have therefore are two sets of literature: one set which looks at the current and future skills, needs and demands of the workforce and the wider economy; and one which looks at the outcomes of arts education. It is the aim of this paper to relate these two literatures in a way that, while not always being able to make use of empirical research, relies on robust argument.

Almost any work on the arts and creative industries needs to set out its terminology clearly, particularly as 'creativity' has now become such a widely used, even

misused, term (Banaji *et al*, 2006). The 'creative workforce' in this context includes those who work in the cultural and creative industry sectors, as well as those who work in creative occupations in the wider economy – designers who work in car factories, or musicians who work in education. It should also be taken to include the current demand for 'creativity' in the workforce in general. The aim in this latter case is to understand if and how the creativity developed via arts practice and instruction in education can be parlayed into a variety of workplaces.

There is currently no agreed single definition of 'creativity' in arts or education literature, and this contributes to the difficulty of empirical work in this area. This report is not concerned with providing a definition of creativity as much as it is concerned with reflecting the different meanings attributed to it by the arts education literature. Our hypothesis, following the work of Lester & Piore (2004) on innovation, is that there *are* distinct forms of creativity that are highly developed in the arts, and which the practice of arts education is particularly well suited to encouraging.

The world of skills and training also has its own distinct nomenclature. The DEST report 'Employability Skills for the Future' (DEST, 2002) usefully distinguishes between:

- **Skills** – which refers to the ability to perform a specific task
- **Competencies** - which refers to observable behaviour performed to a specified level and therefore provides a basis for the assessment of performance
- **Attributes, qualities or characteristics** – these refer to the capabilities of an individual, in most cases, and are hence much less specifically related to tasks or to particular jobs.

We will try and maintain these distinctions, though as Craft (2003) has commented 'the slippage of the language in practice' means that maintaining such clear distinctions is not always possible.

One further definitional issue refers to the term 'arts education.' Anne Bamford (Bamford, 2006) distinguishes between:

- **Education in art** – teaching the practice and principles of the various arts disciplines, stimulating critical awareness, and developing the capacity for aesthetic judgement; and,
- **Education through art** – this includes seeing it as a vehicle for learning other subject content, or for developing particular skills such as communication skills, team working and so on. In this category we would also include research on the degree to which the arts helps form wider social skills, or what Craft (2000) calls 'the ability to cope effectively with changing life in the 21st century'.

The literature reviewed will cover both of these definitions, but because of our wider focus on 'creativity' in the workforce and not just on the cultural sectors, the major focus will be on the second of these definitions. Thus education in particular creative disciplines, or skills shortages in these same sectors, will not form the focus of this report.

1.1 Structure of the report

The next chapter looks at the drivers of changing skills needs in the economy, including increased demand for innovation and the growth of the creative industries. This is the starting point for this project and sets the context for the rest of the report.

Chapter 3 looks at the evidence base, focusing on robust empirical work and on the effectiveness of arts education, both formal and informal. Effectiveness is considered in a variety of ways including impacts on academic attainment, creativity and personal and social skills.

Chapter 4 considers the methodologies used by researchers in this field and provides an assessment of the strengths and weaknesses of the research base in this field as well as the implications of research gaps for policy development.

Chapter 5 concludes the report by considering the policy questions and challenges it poses for education, the arts and innovation policy.

2. The 21st Century Workforce

One of the striking things about the business and policy literature on current and future skills needs in the workforce is the degree of consensus expressed and the similarity of language used. The Business Council of Australia's recent report speaks of the need for 'communication, team work, problem solving, ongoing learning, creativity, cultural understanding, entrepreneurship, and leadership' (Business Council, pg 14). In a similar vein, the Pathways to Technological Innovation report makes the comment that 'there is a need to foster an entrepreneurial culture in Australia, starting in the early school years and continued through into public and private enterprises' (House of Representatives Standing Committee on Science and Innovation, pg 72). In Queensland, the Creative Workforce for a Smart State report states that schools and teachers should foster the development of 'project management and entrepreneurship as core skills' (Ministerial Advisory Council for Educational Renewal, MACER, pg 20). The Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) recently made the statement that 'there is potential for creative achievement in many fields of human activity including science, mathematics, technology and the arts' (MCEETYA, pg 1). In the United States, The US Partnership for 21st Century Skills asserts that workers need, 'critical thinking, problem solving, team work and decision-making skills' (Partnership, pg 12). The UK's Cox Review of Creativity in Business argues that 'the ability to innovate depends on the availability and exploitation of creative skills' which are taken to include these very same attributes of communication and cross-cultural understanding (Cox, pg 10). Meanwhile, Business Week (in its typically hyperbolic style) claims, 'the new core competence is creativity - the right-brain stuff that smart companies are now harnessing to generate top-line growth' (Business Week, Aug 2005).

We are by now all familiar with the notion of the 'knowledge economy' (Leadbeater, 1999): the notion that developed economies need to compete on ideas and innovation, not low cost labour, and that education at all levels is essential to the success of this type of economy. The idea of a knowledge economy was initially connected in many people's minds with the innovations resulting from the Internet and other digital technologies, and consequently was the subject of much debate and scepticism in the wake of the dot com bust of the turn of the century. More recent knowledge economy discourse has moved away from a concern purely with digital technology, to stress the need for what might be called 'higher order' notions, such as creativity or even wisdom. As the Imagine Australia report states

we have to move from our current position of relying on commodity knowledge production, to a point where we are constantly innovating on the basis of creative ideas (pg 6).

Although it can hardly be an exact figure, some economists have estimated that between 60 and 80 per cent of economic growth comes from innovation and new knowledge (Mulgan, 2006). More vexed is the relationship between creativity and innovation, which we discuss in more detail below, though recent thinking on innovation suggests that it may be more akin to a cultural activity than a science (Lester & Piore, 2004).

The contemporary focus of economic policymakers across the world on all things 'creative' is driven by essentially three separate, but interlinked, factors:

- **The growth of the creative and cultural sectors.** The UN estimates that creative and cultural industries account for 7 per cent of global GDP and are growing at 10 per cent a year - more than twice the rate of the world economy as whole. Developed economies may not maintain these growth rates going forward, but longer term demographic trends, particularly rising education levels and longevity, suggest that households may continue to spend more of their income on cultural and leisure activities.
- **Creative inputs as a part of wider innovation policy.** Whilst it is clear that the creative industries provide some of the ideas and images that materialise elsewhere as advertising copy, product design, brands or other commercial manifestations of creative culture, it is apparent that creatively trained labour is also increasingly in demand. Design (in particular) is a vital input to the competitive success of firms in a wide range of sectors, as indicated by the fact that in recent Australian, Canadian and Dutch studies (Cunningham, 2006; Gertler and Vinodrai 2004) fewer than half of designers are directly employed in design or architectural firms, but in fact work across sectors from manufacturing to retail. This may be the case for other creative labour, but the data on the demand side is less well-developed in these cases and future research programs will need to focus on the workplace to meet this need.
- **Skills, aptitudes, and ways of working.** Broader skills sets developed via creative education and practice are increasingly in demand. Team-working, communications and presentation skills are highly developed in many creative industries, particularly the performing arts. Also in demand are the ways of working and attitudes that are said to be characteristic of these sectors – whether this is the short-term project-based nature of much creative work in film or TV, say, the entrepreneurial freelancer, or the ‘emotional intelligence’ and commitment that cultural workers are said to bring to their practice.

In industrialised and developing economies, there is an increasing focus on what might be termed ‘educating for creativity’ or creative education alongside the mainstream policy objectives of the acquisition and productive deployment of skills. Some argue that this means a major change in the role of teachers (MACER, 2004) from the primary dispensers of wisdom in what is the relatively closed world of the school, to a collaborative relationship with parents, practitioners and others in a more open, ‘distributed learning system’. The notion that skills, or even formal knowledge bases in some cases, are changing more rapidly, has led to an emphasis on helping pupils develop the ability to learn and re-learn (or ‘unlearn’) and this has implications for the training of teachers themselves.

Many commentators (Sharp & Le Metais, 2000; Galligan, 2001) have acknowledged the importance of creativity in our education system. This remains at odds with the time and priority given to one of the traditional sources of that creativity: education in the arts and creative practices. In part this results from the arguments that creativity is a generic thinking skill, as important in the sciences, technology or any other field as it is in the arts. This seems to be widely accepted, but immediately raises the question: why use the arts to teach creativity? Do they have any privileged place in an education system committed to raising creativity? And if so, why?

2.1 The rhetoric of creativity

There is no agreed definition of 'creativity' among educational policymakers, academics, teachers or employers. As Rob Pope has pointed out (Pope, 2005), in its form as an abstract noun, the term 'creativity' did not appear in the Oxford English Dictionary until 1933 and was not in widespread use until the 1940s and 1950s. Having emerged in educational and psychological circles in the 1920s, Pope argues that it is a specifically 'modern' response to rapid social and technological change. He quotes one of the pioneers of creativity research, J P Guilford, as claiming that the 'upsurge in interest in creativity' (Pope, 2005) was the result of specifically modern dilemmas including space travel, global communications and the population explosion. As Pope comments, it is not clear whether, in this conception, creativity is the force driving these changes or what is needed to help people readjust to them.

This dual role of creativity is picked up by Banaji *et al* (2006) in their description of the influential UK National Advisory Committee on Creative and Cultural Education (NACCCE) report 'All Our Futures' (Robinson, 1999). This report argued that the reasons for fostering a creative curriculum include being able to participate in global markets, facing national economic challenges, feeding the fast-growing creative industries and helping young people adapt to technological and social change.

It is clear from this description that notions of the creative genius, or even the idea that creativity is a particular quality associated with the arts or with those with artistic talent, remains some way off. If, as Craft (2001) has argued, there have been two waves of conceptualising creativity in education: firstly a romantic notion of personal creativity and secondly a strong emphasis on social systems, we are by now firmly in the latter camp. The NACCCE notion of creativity is that creativity is essentially 'democratic' in that everyone can learn it; it is a co-operative activity and best learned via collective activity. It is essentially pro-social in that it encourages communication and feelings of empathy.

Such a notion of creativity clearly has widespread appeal to those in the community arts and education worlds who see more 'elitist' notions of creativity, which focus on individual talent, as setting up barriers to personal development. As Margaret Boden (1990) writes,

someone who believes that creativity is a rare or special power cannot sensibly hope that perseverance, or education, will enable them to join the creative elite...either one has got 'it' or one hasn't.

Banaji *et al* (2006) argue there are dangers in this broad put possibly bland definition of creativity. Most obviously there is a danger that by 'mainstreaming' creativity in this way, and stressing its pro-social elements, we risk excluding creative expression that is marginal, radical, counter-cultural or in some way deemed to be anti-social. Secondly this 'problem solving' idea of creativity, the notion that it is 'the application of knowledge and skills in new ways to achieve a valued goal' (Seltzer and Bentley, 1999), while it clearly links artistic creativity with the creative process common in the sciences, does tend to diminish notions of fantasy or play, which have a long history in discussions of artistic creativity. It also fails to highlight what might be the distinctive features of creativity as practised in the arts.

2.2 Creativity and Innovation

Recent work on innovation across the economy (Lester & Piore, 2004), suggests that it is precisely the habits associated with artistic creativity,

the capacity to experiment, and the habits of thought that allow us to make sense of radically ambiguous situations and move forward in the face of uncertainty (pg 5),

that are a vital, if neglected, element of current innovation policy. Lester and Piore's work on leading US firms, suggests that innovation depends on two processes; analysis and interpretation. While analysis is essentially rational decision making, akin to Seltzer and Bentley's definition above, interpretation, they argue, is something very much more like a language community – a process of mutual understanding arrived at via exploratory conversations with a variety of interlocutors.

A current term for such collaborate endeavour is 'c-learning' (Owen *et al*, 2006), variously spelled out as community, collaborative or communicative learning. The notion is hardly new. Alfred Marshall's idea of industrial districts (1920), now more commonly referred to as 'milieu', describes the importance of places where inhabitants share a variety of common norms and understandings that in some case underlie their local economy. More recent work on Silicon Valley (Saxenian, 1994) or the jewellery industry in Los Angeles (Scott, 2000), essentially uses the same idea and Polanyi's (1983) notion of 'tacit knowledge' - that which we know, but do not necessarily know that we know - again suggests the idea of an informal, embedded type of knowledge that is not necessarily easily subject to rational analysis.

Ikujiro Nonaka and Hirotake Takeuchi have looked at the innovation process in the Japanese manufacturing industry, though their findings have a wider resonance (Owen *et al*, 2006). According to Nonaka, making personal or tacit knowledge available to others is the central activity of the 'knowledge creating company'. The process of converting tacit knowledge into explicit knowledge is different from an analytical approach, where alternatives are well understood and can be clearly defined, and instead operates in a way very reminiscent of much creative practice:

First by linking contradictory things and ideas through metaphor; then by resolving these contradictions through analogy; and finally, by crystallizing the created concepts and embodying them in a model, which makes the knowledge available to the rest of the company (Nonaka 1991, pg101).

Others find similar processes to be important in design, with Verganti (2003) arguing that 'design is the brokering of languages'. Along with the familiar 'technology push' and 'market pull' arguments about innovation, he argues for 'design push': where what is 'new' is not a technical innovation, but a largely symbolic difference (the Apple iPod as opposed to another portable music system would be an example of 'design push').

Nonaka argues (Nonaka and Hirotake, 1995) that an important step in the process of creative working is the ability to cope with the concept of redundancy, and again there are parallels with work in the cultural and creative sectors. It could be argued that 'creativity' requires waste and redundancy – hundreds of pop bands need to exist to produce a few that are successful, fanzines can make an impact with one or two issues, temporary installations can bring as much pleasure as permanent art galleries. At the same time, having more ideas that can be dealt with in a linear

fashion, or generating what may seem irrelevant ideas, are also a valuable part of this creative process (Owen *et al*, 2006.)

Similarly, attitudes to risk (Knell, 2006, Bryce, *et al* 2004) and tolerance of ambiguity appears to be essential to the interpretative mode of innovation; unlike a more analytical approach that proceeds by reducing ambiguity and eliminating risk. Lester and Piore (2004) go so far as to claim that 'ambiguity is the critical resource out of which new ideas emerge' and it is this ambiguity that makes 'the conversation worth having' – not the actual exchange of information. If the conversation is narrowed down or closed off too soon - in other words if ambiguity is eliminated – the potential for innovation can be lost.

In her research on the social psychology of creativity, Amabile (1996) describes creativity as 'a novel, appropriate response to a heuristic (or open-ended) task.' She contrasts heuristic tasks with algorithmic tasks, 'those for which the path to the solution is clear and straightforward—tasks for which an algorithm exists'. As Lampert (2006) notes, this is similar to Geahigan's (1997) description of works of art as 'potentially problematic because they can be understood and evaluated in different ways'.

None of this is to suggest that analysis or rational problem solving approaches to innovation is irrelevant. At some point decisions need to be made and alternatives need to be reduced. What Lester and Piore's work and that of others suggests is that the interpretative phase needs to precede this analytical phase and if it does not, then the range of options at the end - the ideas from which one can choose – will be too narrow. Thus, if innovation can be simply defined as 'new ideas that work' (Mulgan, 2006), creativity's relationship to that is to open up the 'new ideas' - deciding which ones will work and should be pursued is the job of innovators.

There are two other aspects of this process of creative interpretation that are worth remarking on, particularly in their connection to the creative and cultural sectors. One is the importance of 'public space', not solely in terms of the built environment, but in the sense of somewhere where 'conversation' can take place in an atmosphere of trust, openness and mutual tolerance. Highly competitive environments, such as markets, may act as a spur to the later stages of innovation, but they can be inimical to these earlier, exploratory stages. The debate about the role of open source innovation (Mulgan, Salem & Steinberg, 2005) versus the need for protection of intellectual property crystallises this distinction quite well.

Lester & Piore state that these interpretive spaces, which include universities and educational institutions, industrial districts or milieu, and the publicly subsidised arts sector, do not grow up naturally in market economies and indeed it is often the role of public policy, and public funding, to create them. They can include firms or organisations themselves, research centres within companies (such as Xerox' Palo Alto Research Centre [PARC]), but competitive pressures and the trends to outsourcing have reduced the number of such interpretative spaces within commercial firms.

This understanding of the need for public space casts new light on the debate about the links between the subsidised cultural sectors and the marketplace. It has long been clear that, despite the market facing the rhetoric of 'creative industries', the links between the public and market creative sectors are in fact quite complex (Hesmondhalgh, 2002). Practitioners often move between the subsidised sectors and the market – actors work in both the subsidised and commercial theatres before stints on TV (again a mixed public and private market) or, in some cases, film, which

receives partial public subsidy in most countries. At the 'lower' end of the labour market this allows creative workers to make a living in what can be an insecure industry; but it also serves to attract top level talent by allowing those who have attained commercial success to gather creative kudos as well, as when film actors take a substantial pay cut to work on stage. Consumers similarly, move between the commercial and the public sectors often without knowing it, and the aesthetic sensibilities that are formed in public art galleries, in public education and in urban design often exercise themselves in the market through the increased consumption of cultural goods and services (Landry, 2000; Gertler, 2004; Duxbury, 2004; Evans, 2004).

It may also be the case that the subsidised sector provides the interpretative space for innovations that will later find their way into the market place. In this sense, rather than simply providing cultural goods and services that a market would under-produce (the standard market failure argument), the role is more akin to an R&D lab, providing risk funding and an atmosphere of experimentation that markets find difficult to sustain.

The other way in which the cultural and creative sectors provide a clue as to how to approach innovation via interpretation is in the close links that they provide between production and consumption (Leadbeater, 2004; Tether 2005). In the modern economy, consumers play an increasingly important part in innovation in all sectors, whether it is through helping to generate new ideas, directly providing the content of products (as in videogames), or in resisting particular innovations (such as genetically modified food). These links are particularly well developed in the creative and cultural sectors. In Lester & Piore's (2004) case studies of innovative firms, it was in the fashion industry that they observed the closest connections between consumers and producers. The traditional method of analytical innovation suggests understanding the customer's needs as a pre-requisite to developing suitable products or services. Given that so few fashion items respond to need at all and are often more positional or symbolic goods, this approach sometimes falls down. In understanding clothing only partly as utility, and in close observation of the way that clothes are interpreted and often customised, the fashion companies in their study seemed to get closest to the consumers' world view.

It is clear that creativity is not confined to the arts and cultural realm, but is a common element of social and economic innovation. If we only address creativity outside of its connections with the arts, we may be in danger of overplaying the analytical elements of creativity at the expense of the interpretative. In other words, it appears as if there are elements of creativity such as a tolerance of ambiguity and the notion of 'no right answer' and the ability to take risks and deal with uncertainty that the arts are particularly well placed to engender.

2.2 Why use the Arts to teach creativity?

Before we examine the evidence about the effectiveness of arts education as a way of enhancing creativity in the workforce, it is worth considering what advocates and policymakers claim the benefits of arts education in enhancing creativity to be.

**Case Study: The Early Learning Centre
Incorporating Boorai -The Children's Art Gallery**

The ELC is the research and demonstration early childhood facility attached to the Faculty of Education at The University of Melbourne. Located in an inner suburban part of Melbourne, the ELC provides long-day preschool program for 3-5 year old children from the surrounding community and the University.

The ELC is led by Jan Deans and Robert Brown, both tertiary art educators/researchers, whose experience has informed an arts-centred approach to teaching and learning at the centre. The philosophy of the ELC is based upon an image of the child as capable and inquisitive and encompasses a commitment to creative and expressive learning through artistic exploration.

The ELC's philosophy is informed by a belief that 'a distinct precept of education must be to combine greater knowledge, know-how and skills with social awareness, ethical orientation and aesthetic sensibility' (Oslo, 1997).

Not all countries see 'arts education' as being about teaching creativity, preferring in some cases to focus on notions of cultural transmission or understanding, or simply on the development of artistic skills. Bamford (2005) argues that the focus on cultural transmission, or grounding in tradition and 'way of life', are characteristic of both developing countries and new nation states (such as those in Eastern Europe and the former Soviet Union). Whitby (2005) says that of the 21 countries she surveyed, four kinds of outcome – artistic, personal, social and cultural - were expected from arts education. According to Whitby, educational policymakers often refer to the 'language' of the arts' – this language being conceived of as 'a combination of productive skills on one hand and cultivated judgements on the other'. This echoes

Nonaka's (1991) description of knowledge creation within firms.

Sharp and Le Metais (2000) in their study of 19 OECD countries found that only six countries - the US, Netherlands, Korea, Japan, Germany and England – explicitly mention creativity or developing children's creative ability as among the aims of their arts education policy.

In Australia, state-level policies in Queensland, Tasmania and Western Australia acknowledge the contribution of the arts to thinking skills, problem solving or emotional intelligence (Sharp and Le Metais, 2000). As Whitby argues, this is reflected in other national statements about the role of the arts in 'personal outcomes' – including capacity for innovation or internal resourcefulness. At the national level, the recently released Draft National Education and the Arts Statement aspires to build a framework that will 'foster a culture of creativity and innovation in Australia's school systems...where individuals are able to generate fresh ideas, communicate effectively, take calculated risks and imaginative leaps, adapt easily to change and work cooperatively' (Ministerial Council on Education, Employment, Training and Youth Affairs, MCEETYA, pg 1).

To realise the potential of all children, the ELC provides a nurturing, secure and stimulating learning environment, one that promotes happiness and a desire to learn. The primary aim is for the children, through play, to become self-motivated and independent learners who are sensitive to the needs and views of others.

Inquiry based learning is extended through the development of in-depth projects which respond to the interests of children, teachers and families. It involves finding answers to questions using collaborative planning, experiential processing and reflective evaluation. The projects provide children with the opportunity to investigate understandings of everyday life through direct experience and children and teachers regularly enjoy excursions to support their curriculum negotiations.

Once a topic is identified, children are encouraged to become involved in an enquiry approach to learning that stimulates the generation of questions, thoughtful investigation of interests and playful exploration of ideas. This approach, supported by a sensory rich and dynamic learning environment, encourages children to solve problems creatively through active exploration and interaction with people, materials and technologies.

The educational objectives the ELC aims to develop in children include:

- positive attitudes to the self and to others through the achievement of personal and social goals
- positive attitudes to learning, including the development of problem solving and critical thinking skills
- concentration and observation skills
- independence and an understanding of the need for self-discipline
- a range of cognitive skills through experience in language, mathematics, science, music, art, dance, drama, literature, studies of the society and the environment and technology
- effective language, collaboration and communication skills which prepare individuals to be effective team members.

More information on the ELC is available at <http://www.edfac.unimelb.edu.au/eldi/elc/>



There are clearly aspects of arts education that, whether as a result of conscious policy or not, can be seen as contributing to enhanced creativity.

As Owen *et al* (2006) point out, one of the central features of the teaching of most sorts of creative practice is the 'crit' – discussion between peers, where work in progress is exposed for developmental discussion. Bryce *et al*'s (2004) work on arts education in Australian schools argues that arts programs provide an opportunity for reflection and constructive criticism, which, while not unique to them, is particularly well developed in the tradition of most art forms.

As art students practice reflective thinking and aesthetic inquiry when they create artwork, as well as when they discuss their work and the work of others, many commentators have speculated on the links between arts education and critical thinking (Lampert, 2006). Few empirical studies have tested this link, although Lampert refers to one by Burton, Horowitz & Abeles (2000) which found that students with high arts exposure showed clear evidence of an understanding of 'multiple or alternative vantage points'. Her own empirical study, albeit relatively small scale (involving only 141 under-graduates) also indicates that exposure to learning in the arts positively reinforces students ability to think critically.

Lampert used the California Critical Thinking Disposition Inventory (CCTDI), which tests the motivation to approach problem framing or problem solving by using thinking and reasoning. Her study compared arts and non-arts undergraduates. While there was no significant difference in overall score between the two groups, the arts students were found to have significantly higher mean scores on several of the subscales within the CCTDI: truthseeking, maturity, and open-mindedness. Lampert argues that these categories are highly aligned with creative exploration and the analysis of ill-structured problems with no obvious solution.

The link between arts education and what one might call 'problem finding' or exploration was assessed by Getzels and Csikszentmihalyi (1976) in a task in which arts students were asked to draw a still life. The researchers found that arts students were not content to accept the problem as described, but challenged themselves to make it more interesting and difficult. This kind of small-scale study is hardly conclusive, but others (Moga *et al*, 1999) also hypothesise that arts students are better than others at problem finding and imagining new possibilities.

Willingness to put one's work on show, to accept constructive criticism and to let that feed the development of future ideas is obviously part of this process, but critical to its success is the community of practice (Wenger, 2000) in which it takes place. The communication skills, ability to work co-operatively with other people and understanding of emotional control (which some argue is developed via arts programs [Bryce *et al*, 2004]) are thus invaluable in being able to form and sustain such communities. This also provides some argument as to why the process of socialisation (working with people, trusting them and relying on their recommendations for future work) is more important in many creative and cultural industries than the process of skill development via formal education (Bathelt *et al*, 2004).

None of the above should be taken to suggest that the arts have a monopoly on teaching creativity. It appears that there are elements of the creative process – particularly the elements of critique and developmental discussion – which have retained a currency in arts teaching that may be less evident in other disciplines.

Merely stating this case is unlikely to convince educational policymakers of the merits of arts education. Fortunately, there is a growing amount of empirical research that can provide support for some of these statements. It is that to which we now turn.

3. The Evidence Base

3.1 Arts education in schools

The vast majority of research on arts education focuses on schools. According to Sharp & Le Metais (2000), arts education forms part of the curriculum in most OECD countries and is compulsory until around age 14. The proportion of secondary students studying the arts as an elective subject remains quite small and the researchers hypothesise that this may be because higher achieving students are often encouraged to study 'academic' subjects rather than the arts. Additionally, it must be remembered that policy statements and actual practice can differ – sometimes substantially. As Pascoe *et al* (2005) pointed out, although in theory music education should be available to all children in Australia throughout their schooling, in fact students can complete 13 years of education without any music instruction at all.

Although the primary policy drivers for arts education may differ somewhat internationally (Sharp & Le Metais, 2000; Whitby, 2005), the components of arts education in schools display remarkable similarity. In Bamford's (2006) study of arts education for UNESCO, over 90 per cent of courses surveyed see music and drawing as part of arts education; painting and crafts are included in over 80 per cent of counties, while dance, drama and sculpture were part of the curriculum in 70 per cent of cases. The study of literature or 'creative writing' is often considered part of the core curriculum, rather than part of arts education (Whitby, 2005).

Again according to Bamford, European countries, as well as Asian states such as Malaysia or Korea, mention 'cultural heritage' as part of the arts curriculum, with the latter seeing arts education as a key element of nation building. Media education only forms part of the curriculum in a minority of cases, although, in economically developed countries, the curriculum does sometimes include photography, film, digital art or design (though these are more likely to be optional subjects, rather than core curriculum). As Bryce *et al* (2004) note, there are few research studies looking at the effects of media education in schools on broader academic attainment. What is apparent is that the traditional nature of arts education (dance, drama, drawing) may differ somewhat from the likely cultural consumption habits of many school age children.

The research literature on the arts and education is now vast (Bryce *et al*, 2004). One study (Hetland & Winner, 2001) located 11,467 published and unpublished articles on the subject. Our focus is on empirical work, the vast majority of which has been carried out in the United States. We may also consider work that, while not carried out to an experimental standard, has been influential in policy terms.

The literature includes a hugely wide variety of claims for educational impacts. The Cultural Minister's Council (2004) report, lists 26 claims for the benefits of arts education programs from improved school attendance to improved citizenship. The language used for such claims is often quite vague (one writer's 'self-esteem' is another writer's 'confidence') and the claims made are only rarely directly tied to specific empirical work. In addition, as Bryce *et al* (2004) conclude, even activities labelled drama, music or art vary from study to study; much less is there any consistency about the definition of a 'program', which can be as little as a few days or as much as several years.

Given that, some clustering of claims needs to be made in this report. It is clear that these categories overlap, indeed Stumm (1994) argues that there are links between creativity as measured on standard tests and academic ability, and others (Carnerio and Heckman, 2003) argue that personal and social skills such as persistence or concentration are likely to be linked to academic achievement. Within this report, we have focussed on three 'clusters':

- claims for 'academic' impacts, understood as improved results in non-arts subjects
- claims for improved creativity
- claims for 'enabling skills and attitudes,' the widest category, which includes personal and social skills.

3.1.2 Evidence for impacts on academic attainment

One of the most noted studies of the relationship between arts programs and academic achievements is that by Catteral, Capleau & Iwanga (in Deasy, 2002). They analysed US National Educational Longitudinal survey (NELS) data, as part of a panel study on a cohort of over 25,000 students from Grade 8 to 12, over a period of ten years. Those students involved in arts-related courses either in school, or outside, performed better on every measure reported, including those for English, reading, history, geography, and citizenship. Rather than simply reflecting socio-economic advantage (in other words children from middle class families are more likely to be involved in the arts), these findings not only held good for students from disadvantaged socio-economic backgrounds, but were more significant in these cases.

Catterall & Waldorf (1999) followed up this work with a study that looked again at the test scores of children from lower socio-economic groups. This study focussed on an initiative called the Chicago Arts Partnership in Education (CAPE), an initiative to bring local artists and arts organisations into partnerships with teachers at all grade levels in Chicago schools. The study collected data on student achievement in reading and mathematics from 1992 to 1998 on a US basic skills test, the Iowa Test of Basic Skills. Comparing the results from the CAPE schools with the non-CAPE schools, reading and mathematics scores were higher in the former. The difference was statistically significant at elementary (primary) school levels, though not at high school level.

As the researchers themselves comment, the results are interesting but difficult to interpret. Although the results held across socio-economic groups, it may still be that the children who choose to involve themselves in arts activities come from families, of whatever class, who value the arts and high academic achievement. In other words, the studies cannot demonstrate that arts involvement causes academic achievement to rise. In addition, it may be that the improvements are the results of new programs or interventions (the Hawthorne effect) rather than being specifically related to arts programs as interventions. A more robust study may have sought to compare students who have been exposed to arts programs with those who had been exposed to another sort of 'new' program, to see if it was the arts element that is making the difference. Such comparative studies are rare, but need to be developed in future. The study suggests that arts and teacher partnerships can have beneficial effects on student's attainment in other academic subjects as well as in other outcomes such as personal and social skills.

Although the levels of correlation were high in both of these studies, the authors do not claim to have established a causal relationship between studying the arts and improved performance on non-arts subjects. One of the few studies that has attempted to demonstrate evidence of causality was the Reviewing Education and the Arts Project (REAP), published as a whole issue of the *Journal of Aesthetic Education* in Autumn 2000. The project as a whole synthesised 188 reports on the effects of the arts (music, drama, dance and arts-rich education) on academic achievement in an effort to demonstrate a causal link between the two. It used a 'meta-analytical' approach, reviewing the literature as in a standard literature review, but adding a quantitative element by calculating an 'effect size' for each study reviewed. In other words, the effect size acts as a measure of quality, so that studies with small sample sizes do not 'count' as much as larger studies.

Winner and Hetland (2000), two of the researchers involved in the study, argue that causal effects can only be demonstrated via experimental or quasi-experimental methods, using control groups for example (such as a group on an arts program compared to a similar groups studying sports or sciences). Such quasi-experimental methods are rare – they found that out of the 1,325 studies they reviewed, only 32 met with their criteria for effective research design.

In the ten meta-analyses published, causal links were established in only three areas: listening to music and spatial temporal reasoning, learning to play music and spatial reasoning (Hetland, 1999) and classroom drama, which demonstrated a clear link with verbal skills (Podlozny, 1999). Overall, the study considers that there is as yet little evidence that an arts-rich educational environment leads to improved academic attainment, although they admit that the research may have focussed too narrowly on test scores and exam grades as evidence of attainment (Winner & Hetland, 2000). In addition, although the REAP studies demonstrated causality only in rare cases, they managed to establish a high degree of association between studying particular art forms and improved academic results in many cases.

Eisner (1999) is similarly sceptical about claims for links between arts education and academic attainment. His review of literature published between 1986 and 1996 found 'no good evidence' (pg 150) that arts education can boost academic performance in unrelated areas, such as mathematics, though he did find evidence of improvements in measures of creativity, aesthetic appreciation and, in particular, on literacy programs designed to help students with reading problems.

The experimental work on this area is overwhelmingly from the US. Bryce *et al* (2004) in their review of the literature found only four experimental Australian studies, all of which were small-scale examinations of the relationship between music, in particular, and reading or mathematics ability. One of the largest non-US studies was Harland *et al's* (2000) three-year study of arts education in secondary schools in the UK. Using a variety of quantitative and qualitative methods (test scores, plus extensive interviewing and case studies), this study found no evidence to support the claim that the arts boost general academic performance (as measured by exam results). This study did find evidence of a wide variety of other effects, such as improvements in creativity and thinking skills, communication skills and advances in personal and social development.

The argument that studying the arts boosts academic achievements in other subjects has thus been the subject of relatively extensive, if not always truly experimental, research. The consensus view could be summed up as 'not proven'. The majority of researchers and (increasingly) educational policymakers have started to look

elsewhere, to other sorts of skills and competencies, for the benefits of arts education. While some advocates (Rauscher, 2001) continue to make claims for the so-called 'Mozart effects' (the argument that early exposure to classical music can improve performance in subjects such as mathematics), many others, even those who are strong supporters of arts education, are more comfortable with an orientation in research which takes it away from claims about improved exam results (Galligan, 2001). There is thus a tension between the broader notions of learning that have developed to reflect what actually goes on when engaging with the arts and more traditional education measures such as exam passes.

There is an increasing discrepancy between the economic challenges as laid down in much 'knowledge economy' rhetoric and the educational response as argued in the NACCCE report (Robinson, 1999). In other words, if it is the case that the economy requires highly skilled, flexible, self-learners, then the perceived need to raise standards in education continues to lead to greater emphasis on outputs and targets, perhaps at the risk of experimentation. In addition, the number of tests has increased, though it is clear that much testing emphasises simple recall at the expense of critical thinking.

3.1.3 Evidence for impacts on creativity

As discussed in Section 2, there is no clear, shared definition of creativity either in the arts or education literatures. Considerable discussion about how to measure creativity has been engendered due to its multifaceted nature. There are a variety of 'creativity tests' in existence - the most common being the so-called 'alternative use' test, whereby the test subject is asked to think of as many uses as possible for a common object. These tests measure 'divergent thinking' and are usually scored in relation to both the quantity and the quality (originality) of the answers. Some research creativity is more informally assessed by teachers or early childhood workers.

Many theorists of child development view young children as highly creative with a natural tendency to fantasy, experimentation and exploration of their physical and conceptual environment. This high level of creativity is not necessarily maintained throughout childhood and into adulthood (Sharp, 2001). In the 1960s, Torrance (1968) was one of the first to show that students' creativity begin to decline around age six, but showed an increase in later years. This phenomenon became known as the 'fourth grade slump' and Torrance argues that similar results have been found in countries other than the US (1967).

Howard Gardner focused on what he describes as 'expressive artistic creativity', which he argues is found at high levels in pre-school children. He argued that the 'slump' was caused as children entered formal education and entered a 'literal' stage of development when they learned conformity. Like Torrance, Gardner also argues that creativity begins to increase again at pre-adolescence. Later studies (summarised in Claxton *et al*, 2005) have also argued that creativity peaks and slumps throughout education; though there have been few detailed studies beyond the sixth grade (around age 11) and into adulthood.

The difficulties that schools appear to have in teaching 'creativity' (via the arts or any other means) is borne out by Bamford's survey (2006), where a quarter of the countries that responded to her survey felt there was little or no connection between arts education and the development of creativity and imagination. Harland *et al*

(2000) found that while both pupils and teachers saw creativity as an intended outcome of arts education, pupils in particular used the term so widely (variously meaning freedom, experimentation, imagination, new thoughts, self-expression) that any measure of it is in danger of becoming meaningless. In addition, their descriptions rarely suggested any sequential or progressive improvement in 'creativity', either as a competency or a cognitive process.

These findings present a clear problem for policymakers. It appears from the discussion in Section 2.2 that there are elements of arts practice and arts education - the tradition of critique, the emphasis on collective learning and interpretation, tolerance of ambiguity – that contribute to the qualities associated with 'creativity', but as Bamford comments, there is limited empirical evidence to support the claim that arts teaching develops creativity.

Burton *et al* (1999) provide one of the few empirical studies, though it measures association rather than demonstrating a causal relationship. In their study of over 2000 children, they distinguished between 'high arts groups' (those who had received arts instruction for at least three continuous years) and low arts groups (those who had had less than one year of music or art and little or no dance or drama) and found that those in the high arts group consistently outscored those in the low arts group in measures of creative thinking (as assessed by the Torrance Test) and on teachers' perceptions of their artistic capabilities.

In their review of empirical work in this area, Moga *et al* (2000) considered the impacts of visual arts teaching on creativity. Of the nearly 3,000 studies they looked at, only eight met their criteria for empirical research - in this case by using non-arts control groups. All the studies used 'creativity' tests, of which some were figural and some verbal/conceptual. They found modest evidence for a causal relationship between arts study and high creativity measures where the creativity test was figural, but no causal evidence where it was verbal/figurative. As the researchers comment: 'where the bridge is narrow' (that is from studying visual arts to drawing tests) there is some evidence of skills transfer, but there was no evidence of transfer from studying visual arts to performance on tests requiring the students to generate ideas, concepts or words.

Moga *et al* (2000) admit their paper was limited by the dearth of experimental studies available to assess, but also raised the question that the creativity tests used in these studies 'might not actually detect the kind of creativity fostered by study in the arts' (pg 102). In particular, they hypothesised that rather than problem-solving skills, the arts may foster problem-finding skills, where students are not content to accept the problem as described. To test this, they suggested that researchers would need to develop measures of 'problem finding' on both arts and non-arts (say science) to test whether problem finding was improved in those who study the arts.

It thus appears as if standard tests of creativity are unable to produce conclusive evidence as to the effectiveness of the links between studying the arts and creative thinking. In addition, many of these standard tests have been criticised (Craft, 2001) - in some cases for measuring intelligence-related factors rather than creativity, or for being too easily affected by external circumstances. The problem is that if testing for creativity is disreputable, it becomes impossible to produce empirical work that demonstrates effects on creativity. Nevertheless, it seems widely accepted that in this case lack of evidence is not the same as evidence of lack, and it may be that breaking creativity down into sub-components (critical thinking or autonomy for example) and studying the skills and attributes associated with them, will yield stronger results.

Case Study: Artstories

Artstories is about wellbeing, learning and arts participation in school communities. The program facilitates participation in arts-based activities to improve wellbeing and literacy for schools, students, their families, teachers and other school staff. The project has grown out of Anja Tait's doctoral research, which evaluates links created between music education, and literacy and numeracy.

ArtStories aims to impact on:

- partnership building
- wellbeing
- literacy
- arts learning

ArtStories facilitates a range of arts-based workshops and activities including listening, singing, playing, dancing, composing, writing, drawing, painting, constructing and multi-media. Students, staff and families will create and tell stories about self, family, dreams and community that will culminate in a public exhibition and community celebration in 2008.

The program is working in five schools in the Northern Territory: Howard Springs Primary School – a rural school 25km south of Darwin, with a high proportion of Indigenous students; Wagaman Primary School – in the northern suburbs of Darwin, a diverse socio-economic mix with students and families from more than 26 different cultures; Wulagi Primary School – also in the northern suburbs of Darwin, with a mix of 15 cultures, and with a number of women and children from a local refuge also attending; and Numbulwar – a very remote Indigenous community situated on the north east coast of the Northern Territory, where English is primarily the third language of most students; and Humpty Doo Primary School – a rural school 40km south of Darwin, with a high proportion of students from Asian and Indigenous backgrounds. The school also houses a Special Education annexe for students with high support needs.

Each school and its wider community are engaged in active learning for building whole school wellbeing through participation in the arts. Improved education and social outcomes are anticipated for both children and adults. Two full-time Arts and Wellbeing Officers have been employed for the term of the three-year strategy. A fifth primary school in the remote community of Numbulwar is also engaged. These two officers work closely with teachers to collaboratively plan and teach the arts in ways that improve children's literacy, wellbeing and learning skills.

Evaluation of the project will include interviews and discussion groups within the school community, and standardised testing for literacy levels.



Photos: Anja Tait

3.1.4 Evidence for impacts on enabling skills and attitudes

This is perhaps the largest category of benefits claimed for arts education, but it is also extremely broad and in many cases the claims made are vague and lacking in much empirical support. Nonetheless, a growing body of opinion, both in the arts and education worlds, suggest that it is in what are variously called 'soft skills' or 'non-cognitive skills' that the major benefits of arts education lie, and that these skills and attitudes are highly transferable to the creative workforce. As Eisner (1999, pg 152) comments,

Perhaps it is not skills at all that art courses develop, perhaps it is the promotion of certain attitudes that promote risk taking and hard work.

Many studies (Bryce *et al*, 2004 etc) mention motivation or increased engagement as an outcome. As Fullarton (2002) argues, several Australian studies have argued that this engagement transfers to improved attendance at school (Bamford *et al*, 2004) and aspiration to higher levels of education.

Improved self-esteem is also commonly reported. Brice Heath and Roach (1999) conducted a variety of tests in which they compared students in arts projects against data on students who had not participated in out-of-school arts programs. The arts students scored higher in all cases. Similar accounts are found in Catterall *et al* (1999), Burton *et al* (1999), Deasy (2002) and Harland *et al* (2000).

In their study of young people involved in 'theatre arts' (drama clubs), Catterall *et al* (1999) also found evidence of increased interest in school, increased language and reading abilities and, perhaps more contentiously, of improved 'tolerance' (which was measured by asking questions related to race relations). Harland *et al* also argue that increased empathy and awareness of others is an outcome particularly associated with those who have studied drama.

Similar results do not seem to hold for the visual arts. In a systematic review of the literature of the links between visual arts instruction and young people's understanding of cultural, ethnic, racial and national identifications (Mason *et al*, 2005), the researchers found very little empirical work to support the claims that art education affects positive changes in learners' understanding of their self and others.

3.2 The role of informal arts education

Although the majority of research in arts education focuses on schools and other formal education, there is a growing body of work that looks at the effects of extra-curricula arts education, either in so-called 'informal' settings (Sefton Green, 2006) or in cultural institutions such as museums or galleries.

Sefton Green (2006) distinguishes between 'non-formal' learning, which he describes as programs outside of formal education that are structured; and 'informal' education, which might be unplanned or even accidental. Within cultural institutions, such as museums or galleries, some programs could be described as 'informal', while others are designed more specifically as adjuncts to the curriculum.

Sharp and Le Metais (2000) report in their international study of arts education that while most respondents said that the core arts curriculum was intended to be delivered within school time, a good deal of work was taking place outside of school.

In Singapore, for example, while the formal secondary school curriculum takes place in the morning, the afternoon is designed around a range of co-curricula activities, including visual arts and music.

Other countries have a more formal notion of cultural entitlement. Schools in Korea, for example, are expected to enable students to visit museums or galleries at least once a term. In the Netherlands, students receive vouchers that they can redeem in museums, galleries, theatres and other cultural venues.

As perhaps befits the informal or non-formal sector, arts education outside of school has been subject to relatively little evaluation and research. Sefton Green (2006) suggests that the techniques used in evaluating learning in schools are often not as rigorously applied to the informal sector, and its strong culture of adherence and support, makes it particular prey to producing a good deal of unsupported advocacy. Newman *et al* (2001) in their review of community arts projects, argue that some informal interventions are particularly unsuited to experimental research because of the large number of stakeholders and the multiplicity of aims and outcomes as well as the difficulty of establishing formal cohorts who can be tracked via longitudinal research.

One of the best known and most rigorous studies of non-formal education was Brice Heath & Roach in the (Fiske, ed, 1999) report 'Champions of Change'. The Brice Heath and Roach study, which took place over a ten-year period, was unusual in that it compared young people in arts-based out of school activities with those in sports and community service. A team of researchers studied 124 youth-based organisations across the US, the majority of which had a focus on disadvantaged young people. They used a multi-method approach, combining ethnographic observation, interviews and audio recordings with survey data that enabled the researchers to compare a sample of young people from the various types of youth organisations with a national sample of high school students. As the research developed, it became clear that those young people involved in arts-related activities developed particular attributes, including enhanced use of language, that was different from the groups engaged primarily in sports or community service.

Brice Heath & Roach in their description of the arts-based youth groups reflect many of the same features of interpretative innovation or creativity discussed in Section 2. In particular, they argue that the arts organisations allowed young people 'multiple opportunities to express ideas', to question and challenge,

the frequency of 'what if' questions, modal verbs, (such as could) and mental state verbs (such as believe, plan), as well as the complexity of hypothetical proposals, amounts to lots of practice (pg 25).

Compared to this, those young people who did not get involved in out-of-school activities received almost no practice in talking through future plans, developing ideas for execution, or assessing the next steps from a current situation. Brice Heath & Roach also refer to the role of critique in the arts organisations as an almost daily occurrence requiring tolerance of risk and 'an atmosphere in which students know how to solicit support, challenge themselves and others' (pg 26).

This 'constant anticipation of a critical audience' motivates self-monitoring and consistent refinement. Although it does not describe a causal relationship, Brice Heath and Roach's work employs baselines for young people (on entering the groups) and demonstrated an increase in syntactic complexity, hypothetical

reasoning and questioning approaches within four to six weeks of entry into the arts organisations.

In the UK, out-of-school, though structured, learning often goes by the name of 'study support' and has recently been the subject of a three-year longitudinal evaluation (Macbeth *et al*, 2001) tracking two cohorts of over 8 000 children across the UK. The study looked at academic attainment, 'attitudes' and school attendance, and concluded that this out of hours learning, including arts-related activities, could have significant and substantial effects on academic achievements, including exam passes. This was the case, even where the activities (such as sport or arts) were not directly curriculum-related and appeared to be particularly effective for students from ethnic minorities. The report does however admit that the 'ethos' of study support, such as its voluntary nature, may contribute to its effectiveness, which raises the question of whether children who are likely to volunteer for study support are likely to do relatively well anyway.

A large category of research in arts education concerns itself with what can broadly be described as the educational effects of visiting cultural institutions,. Much of the impact that cultural institutions (such as museums) have on learning is to do with externalities (unintended consequences), rather than being the conscious objective of these institutions (Scott, 2003; Bryson, Usherwood and Streatfield, 2002).

When evaluating the educational impacts of such programs it needs to be borne in mind that very few of these programs were developed with specific educational outcomes in mind. While projects may have broad goals such as improved literacy or self-confidence, these do not always translate easily to more detailed measurements either of academic attainment, or of other skills and aptitudes. If genuinely experimental research is rare in the schools environment, then it is almost unknown in this environment.

Much of the research on cultural institutions is short-term (asking, in effect, 'what did you learn today?') and there is very little if any work that looks at longer-term impacts. Hooper-Greenhill and Moussouri (2000) claim that few studies of museums education for example,

have viewed learning as continuous process and tried to explore visitor learning, before, during and after the visits, as different stages of a single learning process.

The most important category of research on museum learning is the work on school visits. Early research in the USA (Hooper-Greenhill and Moussouri, 2000), found that elements which influenced the experience of the participants and hence the capacity for learning, included the size of the group (smaller being better), spending enough time at the museum or gallery and, in particular, children and young people having some choice or control about what they learn and the manner in which they learn it (CEI, 2004; Griffin 2002).

Case Study: The Albert Park Flexible Learning Centre

The Albert Park Flexible Learning Centre is an alternative and informal education facility in Brisbane, Queensland, where young people aged between 15 and 25 can complete their secondary education in a supported environment. The school is non-hierarchical. Students, and all staff work in flexible structures that encourage and challenge the students to accept responsibility for their own learning.

The school currently has five full-time and seven part-time staff. Student enrolment has been capped at 60 and a long waiting list indicates that demand for the school and its educational approach is high, especially from young people whose needs were not being met through traditional and more formal schooling structures. The Centre Coordinator, Mr Paul Toon believes the school seeks to support every young person to be 'a fuller version of him or herself'.

The Centre is not designed around a 'drop-in, drop-out' model although there are plenty of 'comings and goings' during the school day which is organised into three workshop sessions. The day begins at 9.30 with a community meeting. These meetings are democratic and informal, but aimed to strengthen the relational aspects of community building. These meetings develop maturity and trust within the whole community and value the practices of non-violence and peace.

These community-building practices enable an enriched creative environment to be a deliberate part of the ethos of the school. Teachers hold the view that students are powerfully creative and they have a right for that creativity to be engaged and given form within and beyond the school. Amplifying the creative capacities of their students intersects strongly with the belief that the school needs to be a place where students can feel joyful about life - and it is easier to feel joyful when you feel creative. Creativity then is not merely added through an 'arts' layer to the students' experiences. Instead it is an integral dimension of the school's larger engagement with life, vocational outcomes and community.

Not surprisingly the creative activities of students start outside the school (as in the new tattoo or skateboard manoeuvre) and arts in the Centre are framed as part of that larger impulse. So body art, storytelling, creative power-point presentations, newly written songs to be recorded and engineered, animations and movie-making all become significant as processes for understanding identity and making sense of the school and the world. As enthusiasm, learning and understanding grows through projects of these kinds, it is not surprising that a number of students decide to pursue traineeships and other pathways that lead to employment in the creative workforce.

The Albert Park Flexible Learning Centre is operated by Edmund Rice Education within its Flexible Learning Centres network, with the collaboration of the Brisbane City Council Youth Team and with the support of the Queensland Department of Education Training and the Arts.

There is a relatively small literature on family visits to museums (Hooper-Greenhill & Moussouri, 2000), the primary interest of which is the evidence it provides for the importance of social interactions in learning. Various studies (Blud, 1990; Diamond, 1986; McManus, 1987) argue that social interaction is important as a factor in

enhancing learning behaviours. In her study of families in the Science Museum in London, Blud (1990) suggests that interactive exhibitions are more successful than static ones in stimulating exchange between parents and children, though this finding may be related to the fact that science museums tend to have more interactive displays than other types of museums. Research in the US on children's learning in museums, (Hass, 1996; Crowley & Callanan, 1998) suggests that the importance of interaction with adults is not confined to family members, but that children were more likely to learn when any adults were involved in the interaction than otherwise. Bird & Ackerman (2004) stress the importance of social networks to motivate and maintain interest in learning.

Young people and intermediaries, such as teachers or parents, generally view interaction with museums, libraries and archives as enjoyable. This is important in light of the findings from the OECD Reading for Change Research (Twist *et al*, 2003) that included that reading for pleasure is a strong indicator of academic success. Similarly, research undertaken by the Centre for Education and Industry at Warwick University in the UK (CEI, 2004) found a correlation between enjoyment and subject learning in museums.

While public policy interventions may help develop positive learning habits, most research suggests that this is unlikely to be effected by only occasional interaction with cultural institutions. In their large-scale study of the claims for social and economic impacts of the arts, McCarthy *et al* (2004) suggests that any process of change in individuals is cumulative and typically takes time and sustained involvement. The importance of habit is also suggested by the final report on the Impact of Phase 2 of the Museums and Galleries Education Program in the UK (CEI, 2004), which suggests that prior knowledge or actual experience of museum visiting seems to have a favourable impact on learning outcomes. In particular, longer lasting benefits seem to require some level of sustained involvement. The same report also points out that there can be significant gains in learning for those with lower baseline knowledge.

3.3 Evidence for impacts on social inclusion

Although not a specific focus of this report, it is worth looking briefly at the evidence for the impacts of arts education on particular groups, variously described as socially excluded, marginalised or 'at risk'. While it is true to say that the focus on social exclusion found in Australia or Britain is not necessarily a feature of US studies where the bulk of evidence lies, work such as Brice Heath & Roach (1999) and Catterall (discussed above) does look at what Mirza (2005) calls the 'therapeutic' use of the arts.

In the Australia Council's review of arts education programs (Hunter, 2005), most of the project studies involved the participation of students identified as 'at risk', although various definitions and interpretations of the term 'at risk' were in use. In the New South Wales Education and Arts Partnership (EAPI) program, young people identified as 'at risk' were those with a group of 'risk factors' such as substance abuse, poor educational and employment histories or poor health. The WA program used the rather vague and less socially-situated definition of 'those students who may be at risk of not achieving their major learning outcomes to levels which enable them to achieve their potential', which presumably could include almost anyone.

Although none of the programs reviewed by Hunter sought to compare results for at risk students compared to those not at risk, there were a series of positive results for the targeted groups and individuals. The NSW project (Bamford et al, 2004), though it used a very small sample, observed improvements in language use and reading comprehension as well as enabling skills such as independence and motivation. The Queensland projects (Piscitelli *et al*, 2004) also looked at disadvantage, though with a focus on the qualities of good arts programs for schools in disadvantaged areas, as well as the outcomes and benefits for the children themselves. Based on children's self-assessment and parental observations, the report argued that participation in the arts strengthened creativity, identity and self-esteem in particular.

In addition, there is a body of work (Collett, 1991; Whilhelm J, 1995) which looks specifically at the success of arts programs (in many cases music) in promoting literacy. Given the increased understanding of the connections between poor levels of literacy and the process of social exclusion this body of work assumes a position of importance. Bird and Ackerman (2004) have summarised the literature on this area and have concluded that there is evidence of a link between poor literacy and a range of other outcomes: from educational attainment (Raban & Nolan, 2005) to offending, mental health and poor quality of life.

One of the largest scale interventions with a particular focus on disadvantage is the UK's Creative Partnerships (CP) initiative, a nationally-funded program working in 36 of the most disadvantaged areas of England. Established in 2002, CP is designed to develop 'creative learning' in schools via long term partnerships between school and creative practitioners, both individuals and companies. It has now worked with over 4,000 schools on over 4,500 projects involving almost half a million young people. CP has been extensively evaluated (Sefton Green, 2005), with over 90 research and evaluation studies currently listed on its website (<http://www.creative-partnerships.com/researchandevaluation>), though only one national study by the National Foundation for Educational Research (Eames *et al*, forthcoming 2006) would meet the criteria laid out at the beginning of this report for robust empirical work.

The NFER work is a large-scale study that looked at all 398 core schools selected by the first 16 Creative Partnerships (CP) offices in 2002. The work uses a statistical technique known as 'multilevel modelling'. This examines whether there exists a difference between those young people involved in CP and those that were not, when all relevant background factors are taken into account. It is based on analysis of a variety of pupil attainment records sourced from the National Pupil Database (NPD).

The research shows that, when compared with national data, the analysis of young people's progress showed no evidence of an impact of attending Creative Partnerships activities at key stage 2 or key stage 4, though there was a small positive impact at key stage 3. The study was able to show, however, that those that were involved with CP outperformed their peers in the same schools 'to a statistically significant extent at all three key stages', but even here:

given the fact that the differences in progress are small, and that other factors which were not included in the analysis could have influenced performance, it cannot be concluded with any certainty that Creative Partnerships has caused the observed differences.

The NFER study illustrates the difficulty of engaging the most disadvantaged children and young people in (mainly) voluntary cultural/creative activities. While CP was

successful in targeting schools that are more disadvantaged than other UK schools nationally, those that actually took part in CP activities 'are less likely to be disadvantaged than pupils within these schools generally' (pg 7).

The CP report focuses on the impacts on academic attainment. Other researchers (Carneiro and Heckman, 2003) argue that this may be the wrong strategy if ameliorating social exclusion via employment is the goal. Carneiro and Heckman (2003) argue that the discussion of skills and skill formation in the policy literature has focused too much on academic or cognitive skills and underestimated the importance of non-cognitive or attitudinal ones. Their argument is that employers value attitudinal traits such as dependability and stability, as much as more cognitive skills, and that these traits may be more important in determining personal success in the long term. In addition, the rising demand for what is sometimes called 'emotional work' (Urry, 1990) (that is, the ability to interact with people and to make them 'feel good' in an economy where services make up the vast bulk of employment and human services a growing percentage) suggests that such skills will be in increasing demand.

As non-cognitive skills are more easily improved during adolescence, public policy can help stimulate their development over longer periods. This is important for the debate about combating social exclusion as it suggests that public policy may have some role to play in helping to combat pre-existing inequalities.

This presents policymakers with a clear problem. While there seems to be a substantial body of evidence supporting the view that social and personal skills development via arts and cultural activities can be particularly beneficial for students from disadvantaged backgrounds, those most disadvantaged are least likely to take up such opportunities (Bennett, 1995; PISA, 2000), thus limiting the effectiveness of public intervention.

4. Research Strategies and Methods

This report has concentrated on research reports that have 'gathered robust empirical data'. This has essentially meant focussing on a small minority of the vast literature that this area has spawned. Hetland & Winner in 2001 located 11,467 published and unpublished articles on the subject, and though no similar count has been done since, the demands of evidence-based policymaking, particular in Australia and the UK (Bamford, 2006) will have added to that total.

It also means that the evidence section has been based largely on US research, which accounts for the majority of research, particularly experimental research, in this area. The most prominent publications, as in many reviews of this type therefore, have been *Champions of Change* (Fiske, 1999), REAP, published as the *Journal of Aesthetic Education*, 2000) and *Critical Links* (Deasy, 2002).

The reason that so many reviews in this area return to these texts is the manifold problems associated with much of the other research produced. In arts education research, replication of studies is rare, consistency of measures is almost non-existent and the use of terminology is often poorly defined and extraordinarily vague (Podlozny, 2000). Research on the impacts of the arts in general is often criticised for adopting an overly advocacy-like approach (Selwood, 2002) and this is perhaps particularly pronounced in the area of arts education. As Sefton Green (2006) says,

it is noticeable how many of their writers see their work as if from a defensive perspective, writing against an imaginary detractor (pg 14).

Sefton Green is referring to the research outputs from Creative Partnerships, one of the largest and most ambitious art-based interventions in education that the UK has witnessed, and one that has engendered a large research and evaluation program. Much of this research will no doubt be useful to practitioners and in some cases, to advocates: but in the lack of longitudinal studies, the absence of control groups, the small scale and sample sizes of much of the research and the reliance on case studies (about a third of the research consists of case studies), it exemplifies many of the problems that policymakers, particularly in education, find with research on the arts.

In his description of a convincing research study, Eisner (1999, pg 151) provides a good illustration of how far most studies of arts education deviate from it. Firstly he points out that to support claims that students have benefited from arts education, one ideally needs to compare them with a control group that has not been through the same process, though this is very rarely done. The control group would be subject to a similar-length intervention of a different kind, say a sports or science program; or else what is being reflected may simply be the effects of some children being part of a 'new program', while others are not. Better still would be a study involving children in arts programs, children in other programs, and children in 'no' programs - though as Winner & Cooper (2000) comment in their review of the literature, only one study they found used such a method.

In order to know what makes a difference in outcomes, the form and content of interventions needs to be described more thoroughly. In the literature in general, an 'arts program' or 'arts education' can vary from a single day (a trip to a gallery) to instruction lasting several years.

Another common problem is the lack of baseline data against which to compare change. In other words, many studies will claim that arts education has 'improved' self-confidence, awareness, critical thinking or creativity, while providing no information on what level of such characteristics existed in the first place. It may even be suggested that researchers often operate a 'deficit model', assuming that young people have gained benefits from attending arts programs without knowing what levels of particular qualities they started out with. Even in their large-scale study of arts education in secondary school, Harland *et al* (2000) comment on the 'lack of suitable instruments' (pg 18) with which to assess baseline achievements. As the report makes so much use of self-reporting, it is often unclear what is meant when people say they have 'increased' appreciation of others or improved social skills.

Relying entirely on self-reported responses without peer review or independent verification can be problematic as there is a tendency towards normative responses. People may be unwilling to say that they have not noticed any benefits from a particular program for a variety of reasons: not wanting to appear ungrateful, not wanting to lose privileges in the future, or simply because they think it is this answer expected of them. A good example of this phenomenon is the study of a large museum education program in the UK, entitled 'What did you learn at the Museum Today?' (Hooper-Greenhill *et al*, 2004). This analysis surveyed almost 20 000 pupils and 1 000 teachers and reported extraordinary high levels of positive findings - 87 per cent of pupils felt they had learned something interesting, while 73 per cent said their visits had made them want to find out more. Behaviour is often different though - only 55 per cent said they would visit a museum again. The reasons for this seeming discrepancy would be a useful focus of further research.

Although the standards required to meet, say, Eisner's definition of quality research are rather high and would discount much of what informs public policy in a whole range of areas (Davies, 2004; Becker *et al*, 2006), there are good reasons why associational or co-relational research often falls short of being able to evidence the impacts claimed for it. In particular, co-relational data does not allow us to rule out other plausible hypotheses as to why people who study the arts may do better, either academically, in measures of creativity, or in measures of broader skills and attributes. It may be the case that high academic achievers choose to study the arts, or to do non-required courses in general; or that those who are 'creative' by inclination choose to study the arts; or that those who are already high in self-confidence, esteem or other qualities choose to get involved in art forms which allow them to demonstrate these very qualities. This is particularly problematic for policymakers, as what such research is picking up may simply be effects of social class. Middle-class children come from families where the arts and academic achievement are valued and where cultural and social capital is high, and this is simply being reflected and replicated.

Faced with these complexities, advocates and researchers often fall back on the technique of measuring commitment and effort, rather than effectiveness. As Wavell *et al* (2002) point out, documents tend to describe the potential for impact, illustrated by some 'case studies' or in-depth interviews purporting to illustrate this potential.

One omission of particular concern to policymakers is that there is rarely an attempt to measure opportunity costs - in other words the benefits of spending money on one particular intervention rather than others. The real question for policy makers is often not assessment-based (that is, 'did this work?'), but relationally-based (that is, 'did this work better than another approach, and what were the relative costs?').

The use of 'anecdotal' evidence in policymaking remains contentious. As Ray Pawson comments (Pawson, 2003, pg 14),

whilst it is hardly obsessed with the lofty ambition of qualifying for the inner sanctum of 'science', the very idea of evidence-based policy rests on the matter of differentiating its efforts from 'common sense', 'intuition', 'experience', 'value judgements' and so on.

Others argue that in always valuing 'hard data' above the 'anecdotal', we simply privilege certain kinds of knowledge: the scientific and the rational, usually the preserve of cultural and economic elites, above the more informal or intuitive 'local knowledge'.

We are thus at an impasse in policy terms. Policymakers, either in funding departments or in educational policy, appear to need to be convinced that arts education can yield measurable benefits and that it can do this as well as, or better than, other sorts of educational interventions. That is not to say that without these arguments, arts education would simply disappear from the curriculum, it would and should stand on its own merits as a subject of enquiry, but the practical experience of the last few decades is that despite in principle notional policy support to the importance of creativity in the curriculum and in the workforce, arts education, one of the sources of that creativity, continues to be marginalised.

There is evidence that particular sorts of benefits – the links between drama and language use or between music and spatial reasoning - can be demonstrated empirically and exhibit a degree of causality. In addition there is a large amount of robust and often large-scale research that can demonstrate co-relational effects – particularly in social skills, communication skills and feelings of well-being including self-esteem and confidence. The largest group of research is highly descriptive, small-scale case studies, where benefits are stated rather than demonstrated. It may be the case that the sheer volume of this sort of material detracts from the generally positive message that the minority of robust studies can provide. Thus, whilst arts advocates often seem to feel that 'making the case' for their subject is important, the quality of that case making is often poor. What is required is a less defensive approach, which accepts the value of these subjects, but seeks to understand more about how the particular facets of arts education that are important for developing creativity – open enquiry, critique, collaborative learning, can be mainstreamed within practice.

What is also needed is the recognition that qualitative research, self-reporting and 'anecdotal' evidence all have their place within evidence-based policy making. Some policymakers (Davies 2004) argue that single studies, case studies and even public opinion surveys do indeed have a role as evidence if carried out to 'the highest possible standard'. The issue then becomes one of standards, not just methods, of evidence-gathering, and it is clear that self-reporting, backed up by peer review and verification as in Harland *et al* (2005) offers a legitimate alternative to experimentally designed studies.

Case study: A Rich Arts Environment - One School's Success

The rich arts environment of Mt Gambier High School in rural South Australia has been a major part of the strategy to transform an underachieving school that had been perceived as being 'in trouble'. The Principal Gary Costello, who was awarded the 'Best National Achievement by a Principal' in 2006 from the Department of Education, Science and Training, believes that a happy school where students enjoy themselves is critical. Access to art plays an important part in the achievement of the target: 'student engagement and well being'.

A school with more than 1000 students, it has in the last nine years demonstrated significant improvement in academic success and retention rates. Whilst there clearly have been multiple policies explored and implemented, the use of arts is outstandingly obvious. The vision for The Arts includes: arts curriculum, support for emerging artists, performance and exhibition opportunities, technology and e-learning facilities.

Art is everywhere:

- Art subjects were increased to include filmmaking, music industry and dance and was made available to all students in Year 8 and as a subject for Year 9 boys. Action Arts programs (boys dance) are currently being designed to include Senior years.
- The arts play an integral part in the school's environment. Students and teachers have helped to design and create works of art that are displayed around the school. This includes 11 murals, a reconciliation sculpture, and several modern pieces of sculpture, two water features, and graffiti art. The school's Governing Council is working with the school to replace the school fence with a mural for the entire outside wall. Construction work for an amphitheatre and an external drama space is currently being undertaken.
- Multiple artistic opportunities for all are generated. The school vision for the arts states that The Arts are for everyone, regardless of whether the experience is formal or informal, or the person is a viewer or participator. This includes Artist-in-residence programs and strong community links made with local artists and organisations including the Sir Robert Helpmann Theatre.
- Art experiences include: arts festivals, opportunity to attend workshops and to perform in the school community, school musicals, (often written by the school community), dance spectacles, visual art showcases and the screening of student film.

The problem with demonstrating impacts on creativity and the creative workforce is somewhat different. In this case, the lack of agreement about what would constitute enhanced creativity and the very few studies that attempt to measure it in any robust way, are one side of the problem. As Craft (2001) points out, the methods and criteria for evaluating creativity are often underpinned by different theories of creativity – so comparability is a major problem. The other problem, in the absence of studies that

track cohorts from formal education into the workforce, is demonstrating any sort of 'evidence' at all. It appears clear from both the literature on workforce needs and that on innovation, that many of the habits, skills and practices of artistic education are highly desirable. Testing this hypothesis offers a rich future research framework, but the current evidence base can say little conclusive either way.

What is needed now is a different approach. Empirical work to uncover transferability effects will no doubt go on, but it seems increasingly clear that there is no 'evidence silver bullet' that will put an end to this debate once and for all.

In some areas, particularly those to do with the workforce, more empirical work is clearly needed. While there are studies of creativity in the workplace (Swann & Birke, 2005; Whyte, 2005), we know very little about whether the creativity of those trained in arts disciplines differs from that of those trained in other disciplines. As Moga *et al* (2000) suggest, it may be that those trained in the arts are better at problem finding than others, rather than problem solving. Similarly, the creativity required by those who work in the creative and cultural sectors may reflect different characteristics from those creatively-trained workers who go work in manufacturing or financial services.

The work by Nonaka & Hirotake and Lester & Piore seems to suggest that artistic processes of creation are vital to the interpretative stage of innovation and they have evidenced this to an effect via case studies of firms, but it is not clear from that literature that these firms in particular employ large numbers of artistically trained people. In other words, what we currently have is a notion of innovation that looks very much like those practices developed in the arts, but very little research on how that connection takes place.

More problematically, it could be that looking for evidence on creativity or even a watertight definition of it, misunderstands the nature of the issue. There are many concepts that we use quite happily in everyday life, and even in public policy formation such as democracy, the public interest, community or well-being, which lack uncontested definition and are intrinsically difficult to measure. As Andrew Graham has commented (in Davies, 2005) on the question of broadcasting quality: 'if you could measure quality, it would be quantity'.

While there is a need for more empirical studies of the creative workforce, public policy in arts education cannot rely solely on evidence for its legitimacy. More important even than improved evidence, is the use that is made of evidence. This report has shown no lack of evaluations, surveys and studies - the challenge is to translate this evidence into improved practice and deeper engagement.

5. Policy Questions and Challenges

There remains a number of challenges facing policy makers in the arts, education, and innovation policy despite the acknowledged importance of creativity in our economy and society, and the at least partial understanding of the role that the arts have in developing this. Some relate to the difficulties of 'proof' in such an area and the demands of evidence-based policymaking (EBP) that such proof is produced. Others relate to lack of clarity about what a creative curriculum looks like and how the arts fit into that, particularly given the already crowded nature of the school curriculum. Still others relate to the need to respond to the demand for greater creativity in the workforce.

The next two sections look at current policy approaches to arts education and to encouraging creativity and innovation in the workforce. The final section will consider what sorts of future research may be useful to informing that policy development.

5.1 Challenges and policy questions in schools

Commentators point out the discrepancy between repeated calls for more creativity in education or the workforce and the relatively low status that arts education retains within the curriculum in most countries (Pascoe *et al*, 2005). As Banaji *et al* (2006, pg 8) write,

creativity is being constructed in quite contradictory ways: it is supposedly overwhelmingly important, but also marginal to the mainstream curriculum in terms of time and resources.

Sharp and Le Metais' (2000) international review of the curriculum provides some evidence for this assertion. Respondents to their survey from Hong Kong, Ireland, Korea, New Zealand and Sweden indicated that other subjects took precedence over the arts. This list is interesting, given that it includes so many countries that make much of creativity in their national competitiveness rhetoric.

Bamford (2006) argues that this is because the arts, more than other areas of education, have been 'subject to waves of passing educational practices' (pg 47), from child development approaches and arts as free expression, to art as cultural agent or the current stress on the arts as 'therapy' for a variety of social ills (Mirza, 2005). This, she argues, instead of building strong educational programs, has resulted in scattered approaches, which sees the arts as little more than the occasional experiment in schools. Hence children have little time to build the skills and understanding needed to develop artistic practice and indeed most of them may end up thinking they are 'not good at the arts'.

No one suggests that the lack of empirical evidence as to the transferability effects of arts education is the major part of this marginalisation, not least because similar transferability effects may be difficult to prove for many forms of education (Wolf, 2002). The link between arts education and enhanced creativity has perhaps not been sufficiently made in many policymakers' minds.

Bamford (2006) suggests that this is in part because of the tension between teaching art as free expression, with an emphasis on creativity and imagination, and the cognitive and discipline-based skills needed to fully participate in the arts. Others

argue that the demands of conforming to standard forms of artistic expression can actually hinder creativity. This is an ancient debate and goes to the heart of the difference between 'education in art' and 'education through art', or as Banaji *et al* (2006) argue between the extremes of elite and democratic views of creativity. Schools are often pulled in different directions between the notions of arts for all, as a means of developing both self-expression and developing other skills, and art provision for the 'gifted and talented'. The problem for policymakers looking for evidence of impacts is that these differences are often not made clear but are rather submerged in discussions of 'arts education'.

A further challenge to arts education in schools is the fact that at the same time as the rhetoric about the need for creativity has grown louder, the demands for 'standards-based reform' (Annenberg, 2003) in schools has also grown. This demand is often led by large employers, many of the same employers who are calling for enhanced creativity, but are nevertheless concerned, that as a recent UK report (CBI, 2006) claimed, one in three employers is having to send staff for remedial training in mathematics and English.

Employers are thus calling for more and more emphasis on raising standards in English, mathematics and other 'core' subjects, which often leaves less and less time for other subjects. This was a primary concern of the influential Robinson report (1999), which argued that the perceived need to raise standards in education has led to greater emphasis on outputs and targets at the risk of experimentation. While it is generally considered that the ability to tolerate failure and move on is part of the vital training for entrepreneurship, the increasing emphasis on testing and rating both pupils and schools means that they can no longer afford to engage in speculative, experimental, or open-ended curriculum or enquiry.

Some would argue that little has changed in education since the Robinson report, but there is perhaps an emerging understanding that the demands of a standards-based curriculum may at times be in conflict with a need for greater creativity. Although more in rhetoric than in practice at the moment, there are moves with education systems, including Australia's, to construct a more coherent 'creativity offer' for children both within and outside of school and to develop more sophisticated ways of assessing effectiveness.

Such an offer is supposed to be available for children from early years education and into the workforce, although the stress is often on clearer routes into the creative industries, rather than the workforce in general. Nevertheless, the Pathways to Technological Innovation report recommends that the Government establish a 'dedicated whole-of-government taskforce to develop a series of measures targeting the early development of entrepreneurial skills in the education system – including the early school years' in order to develop skills applicable to careers beyond those of a creative or cultural focus (House of Representatives Standing Committee on Science and Innovation, pg 72). This recommendation grew out of submissions which strongly suggested that employers and industry (across a range of occupational fields) are finding employees and budding entrepreneurs without the right 'higher level soft skills' such as communication and teamwork skills, problem solving skills, strategic skills and cultural-based skills such as management of a contemporary diverse workforce - skills which are at the heart of much creative and arts education (House of Representatives Standing Committee on Science and Innovation, pg 76-82). A comment from the report sets this out well:

if you do a project at school, you should be asked how you would set up a business to do A, B and C, that type of thing, something that makes people

understand what risk is about and how the total thing fits together... It's a cultural thing that, unfortunately we lack a bit in our education system (pg 68).

Case Study: Pixel.play

Pixel.play is a creative content development program for school students using mobile phones and readily available digital technologies. The project builds on the potential of mobile phones as artistic creation and distribution tools. Mobile phones are a unique media device in that they have always been about personal broadcast of thought. The introduction of built-in cameras and sound and video recording hardware make them a rich media content creation tool.

The ever-increasing memory in phones also makes them a fabulous depository for personal and contemporary narrative. Pixel.play has seen students use their phones in a variety of ways from the creation of SMS poetry and pixel drawings to sound, animations and short films.

In 2006, pixel.play workshop programs took place in Adelaide, Whyalla and Port Lincoln in South Australia. In Whyalla and Port Lincoln over 100 students took part in pixel.play workshops in their schools, while 30 ambitious students elected to take part in further workshops run at the local TAFE or university. In Adelaide, pixel.play ran in partnership with the Department of Education and Children's Services and Flinders University and worked with 15 schools to create short films and animations with an anti-bullying theme as part of National Safe Schools Week.

Mobile phone creative media workshops encourage young people to make works that they keep in their pocket and hold in their hand. Mobile phone movies are easily shared and cheaply made, given the small-scale screen (small file sizes required and availability of free software that supports the platform). All these factors make the mobile an ideal form for youth and community projects. The mobile is a fun and accessible doorway to engaging with IT, media and creative skills, and are a ubiquitous object and thus break down some of the fears around engagement with new digital technologies.

In 2006 pixel.play has been supported by the Australian Government through the Australia Council, the Regional Arts Fund through Country Arts South Australia, the South Australian Government through the South Australian Film Corporation, South Australian Youth Arts Board and through Health Promotions Through The Arts.

More information on pixel.play workshops is available at www.anat.org.au.

Photos taken by Hugh Davies during pixel.play workshops in Whyalla (SA)



A number of suggested initiatives to date that could improve the 'creative offer' are:

- The development of creative portfolios, which reflect what children do outside of school particularly in terms of music, videogames, and interaction with digital technology in general. This is both meant to be more reflective of the cultural pursuits of the majority of young people and recognise the development of a 'pro-am' aesthetic of user-producers (Leadbeater & Miller, 2004; Cunningham, 2006).
- The development of skills to also manage a portfolio career (not just a creative portfolio) – self employed, freelance, casual or part-time – and not with a single employer or even industry. At the same time, schools and educators grow project-based work in teams with multiple partners who change over time (MACER, pg 20).
- Extended school hours or so-called 'wrap-around schools' which provide a range of services and activities, often beyond the school day and are intended to offer a varied menu of out-of-hours activities for children, which will include arts activities and visits to external cultural facilities (for example, museums and galleries) as well as sport and volunteering or community service opportunities.
- Beyond this, the notion of 'learning as a distributed system' (MACER, 2004), networked across many sites from the family kitchen to the business breakfast as well as the classroom and the workplace.
- Practitioner partnerships, such as Creative Partnerships, which seeks to embed creative practitioners within schools in a variety of settings, from providing an occasional workshop to sustained long-term joint project work.
- Providing young people with the means to access to cultural facilities at a subsidised or reduced rate, given that it appears that the majority of extrinsic benefits result from prolonged or habitual interaction with the arts.

Research on extended schools will be able to build on the growing body of work on study support, extra curricula and informal education (Brice Heath & Roach, 1999; Sefton Green, 2006) that already exists. One of the primary policy concerns for this area is to demonstrate that it can engage with hard to reach learners, which seems to be the case with some out-of-school education, as well as amplifying the school experience of those who are already committed to learning.

Work on practitioner partnerships appear to suggest that there are benefits for schools over and above the traditional means of arts education, with the additional advantage of a minor boost to the local creative economy (BOP, 2006) through expanding employment of practitioners. As Creative Partnerships has found, the challenge here is to convince schools that such a benefit is actually worth paying for in the long term.

Research on 'mass creativity' and the development of user-producers is in its infancy, and much of it is still of the hyperbolic sort that accompanies the identification of novel phenomenon. Having said that, it may well be the most important development in terms of arts education, challenging, as it does,

both the role of schools as the major providers of arts education and the traditional arts forms that make up the majority of the school curriculum. Given the hypotheses that artistic forms of creativity have something particular to offer to interpretative innovation, and that that is something that is neglected in current innovation policy, one promising area would be to look at the degree to which current use of digital media by 'user-producers' resembles notions of interpretive innovation (being open ended and discursive) or is more akin to analytical innovation.

5.2 Policies for the creative workforce

In research terms, the difficulty of measuring creativity means that there is relatively little research that looks directly at firms' attitudes to creativity as opposed to design or innovation. More recent work (Swann and Birke, 2005; Drewery, 2003; Whyte, et al, 2005) has attempted to separate these activities, partly as a response to policy calls for more creativity and innovation (PMSEIC, 2005; Cox, 2005) in the economy.

Swann and Birke argue that, in a workplace context, creativity precedes design and indeed design is the channel by which creativity is turned into new products and services. The UK's Cox Review (2005) argued that while creativity is the generation of new ideas and innovation is the successful exploitation of those ideas, design is what links them.

Creativity is thus often a part of the research and development (R&D) process within firms, but as a separate input tends not to show up on company balance sheets or accounts of R&D. The Business Council of Australia argues that this focus on R&D as a measure of innovation is 'fundamentally flawed', as it centres on too narrow an understanding of creativity and innovation which can equally well take place through management practices, workplace organisation or the application of new technology. Similarly a recent UK report in the 'innovation gap' (NESTA, 2006) suggested that much process innovation and innovation in the service sectors, from new methods of retail (such as Amazon's 'one click' technology) to new genetic tests or methods of delivering public services, also represent innovations but rarely show up on the innovation statistics. This has the effect of making countries like Australia, with its concentration in primary and service-based sectors, look weaker on innovation than a country with a well-developed manufacturing base. The challenge appears to be to develop measures of innovation that can capture these advances (and hence encourage policymakers to support and fund them) without producing a definition of innovation that is so broad as to be meaningless.

Other literature of relevance to the creative workforce looks at managing creativity and motivating creative individuals and companies. Much of this focuses on workplace 'cultures' or 'climates' with attempts being made to measure the degree to which firms provide challenging work, autonomy, time to develop new ideas or a culture of openness or risk taking (Whyte, *et al*, 2005). Similarly, social network mapping is sometimes used (Drewery, 2003)

to try and identify 'creative hubs' within firms where discussions about new ideas are occurring.

Various attempts have been made to formalise such measurements, but as Swann and Birke (2005) argue, while this may be a promising line of enquiry in the future, very little evidence exists that links the creative climate of the workplace with any robust measure of company performance. Again, the issue of measurement is a problematic. A survey by management consultants Bain & Company (Rigby, 2002) suggests that four in five senior executives have identified creativity as a 'top three' priority for their firms, but work on innovation by the UK-based employers lobby (the CBI) found that over 63 per cent of respondents did not have any process in place to capture the creativity – simply defined here as new ideas – of employees.

A more robust way of measuring creativity may be to simply look at those in the workforce who have 'creative qualifications': that is bachelors-level qualifications in an arts, media or design discipline. This is the approach taken by QUT's Creative Digital Industries National Mapping Project, which has used it as a way of tracking the rise in creative employment, both in the creative industries and the wider economy. In the period from 1996 to 2001 the number of people in the Australian workforce with creative qualifications has grown from approximately 150,000 to 180,000 - a cumulative annual growth rate (CAGR) of 3.8 per cent. While just over three quarters of employment of those with creative qualifications in 1996 was in the wider economy, this proportion fell to 70 per cent by 2001, mostly due to the 8 per cent increase in the numbers working within the creative industries.

The increasing specialisation of creative industry workers may in part be driven by the higher wages within the creative industries, as the QUT research argues that the mean weekly income is 6 per cent higher for those within the creative industries, as opposed to those employed in the wider economy at the same occupational level (pers. comm., August 2006). Using creative qualifications as the proxy for creativity has the benefit of clarity and traceability – the difficulty is that it does not capture those whose 'creativity' is the result, say, of a scientific education.

The difficulty in defining creativity and the lack of research that looks at creativity (as opposed to design or innovation) in the workplace means that policy in this area often turns out to be innovation policy or policy for design, rather than for creativity. This need not be problematic - innovation policy has been criticised in the past for being too focussed on science and technology (Cox, 2005; PMSEIC, 2005), so many welcome the recognition of the role of creativity in innovation. Much of the debate centres around the approaches that are needed at the level of the firm – so the role of public policy, beyond setting broad innovation frameworks, is limited.

Policy recommendations for enhanced creativity tends to focus on:

- The need for more inter-disciplinary education, particularly at the level of higher education research

- The need for stronger links between education and firms, particularly small firms, who generally have fewer links to educational institutions than larger ones. This can be seen as part of a more general move to 'open up' the education system or to create 'learning as a distributed system'
- The better understanding of creative inputs as part of research and development (R&D) and the support of such inputs via tax breaks. While providing some financial support for companies, such measures are also designed to highlight the importance of creativity in the innovation process, which has been described as 'silent' because of the difficulty of including it on the balance sheet
- Immersion programs that place graduates, often from design disciplines, into firms that have hitherto made little use of design
- An emphasis on 'entrepreneurship training' as part of many higher education courses in the arts or design
- Public sector procurement policy to focus on supporting innovation, rather than just minimising costs

Beyond this, the largest role for public policy is in ensuring an appropriately skilled workforce through publicly supported training programs, as well as (primarily) through public education. The emphasis in much of the debate about skills and education is on the need to ensure a tighter coupling of working and learning, through the involvement of employers in the education system and through the provision of 'lifelong learning' cultures that ensure that workers have access to learning opportunities throughout their working life.

Although there is very little research that looks in detail at the transfer from education into the work place, Harland *et al* (2000) provide a wealth of teacher and pupil perspectives on what is being transferred in such cases. In extensive interviews with pupils and teachers, plus some further interviews with employers, they found that pupils focused on the transfer of specific arts skills into employment (as actors, musicians or artists) while teachers and indeed employers focused on the transfer of skills that were said to enhance employability – such as communications skills or confidence. In other words, pupils were focussed on opportunities in the creative industries while teachers and employers were more concerned about the need for creativity in the general workforce.

Harland *et al* (2005) suggest that pupils were being somewhat naive in focussing only on careers in the arts and creative industries and that the transferable social skills from arts education in fact equipped them for a far wider range of activities. Our analysis of the literature supports this idea and argues that if innovation and creativity are of more importance in the workplace, then there is clear evidence that arts education and creative practice have a particular role in developing these attributes. In particular, the communicative skills and emphasis on team working, the tradition of critique and developmental discussion, a tolerance of ambiguity and the notion of 'no right answer', and the ability to take risks and deal with uncertainty, appeared to be associated with good quality arts education and are elements of the type of creativity that is said to be needed.

The rhetoric of creativity found in much management literature (Swann and Birke, 2005; Drewery, 2003; Whyte, et al, 2005) has been decoupled from that associated with the arts. What is required now is research that can more clearly examine, via studies of work, the degree to which an arts rich education is associated with more generic 'creativity' in the workplace.

5.3 Recommendations for further research

This report has looked primarily at the evidence for a link between arts education in schools and a variety of outcomes – from improved academic success to better social skills – which are deemed to be of importance in the labour market. There is currently strong consensus among employers' groups and policymakers in economically developed countries, about the demand for a more 'creative' workforce. The gap between rhetoric and reality bears further investigation (do employers really want more critical thinkers in the workplace?), but the amount of employment, both in the creative and cultural industries and for 'creative' workers in the economy, looks set to rise, albeit at possibly a slower rate than in the last decade. Thus the characteristics and conditions of creative labour is a fruitful area for research, as well as policy development.

To understand how to develop and support a more 'creative workforce' our attention needs to be switched from looking at education to looking at work. In particular, we need to focus on the links between education, both formal and informal, and work. At the moment, we have studies of creativity in the workplace (and many more on innovation), particularly in management literature (Swann & Birke, 2005; Whyte, 2005), which looks at how work can be organised to facilitate the production and deployment of new ideas. In addition, there is growing literature on education for creativity, much of which has been discussed here.

Studies of the workplace are now required. In both the self-consciously 'creative' and the mainstream, consideration of the relationship between education and what is meant by creativity in the workplace must be detailed. For example, does the creativity of those trained in arts disciplines differ from that of those trained in other disciplines? As Moga *et al* (2000) suggest, it may be that those trained in the arts are better at problem finding than others, rather than problem solving. Is this the case and how does it manifest itself? Similarly, the creativity required by those who work in the creative and cultural sectors may reflect different characteristics from those creatively-trained workers who go work in manufacturing or financial services. If so, what are they?

Lester & Piore's work on analytical interpretation suggests that processes similar to those used in artistic production are important, if undervalued, in current approaches to innovation. If that is the case, what sort of education produces these skills? Are those trained in the arts and humanities, better 'interpretive innovators?'

Educational policy makers and arts advocates have focussed much attention on looking at the supply side of the workforce – the demand side where creativity is deployed and developed – should be the focus of future research.

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