

**THE EXTENT, BENEFITS AND POTENTIAL OF MUSIC  
EDUCATION IN VICTORIAN SCHOOLS**

**SUBMISSION**



educational  
transformations



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# **SUBMISSION OF EDUCATIONAL TRANSFORMATIONS PTY LTD ON THE EXTENT, BENEFITS AND POTENTIAL OF MUSIC EDUCATION IN VICTORIAN SCHOOLS**

## **Introduction**

Educational Transformations Pty Ltd was commissioned by The Song Room (TSR), a not-for-profit Melbourne-based organisation that provides support for the arts in primary schools in disadvantaged settings around Australia, to assess the impact of TSR programs on outcomes for students. The findings of the study were published in reports of TSR that are available on its website ([www.songroom.org.au](http://www.songroom.org.au)) but also for an international readership in the book *Transforming Education through the Arts* (Caldwell and Vaughan 2012). A copy of the book was delivered to the Chair of the Education & Training Committee (ETC) in November 2012. Excerpts and summaries from the book related to the purposes of the inquiry are set out below.

## **Australia may be in breach of UNESCO's Convention on the Rights of the Child**

According to TSR, about 700,000 students in public primary schools in Australia have no opportunity to participate in programs in the arts. Students in public schools in low socio-economic settings appear to be at a comparative disadvantage to their counterparts in schools in more affluent communities and in private schools. An explanation may be that large numbers of private schools have, at least in the eyes of parents, a more holistic view of the curriculum and have well-developed programs in the arts that have withstood the narrowing effect of high-stakes testing. There are notable exceptions, of course, especially for public schools of long standing or where the arts are a 'protected' specialisation. An associated reason that takes account of socio-economic status in the public sector as well as in the private sector is that these schools have more financial resources to draw on or have higher levels of social capital from which they can secure support for the arts.

UNESCO considers education in the arts to be a universal human right, implying that its absence or sidelining is a breach of the convention on the rights of the child. A 'road map for arts education' was prepared at the First World Conference on Arts Education held in Lisbon in March 2006. It included the following statement:

Culture and the arts are essential components of a comprehensive education leading to the full development of the individual. Therefore, Arts Education is a universal human right, for all learners, including those who are often excluded from education, such as immigrants, cultural minority groups, and people with disabilities. (UNESCO 2006: 3)

The road map cited Article 27 in the Universal Declaration of Human Rights: 'Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and share in scientific advancement and its benefits'. It cited the Convention on the Rights of the Child: 'The education of the child shall be directed to . . . (1) The development of the child's personality, talents and mental and physical abilities to their fullest potential (Article 29) and 'State parties shall respect and promote the right of the child to participate fully in cultural and artistic life and shall encourage the provision of appropriate and equal opportunities for cultural, artistic, recreational and leisure activity' (Article 31).

## **The intrinsic value of arts education**

There are intrinsic benefits in participation in the arts, including music, best summarised in the following terms:

In the arts, we should agree that all children deserve the opportunity to learn to play a musical instrument, to sing, to engage in dramatic events, dance, paint, sculpt, and study the great works of artistic endeavour from other times and places. Through the arts, children learn discipline, focus, passion, and the sheer joy of creativity. We should make sure that these opportunities and the resources to support them are available to every student in every school.

(Ravitch 2010: 235)

It is noteworthy that high achievers in other fields have engaged in or have prowess in the arts, including music, as illustrated for winners of the Nobel Prize:

We found that compared with typical scientists, Nobel laureates are at least 2 times more likely to be photographers; 4 times more likely to be musicians; 17 times more likely to be artists; 15 times more likely to be craftsmen; 25 times more likely to be writers of non-professional writing, such as poetry or fiction; and 22 times more likely to be performers, such as actors, dancers or magicians.

(Root-Bernstein and Root-Bernstein 2010: 7-8)

### **Research on the impact of arts education on other outcomes**

Music and arts initiatives have been shown to increase academic outcomes (Bamford 2006; Catterall et al. 1999), increase intelligence quotient (IQ) (Schellenberg 2006), improve literacy (Bamford 2006; Hunter 2005; Spillane 2009) and numeracy (Catterall et al. 1999; Hunter 2005; Spillane 2009; Uptis and Smithrim 2003). Participation in the arts has been shown to encourage changes within the cognitive functions of the brain (Koelsch et al. 2005; Levitin and Triovolas 2009; Parsons 2001; Sacks 2007; Schlaug et al. 1995a; Schlaug et al. 2005; Sluming et al. 2007; Wetter et al. 2009). Catterall (2005) proposed a theory on the transfer of learning through the arts which can be considered as 'change in knowledge, skills, dispositions, and orientations stemming from neural processes stimulated by learning in or participation in the arts' which encompassed two main points:

1. Arts learning and experiences, to varying degrees, reorganise neural pathways, or the way the brain functions. Extended and or deep learning in the arts reinforces these developments.
2. The development and re-organisation of brain function due to learning in the arts may impact how and how well the brain processes other tasks.

(Catterall 2005: p. 7)

Increased attendance may influence the academic achievement of students. Qualitative evidence has shown a perceived influence of arts programs on students' academic achievement in Australia and the United States (Bryce et al. 2004; Oreck et al. 1999). The influence of increased student confidence on improvement in reading achievement in a New York City public school was described by a teacher who formed part of a longitudinal multiple-case study:

She went from the bottom reading group in the fourth grade to the top in grade five...She seemed to feel better about herself. Somehow she got the message that she was special and a good person. I honestly don't think this would have happened if it weren't for the music program.

(Oreck et al. 1999: 67)

The impact of the arts on students was described by (Catterall et al. 1999: 17) in these terms: 'The arts do matter - not only as worthwhile experiences in their own

right ... but also as instruments of cognitive growth and development and as agents of motivation for school success'. Furthermore:

The arts not only build our brains, they insulate them from our stress-full urban environments. In short, all children, and especially urban children, need the arts if they are to thrive and blossom to their full potential. We should not wait until our children are emotionally disturbed or incarcerated before we offer them the positive cognitive, social, medical and emotional benefits of a well-rounded arts education. To deny urban children arts education is societal child abuse. For those who feel that we can't afford arts education, we must remind them about the cost of a child who drops out of school or becomes incarcerated. A full education that includes the arts is the insurance we pay for our nations' democracy.

(Creedon 2011: 36)

Catterall and colleagues used the National Educational Longitudinal Survey data (NELS: 88), which included 25,000 students from the United States with 10 years of longitudinal data, to perform an elegant and extensive analysis of the impact of the arts. The studies identified three main sets of observations set out below that included a focus on students from low SES backgrounds, which makes the findings of particular interest in the context of the Australian study summarised later in the submission:

1. Involvement in the arts and academic success. Positive academic developments for children engaged in the arts are seen at each step in the research—between 8th and 10th grade as well as between 10th and 12th grade. The comparative gains for arts-involved youngsters generally become more pronounced over time. Moreover and more important, these patterns also hold for children from low socio-economic status (SES) backgrounds.
2. Music and mathematics achievement. Students who report consistent high levels of involvement in instrumental music over the middle and high school years show significantly higher levels of mathematics proficiency by grade 12. This observation holds both generally and for low SES students as a subgroup. In addition, absolute differences in measured mathematics proficiency between students consistently involved versus not involved in instrumental music grow significantly over time.

(Catterall et al. 1999: 2)

Wetter and colleagues investigated the influence of music instruction on academic outcome in a retrospective study of students from Bern, Switzerland (Wetter et al. 2009). The study involved 53 children who practised music and 67 who did not (Wetter et al. 2009). Significantly higher academic grades were found in the students who practised music in Grades 4, 5 and 6 in comparison to those who did not practise music (Wetter et al. 2009). No significant difference was identified in Grade 3 (Wetter et al. 2009). The effects were consistent across the academic subjects that included mathematics and languages (French and German), with no significant difference identified for sports (Wetter et al. 2009). Although the apparent lack of effect in Grade 3 could have been due to several factors, the authors proposed that length of time in music instruction may have been a contributing factor (Wetter et al. 2009).

Another study identified a link between length of music instruction and gains in IQ and academic achievement of 147 six to 11 year-old students from Toronto, Canada

(Schellenberg 2006). The longer the duration of the music instruction the higher the gains in intellectual functioning (Schellenberg 2006). Both studies retained their significant findings when they controlled for the economic situation of students (Schellenberg 2006; Wetter et al. 2009). This study like that conducted by Wetter found significant gains in all academic subjects rather than specific associations with some subjects (Schellenberg 2006). Wetter described the importance of music education:

At present, funding for music education is often reduced in order to save money. Music and arts are sometimes regarded as a luxury and as being of lesser significance for a child's education than other subjects such as mathematics or languages. We believe that such thinking is not justified because music is an important part of our culture and its exertion both involves many different skills and activates several areas of the brain. We believe that there are strong reasons why music has been our true companion for thousands of years until now, only some of these reasons and their implications have been discovered.

(Wetter et al. 2009: 372)

Wetter described how music appeared 'to induce structural and functional variations of central regions of the brain resulting in manifold implications' (Wetter et al. 2009: 372). Advances in imaging technology for neurobiology have enabled studies that investigated what specific areas of the brain were activated during the analysis of music and music performance (Koelsch et al. 2005; Levitin and Triovolas 2009; Parsons 2001).

The neural systems underlying music were found to be distributed throughout the left and right hemispheres of the brain (Levitin and Triovolas 2009; Parsons 2001: 211). Differences in brain symmetry and the size of specific regions (increased corpus callosum) and significantly increased grey matter in several regions of the brain have been identified in professional musicians ( Schlaug et al. 1995a; Schlaug et al. 1995b; Schlaug et al. 2005). One area of the brain found to be increased in size was the corpus callosum which acts to connect the left and the right hemispheres of the brain. Interestingly although 'music processing shares some circuitry with spoken language processing', found within the left hemisphere, there is also the involvement of 'distinct neural circuits (Levitin and Triovolas 2009: 226).

Professional orchestral musicians have shown enhanced performance in a non-musical visuo-spatial task (three-dimensional mental rotation), with increased use of a specific area of the brain (Broca's area) in comparison to well-matched controls (Sluming et al. 2007). This study provided 'additional objective evidence to support the suggestion that the development and maintenance of musical performance abilities confers benefit on non-musical cognitive domains' (Sluming et al. 2007: 3804). These findings suggest physical changes within the brain through interaction with music, some of which are localised to regions associated with language processing (although they also have distinct neural circuits), indicating a link between music and language.

These findings are of even greater importance considering the plasticity of the brain, as explored in *The Brain that Changes Itself*, which presented evidence that new neuronal pathways can be created throughout life (Doidge 2010). A study at Harvard Medical School investigated what brain regions were activated that enabled the discernment between regular or irregular musical chord patterns in children (10 year-olds) and adults with and without musical training (Koelsch et al. 2005). No significant differences were found between the groups (Koelsch et al. 2005). The authors concluded that 'humans have a general ability to effortlessly acquire complex musical

knowledge, and to process musical information fast and accurately according to this knowledge'; this 'underlines the inherent interest of the human brain in music and thus stresses the biological relevance of music' (Koelsch et al. 2005: 1074). This study provided insight into the biological basis of the unique appeal of the arts to children.

Participation in arts programs was seen to increase various psychological indicators such as resilience (Oreck et al. 1999), self-regulation (Hunter 2005; Oreck et al. 1999), self esteem (Brice Heath and Roach 1999; Hunter 2005; Uptis and Smithrim 2003), identity (Oreck et al. 1999), self-concept (Catterall et al. 1999), self-efficacy and motivation (Bamford 2006; Catterall et al. 1999; Hunter 2005). Students who actively participated in various arts programs showed improvements in the behavioural indicators of empathy (Catterall et al. 1999; Hunter 2005), tolerance (Catterall et al. 1999), cooperation (Hunter, 2005), skills of collaboration (Hunter, 2005), and communication skills (Hunter 2005)..

The emotion of music (and more generally of the arts) goes beyond the boundaries of social and cultural constraints of human existence, it pierces the 'heart directly' (Sacks 2007: 301). Recent neurobiological evidence indicates that emotion inherent in music can be recognised regardless of large differences in culture and SES. The recognition of three basic emotional expressions (happy, sad, and scared/fearful) from western music was shown to be above that expected for random chance, for listeners from Mafa (native African population) and Western participants (Fritz et al. 2009). This study was important as it enabled the examination of responses for two groups of listeners which were 'completely culturally isolated from each other', with the Mafa listeners not previously exposed to western music (Fritz et al. 2009: 1). These studies indicated that music is inherently within us all, almost as if it was embedded in our DNA.

The ability of music (and the arts) to cross cultural boundaries may be one of the reasons it was so effective in the engagement of multicultural communities in disadvantaged settings (for example one of the schools studied contained 97 percent of students from Language Backgrounds Other Than English (LBOTE). The classroom of the recently migrated refugee would be dominated by talk in a foreign language which presents a territory of the unfamiliar. The universal language of music can reach into this classroom and engage the child through its ability to express emotions without cultural constraints. Furthermore, without the use of a common language the unique culture of the child can still find its own expression through the arts.

### **Impact of The Song Room (TSR) programs**

TSR is a Melbourne-based not-for-profit that offers free music and arts-based programs for children in disadvantaged and other high-need settings. Approximately 20,000 students participate in its programs each week. According to TSR, 700,000 students in public primary schools in Australia have no opportunity to participate in programs in the arts. TSR is supported by grants from federal and state governments but with substantial funding from foundations, other not-for-profits and the corporate sector.

The impact of the program was confirmed in research in 2010 by Educational Transformations commissioned by TSR and funded by the Macquarie Group Foundation. The findings were published in *Bridging the Gap in School Achievement through the Arts* (Vaughan, Harris and Caldwell 2011), launched by Hon Peter Garrett, Australia's Minister for School Education, Early Childhood and Youth in March 2011. A detailed account is contained in *Transforming Education through the Arts* (Caldwell and Vaughan 2012). The research was conducted against a

background of international research in both primary and secondary schools, some findings of which are summarised in the preceding pages.

The research team examined the performance of students in 10 schools in highly disadvantaged settings in Western Sydney. Three schools offered a longer-term program over 12 to 18 months, and three schools offered an initial short-term program of 6 months. In each instance the program was conducted for Grade 5 and 6 students for one hour on a single day once per week. A control group of four schools did not offer The Song Room program. The three groups of schools were a matched set. At the time of the study they scored roughly the same on the Australian Curriculum, Assessment and Reporting Authority (ACARA) Index of Community Socio-Educational Advantage (ICSEA), as calculated in 2009. An even closer match was evident when 2010 ICSEA scores were used (see Table 1). The study is a rare example of quasi-experimental design in educational research.

Table 1: Demographics of the three cohorts involved in the study

Category	School (name has been changed)	Date of TSR commencement	Enrolment	ICSEA 1	ICSEA 2
Longer-term (n=109)	Cooper Stone Public School	2009 Semester 1	296	918	937
	Willow Brook Public School	2009 Semester 1	493	907	886
	Margaret Park Public School	2009 Semester 2	289	929	973
		Weighted mean	439	910	903
Initial (n=140)	Curraburra Public School	2010 Semester 1	340	819	827
	Alfield Public School	2010 Semester 1	204	1100	1058
	Bonvilla Public School	2010 Semester 1	330	992	990
		Weighted mean	359	905	903
Non-participating (n=121)	Banksia Public School		479	955	959
	Docks Creek Public School		332	862	915
	Shornville Public School		477	813	867
	Pinlowe Public School		387	948	942
		Weighted mean	444	883	913

Important differences were found in favour of students that undertook the TSR program. The findings have national and international significance. First, related research in other countries is confirmed. Second, there appears to be a direct association between the arts and outcomes in other areas. Third, the wisdom of including the arts in the Australian Curriculum is confirmed. The key findings were as follows (see also Table 2):

1. Participation in TSR is associated with a gain of approximately one year in Year 5 NAPLAN scores in reading and approximately half a year in science

- and technology when compared to outcomes for students in matching schools.
2. Participation in TSR is associated with higher levels of social and emotional well-being (SEWB) on every dimension of the ACER SEWB scale compared to measures for students in matching schools.
  3. While there was no implication that students in TSR in participating schools had a propensity to engage in juvenile crime, the findings are consistent with world-wide research on factors that mitigate such engagement.

Table 2: Summary table of illustrative findings

Indicator of student performance	Longer-term TSR	Initial-TSR	Non-participating in TSR	Gain in time
NAPLAN 2009 Reading Overall Literacy	d=0.79 (p=0.0002)			At least one year in reading and literacy achievement
Grades Science and Technology	d=0.13 (p=0.022) d=0.46 (p=0.0001)			Lift achievement by about ½ a year in Science and Technology
Attendance percent absent on TSR day	4.6	5.7	13.2	

While caution must always be exercised in drawing cause-and-effect relationships, these differences in comparisons in matched sets of schools were statistically significant. Moreover, the longer the students were in TSR programs the greater the differences.

### Conclusions and Recommendations

1. Australia may be in breach of UNESCO's Convention on the Rights of the Child in respect to opportunities for participation in the arts. Public and private resources should be committed to ensure that every student at every level of schooling has an opportunity to participate in arts education, including music education.
2. There is incontrovertible national and international evidence of the benefits of participation in arts education, including music education, not only for the intrinsic benefits of such participation but also for the benefits it brings to learning and personal and social wellbeing. Arts education, including music education, should form part of the curriculum of every school. It is critical that the arts component of the Australian curriculum be implemented in every school.
3. Australian research in primary schools in highly disadvantaged settings suggests that, in addition to other benefits, students may gain up to a year in NAPLAN scores in reading if they participate in arts education, including music education. The tens of millions of dollars spent on a range of strategies

to improve results on NAPLAN tests have had minimal effect. There should be a reallocation of funds to support arts education, including music education, for all students, with the highest immediate priority being for students in disadvantaged settings.

4. Partnerships of organisations and institutions in the public and private sectors are important, and there should be a substantial increase in funding for those in the private, not-for-profit sector such as The Song Room that provide programs that were the focus of research reported in this submission. Public support for such organisations is currently minimal compared to private support.

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