

ARTS EDUCATION FOR THE DEVELOPMENT OF THE WHOLE CHILD

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Executive Summary

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Elementary-aged children deserve an education rich in the arts. Arts education – in its many forms – supports the development of the whole child, and prepares the child for a life filled with opportunities for learning and joy. All elementary teachers have a fundamental contribution to make to arts education. This review shows that:

- There are both distinct and overlapping roles for arts specialists and for generalist teachers, as well as for members of the community, to engage in the creation of effective programs for arts education.
- There is a time and a place for learning *in* the arts, *about* the arts, and *through* the arts.
- Dance, visual arts, music, and drama are equally important and equally “core” to the curriculum and to the development of the whole child.

Throughout this review the position is taken that it is a blend of true partnerships between generalist teachers, specialist teachers, arts subjects, and art-makers of all kinds that is most likely to yield the richest arts education for the developing child.

Findings

These conclusions are based on a comprehensive literature review, which addresses a series of salient questions to identify ways of supporting and advancing an education for the development of the whole child. They are as follows:

What is Art? This review defines the arts to include the *fine and performing arts* – painting, sculpting, writing poetry, playing an instrument, singing, dancing, acting, creating mixed media productions, and film-making. Indeed the arts are much broader than this definition, but the fine and performing arts reflect the more narrow interpretation contained in the Ontario Arts Curriculum. Each of these arts activities engages the learner wholly – intellectually, socially, emotionally, and physically. Learning *in*, *about*, and *through* the arts involves active engagement in learning that unites mind and body, emotion and intellect, object and subject (p. 3).

Why do the arts matter? Experiences in the arts offer many intrinsic and extrinsic benefits to elementary children. Intrinsic benefits include opportunities to develop creativity and imagination, and to experience joy, beauty, and wonder. The arts also present occasions to make the ordinary special, to enrich the quality of our lives, and to develop effective ways of expressing thoughts, knowledge, and feelings. There is also evidence of extrinsic benefits, as learning in, about, and through the arts contributes to increased engagement in learning in other subject areas, and to the development of students' self-confidence, social

skills, and metacognition. But the research evidence linking arts and achievement in other subjects is, at best, mixed. Fundamentally, one needs to ask – why would music teaching increase math scores better than direct teaching of math itself? And for that matter, who takes classical ballet lessons to improve their geometry scores (p. 13). The Canadian workforce requires employees to think critically and creatively, solve problems, communicate well, adapt to changing circumstances, and continue to learn throughout their careers (p. 22). An education rich in the arts nurtures precisely those skills and attitudes that are required in the contemporary workplace.

How does research on brain function apply to arts education? Recent brain research has examined the critical and optimal periods in brain development, the influence of experience on brain development, the relationship between cognition and emotion, and the transfer of learning from one context to another. In analyzing this research, it is imperative to consider both the large gulf between research findings and direct classroom application, and the conditions – including oversimplification, misinformation, and overextension of research findings – that give rise to so-called neuromyths associated with brain research (p. 25). While researchers, teachers, and neuroscientists agree that a child’s brain needs to be stimulated in a variety of ways to foster development, carefully designed studies are required to understand how the brain functions and to provide helpful evidence-based strategies for improving instruction. Existing brain research suggests that experiences in the arts – particularly extended musical experiences – contribute to a fully functioning brain and body. The research also suggests that we have a responsibility to provide rich arts teaching for all students. It is not the case that arts instruction should be concentrated on the so-called talented, as it is far more likely that experience, rather than genetics or brain structure, breeds accomplished artists (p. 30).

How do out-of-school arts experiences influence children’s development? The – Ontario Arts Curriculum (2009) makes explicit reference to out-of-school lessons as important vehicles for supplementing in-school learning. Studies show that children of all abilities and social classes benefit from both out-of-school opportunities – including community arts programs, informal learning in the arts, and private instruction – and from the positive influence of parental engagement in arts activities. In order for the arts to thrive in elementary schools and beyond, the arts must also thrive in the communities and practices that surround and support schools. Communities can contribute to arts education through well-structured artist-school and artist-teacher partnerships. The findings clearly suggest that elementary-aged students enjoy arts instruction outside of school, it’s not as if students don’t *like* music, it is *school* music that falls short of their expectations (p. 32).

Recommendations: Teaching the Arts through Multiple Means

There are many ways to bring the arts into the classroom on a daily basis. This literature review recommends teaching the arts through multiple means – that is, the arts should be both integrated throughout the curriculum and taught as separate curriculum subjects. Further, it is apparent that elementary students should be provided with as many opportunities as possible to learn in, about, and through the arts. Three specific examples are offered to support a curriculum rich in the arts.

The Elementary Teacher. Elementary teachers – both generalist classroom teachers and arts specialists – can blend roles and skills to provide exceptional arts opportunities to reach all of the children they teach. In order to provide rich daily arts experiences for their students, teachers must directly experience the joy and the value of artistic work for themselves – whether by involvement in the arts in their non-teaching time or by enhanced professional development in the arts. More professional development is required for generalist elementary teachers both in faculties of education and through the Ministry of Education, teacher federations and school boards. Research suggests that the most effective way to develop teacher confidence in the arts is through sustained, hands-on art-making, and that the best guides are practicing artists who know their art form intimately and who are committed to sharing both their expertise and their passion for the arts (p. 39). Once teachers see themselves as artists, the transition to bringing arts into the classroom becomes much more fluid. It is not enough to rely on generalist teachers alone. Ontario no longer has arts specialist teachers in every elementary school, in fact, Ontario has the highest proportion of elementary schools where music is taught by general classroom teachers with no music background (p. 49). Three regions of the country have a very large percentage of elementary schools with a specialist music teacher: Quebec (87%), the Atlantic Provinces (86%), and British Columbia (83%). In contrast, Ontario elementary schools rely very strongly on general classroom teachers with no music background (58%).

Technology and the Creative Process. Students' explorations in the arts can be enriched through the use of web-based and other information technologies. When given the opportunity to use Information and Communications Technology (ICT) in their creative work, elementary students have demonstrated increased motivation, self-regulation, pride, and inventiveness – particularly in situations involving creative expression or composition. Electronic or web-based portfolios, used to store and organize text, images, video, and sound, have been found to contribute to students' abilities to self-regulate their learning in the arts, as imbedded tools help students incorporate the planning, doing, and reflecting cycle into their creative work. A specialized version of such portfolios, called iSCORE, has recently been developed for music teaching and instruction with music content embedded in the software, and special tools, such as a music editor and a rehearsal calendar. The three phases of self-regulation – *planning*, *doing*, and *reflecting* – are embedded into iSCORE and these titles mirror the creative process described in the Ontario Arts Curriculum.

Extra-Curricular Arts Activities: Making a Case for Musical Theatre. Musical theatre, a long-standing and effective extra-curricular activity in many elementary schools, encompasses all of the fine and performing arts. As such, it is one of the most comprehensive forms of art-making that is possible in the elementary school context. Experiences in elementary musical theatre have been found to encourage students learn to trust one another, take risks, become part of a larger community, learn to interact more effectively with their peers, form a deeper and more sophisticated sense of creative identity, and gain ownership over the creative process and product. Research shows that these benefits last a lifetime and yet elementary teachers are faced with a lack of time, support, and resources for musical theatre opportunities – especially in schools facing socio-economic challenges.

The value of this review is both broad and profound. It extends an invitation to envision a system of education where the learning that happens in school feels more like the learning that happens in our adult lives, where we take part in informal learning or hobbies with dedication and passion. But the aim of arts education is not only to prepare students for later life. The aim is also to bring moments of joy and beauty into their lives at school. By engaging students wholly in the present moment – in forging relationships, making things, and using their bodies – art prepares students for the future by encouraging them to become strong citizens with a finely attuned sense of social responsibility. These outcomes are all possible when the arts are a central part of the education of the whole child.

What is art?

Cultures are judged on the basis of their arts. Most cultures and historical eras have not doubted the importance of including the arts as part of every child's education. They are time-honored ways of learning, knowing, and expressing.

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When adults are asked to think of something they love to do – something they pursue in spare pockets of time – virtually everyone will identify an activity connected with the arts, the body, or the natural world (Upitis, 1990; 2010). How are these areas linked? Why are activities associated with these areas so important to leading balanced and fulfilling lives? What makes these pursuits so compelling that we continue learning about them even after our formal schooling has ended?

These pursuits are not undertaken lightly. Often, a passion will be cultivated over many years. And while there is pleasure in the learning, there is often a significant amount of struggle, as well. This type of learning is an intense and complex process that fully engages the body, the intellect, the emotions, and the spirit. In a fundamental way, this type of meaningful learning connects us with what it is to be human, and with what it is to live on the earth.

Activities like canoeing, Italian cooking, playing the flute, and stone carving are all *arts* activities. And, for that reason, they are related to arts education as well. The passion and seriousness people bring to activities like these is precisely the passion required to nurture and sustain meaningful learning in schools – the kind of learning we do when no one is watching, when no one is evaluating us, and when the most important thing at stake is our own learning (whether we call it learning or not).

For the purposes of this review, the arts are defined very broadly indeed. They include the *fine and performing arts* – painting, sculpting, writing poetry, playing an instrument, singing, dancing, acting, creating mixed media productions, film-making. They also include what might be termed the *outdoor arts* – kayaking, hiking, diving, swimming, and skating. Finally, in this review, the term arts education includes the *domestic arts* – cooking, sewing, embroidery, quilting, carpentry, metal work (Upitis & Smithrim, 2008). While most provincial curricula – including the Elementary Arts Curriculum for Ontario – tend to focus solely on the fine and performing arts, the other forms of arts education are equally important to cultivating a rich and fulfilling education. And so, while most examples will come from the visual arts, music, drama, and dance, whenever possible a wider view of “the arts” will be taken. This wider view is in keeping with the research literature, the thinking of educational philosophers and scholars, and, most important of all, it is in accord with the evolution of the human species. This wider view is also in keeping with schools and school boards that both understand and honour the importance of non-mandated personal learning undertaken by teachers. Picture the excitement of a group of Grade 8 students who recently fashioned several wooden canoes, set them in the water, and paddled them for the first time. Canoe-building is not part of the Grade 8 curriculum. But it became a very central feature of the classroom life of a teacher who, himself, is a boat builder

(Ogden, in press). And in the process, students learned – and learned deeply – about many aspects of the mandated curriculum across subject areas.

All arts undertakings require engagement on every level: intellectual, social, emotional, and physical. Indeed, it is worthy of particular note that one of the most important hallmarks of arts learning is that it involves physical expression (Bresler, 2004; Sylwester, 1998). It is well nigh impossible to passionately pursue an art form with the mind alone. The arts unite body, heart, and mind in powerful ways.

Definitions of Art and Arts Education

The connections between feeling, making, and learning have been espoused for centuries. We would do well to take to heart John Dewey's 1906 definition of art:

To feel the meaning of what one is doing, and to rejoice in that meaning: to unite in one concurrent fact the unfolding of the inner life and the ordered development of material conditions - that is art.

(Dewey, 1906/1977, p. 292)

As Jackson (2002) reminds us, the first four words of Dewey's definition – “to feel the meaning” – imply that meaning and feeling are connected, that “meaning can be felt as well as cognized (p. 168)”. The logical positivists of Dewey's time and some cognitive psychologists of today might not be comfortable with the conjoining of meaning and feeling that Dewey heralded. But to experience something fully, one requires both understanding and feeling, and both understanding and feeling ought to characterize children's experiences in arts education (Jackson, 2002; Pessoa, 2008). Music educator Bennett Reimer (2004) makes an even more explicit link between music, mind, and feeling; he argues that recent research on brain function suggests that emotion is at the root of feeling, of learning, and of changes in the state of the body, because emotion serves a primary role in activating the brain and consciousness (Damasio, 1994). Many other researchers and educators espouse the importance of emotion to learning (Goleman, 1995; Pessoa, 2008; Rettig & Rettig, 1999).

Dewey used the phrase “what one is doing” in a way that, Jackson (2002) argues, is “not a feeling about something past, something finished or complete (p. 169)”, but rather “a form of ongoing activity ... that presumably is rather special” (p. 169). Doing is a form of consciousness (Reimer, 2004). And as Fox (2000) reminds us, it is active engagement, not passive response, that helps develop the brain. She suggests that parents, caregivers, and teachers should involve children in expressive modes of music-making and other art-making; including singing, moving, and playing, and that these active modes should be interwoven with positive social encounters. This notion of being active while learning – or “doing” – is a major feature of Dewey's philosophy and of the progressivist movement in general.

Jackson (2002) claims that when Dewey focuses on “rejoic[ing] in the meaning”, he is speaking not only of delight or joy in learning, but also of a sense of being deeply convinced of the importance of the activity. That is, Jackson argues that the activities of art-making are, in some sense, “felt to be right, fulfilling, and satisfying” (p. 169).

Dewey also speaks of the ways that art serves to “unite”. Arguably, he is speaking of some of the classic dualisms such as mind and body, emotion and intellect, object and subject – dualisms that characterize conservative or non-progressive approaches to education and that are foreign to authentic arts activities. Dewey’s reference to “the unfolding of the inner life” is also instructive. Again, Dewey does not separate thoughts, feelings, fantasies, beliefs, and aspirations from the making of art over time. Nor does he ignore the physical elements of art-making, as indicated by his use of the phrase, “the ordered development of material conditions”, in which he not only acknowledges the importance of manipulating physical entities, but also implies that there is a developmental process involved (Jackson, 2002). Dewey’s definition, then, allows for the concept of art to include pursuits that are not normally thought of as art – pursuits as broad as the ones described in the opening section of this review.

Contemporary scholars who share Dewey’s progressivist leanings have also suggested that broad definitions of the arts would serve us well as we conceptualize how arts education might best support the development of the whole child – a child who is skilled in the arts and other subject areas, but who is also becoming prepared, through schooling, to be a thoughtful and contributing member of society. Ulbricht (1998), for example, shows how the concept of environmental art education should go far beyond nature studies to encompass the ecological, human-built, and social environments, making the blend of these fine and outdoor arts serve as an engine for social and environmental change. He describes several arts projects for elementary-aged students, which serve to enhance arts skills as well as to call attention to pressing social and environmental issues. Like Neperud (1995), Ulbricht calls for explicit connections to be made between art, culture, and the environment, so that a socially responsible arts education curriculum can be widely beneficial and far-reaching. Others have also identified the special place that arts education can hold in connecting students to their physical worlds through a place-based approach to arts education (e.g., Brook, in press; Gradle, 2007; Gruenewald, 2003; Noddings, 2005).

With this all-encompassing approach to arts education comes the fundamental premise that what is required for elementary arts education is a series of comprehensive and flexible approaches to learning in, about, and through the arts.

The implications of this premise are several. First, it means there are both distinct and overlapping roles for arts specialists and for generalist teachers, as well as for members of the community, to engage in the creation of effective programs for arts education. These topics will be addressed at length later in the review. Second, it means that there is a time and a place for learning *in* the arts – that is, learning how to paint in watercolours or learning how to create a dramatic tableau. It also means that there is a time and a place for learning *about* the arts – learning, for example, about the historical and cultural aspects of the expression of ideas and feelings through dance. And it means that there is a time and a place for learning *through* the arts – that is, using the arts as entry points to explore other subject areas (such as deepening one’s understanding of aspects of mathematical form through sculpture) or using artistic means to approach themes (such as a study of pond life or an exploration of the properties of metals). Not one of these approaches – learning in, about, or through the arts – is inherently better than the

other two. There are valid reasons to adopt all of these approaches in arts education at various points in the child's development.

Over the past several decades, much energy has also been expended debating whether we should integrate the arts through the curriculum, or whether we should teach the arts as separate curriculum subjects (the answers are “yes” and “yes”). And further energy has been expended discussing the question of whether the arts should be taught by generalist teachers, specialist teachers, or by artists from the community (the answers are “yes”, “yes”, and “yes”). Finally, we have wasted energy on turf scuffles within the arts. Dance, visual arts, music, and drama - as well as the domestic and outdoor arts – are equally important and equally “core” to the curriculum and to the development of the whole child. It is a blend of true partnerships between generalist teachers, specialist teachers, arts subjects, and art-makers that is most likely to yield the richest arts education.

The arts – in the broadly defined sense used in the present review – either directly or indirectly involve all of the intelligences identified by Howard Gardner (1983; 1993): linguistic, musical, kinesthetic, intrapersonal, interpersonal, visual, naturalistic, and spatial. Like Gardner and his followers (e.g. Armstrong, 2000; Baum, Viens, & Slatin, 2005), many fine elementary teachers are aware that teaching and learning in, about, and through the arts can reach more students than schooling by traditional means alone.

There is nothing new about the relationship of the arts to other subjects. Nobel Prize winner John Polanyi (1990) relates how Leonardo da Vinci, arguably the greatest figure of the Italian Renaissance, was left alone to pursue his interests in science as long as those interests did not detract from his time for painting. If da Vinci were living now, would he be permitted to do his art so long as it did not cut into his time for science? This would be an equally senseless restriction, for one form of thinking and feeling feeds the other. Creativity is not subject specific, just as one kind of art-making is not inherently more creative than another. One of the reasons that the arts are important is that they provide many ways of expressing creativity.

And we've never been in greater need of creativity. Before today is over, we who live on this earth will destroy another 60,000 hectares of rainforest. This destruction occurs on a daily basis. In one year alone, 17 million hectares of tropical rainforests are destroyed – an area larger than the country of Switzerland (Nicholson, 2000). Each day, over 140 species of plant and animal life face extinction (Raintree Nutrition, 2007). The Intergovernmental Panel on Climate Change (2007) claims that warming of the climate is undeniable, as evidenced by increases in global air and ocean temperatures, the widespread melting of snow and ice, and rising sea levels. Climate change has caused a loss of biodiversity on a scale equivalent to a mass extinction event. By our actions, we either contribute to the problems or alleviate the impact of human life on our planet.

A deep and prolonged study of the arts equips us with ways to be creative in the environmental and social sciences as well. Studying the arts teaches us to be fully alive. To have, perhaps, what it takes to begin to repair the planet.

Progressivist and Conservative Trends in Education

Since da Vinci's time, the arts have swung far away from the prominent role they once held. If one looks at the patterns of what subjects have been privileged over the past 100 years, it is clear that the arts have enjoyed prominence during times of progressive reforms, while being regarded as an extra undertaking during the "back-to-basics" movements (Oreck, 2002). During the great progressive period in education (between World Wars I and II, when Dewey's ideas were prominent) the arts were valued; furthermore, they were valued in the ways in which they are discussed in this review. *Education for all American Youth*, a pivotal document published in 1944, described what were then regarded as imperative needs of youth (Sedlak, 2008). The publication denounced the "aristocracy of subjects" (cited in Sedlak, p. 871), suggesting that "mathematics and mechanics, art and agriculture, history and homemaking are all peers" (Sedlak, p. 871). The publication included three cardinal principles: global knowledge, economic management, and appreciation of the arts – a strikingly contemporary set of principles to guide education in the present day.

But in the late 1950s, soon after the Russians launched the earth-orbiting Sputnik, the pendulum swung hard and fast in the direction of a much more conservative approach to education. Less than a year after the Sputnik launch, Congress passed the National Defense Education Act (NDEA), a four-year program that poured billions of dollars into the American education system with a focus on science and math (Armstrong, 2006). The so-called basic subjects were heralded as supreme. Not only was there was considerable emphasis on improving science education, but there was also a focus on academically talented students (but only as defined by the basic subjects), and a new emphasis on teacher accountability. The effects of these emphases are still felt today, both in the United States and Canada.

By the late 1960s and early 1970s, a new progressive spin was evident. In the wake of the wide-sweeping civil rights movements, the 1970s saw an expansion in education to focus on desegregation, mainstreaming, and the needs of multicultural and bilingual students and other students with special needs (Banks & McGee Banks, 2010; Sherman, 2009). It was during the late 1960s that *Living and Learning: The Report of the Provincial Committee on Aims and Objectives of Education in the Schools of Ontario* – which advocated a child-centered approach to education – was released (Hall & Dennis, 1968). Much that was said in 1968 in the Hall-Dennis report about the aims of education, with reference to Dewey, Whitehead, Rousseau, Froebel, and Pestalozzi, among others, is perhaps of even greater relevance today.

But the progressive spin of the 1960s and 1970s was short-lived. When American politicians called attention to what they considered alarmingly low results on Student Achievement Tests (SAT) scores early in the 1980s, a new conservative back-to-basics movement began. With it came a renewed emphasis on graduation requirements in math and science, as well as teacher accountability. With the passing of the *No Child Left Behind Act* in 2001 – shortly after George W. Bush became President – the conservative trend only intensified in the US. This has brought with it yet another thrust for standardized testing, higher graduation standards and college entrance requirements, and continued teacher accountability (Sherman, 2009; Siskin, 2003). And there has been a concomitant decline in instructional time and resources allocated to the arts (Beveridge, 2010).

Pockets of progressivism - in keeping with the ideal of developing the whole child – have still surfaced over these past several decades. Sherman (2009) writes:

In 1990, in an attempt to reintroduce progressive ideals, the Network of Progressive Educators drafted a statement of principles, which, for example, included the following: a focus on active learning; a commitment to the interests and developmental needs of students; an embracing of multiple cultural perspectives; inclusive decision making practices; and interdisciplinary curriculum (cited in Semel, p.18, 1999). But ... classroom practices, for the most part, greatly resembled those of the early part of the century (Cuban, 1993). Although many teacher education programs promote progressive educational practice, overall, progressivism does not seem to have staying power in terms of what actually takes place in classrooms on a large-scale. (p. 43)

Sherman (2009) then suggests that the “lack of staying power” (p. 44) of progressive education is likely due to a combination of factors including not only political climate, but also the personal beliefs of pre-service teachers. Sherman notes that pre-service teachers may have deeply held conservative views of how to teach, based on their own schooling experiences, and that these beliefs are then perpetuated in the next generation. These beliefs make pulling back the pendulum a difficult task, especially when coupled with the current call for increases in test scores – a call that Canada has not escaped. While not as extreme, perhaps, there is no question that we have been living and teaching in a culture of testing and standardization. Individuals and organizations have collectively pulled the pendulum back to progressivist notions before – and that this might be the time to do so once again.

Where do approaches to the teaching of the arts fit within these swings? In the mid-1970s, recognizing that the arts had been consistently undervalued since Sputnik, Eisner (1974) began calling for studies that would demonstrate the positive impact of arts programs. From the late 1980s through to the turn of the millennium and beyond – corresponding with the long conservative stretch in educational policies, practices, and thought – arts scholars have contributed to a growing body of evidence derived to show that arts education has values beyond those intrinsic to the arts themselves; arts education positively affects other aspects of living and learning. Reported benefits of the arts include deeper development of the imagination (Greene, 1995); greater motivation to learn (Csikszentmihalyi, 1997); increased achievement in mathematics and language (Butzlaff, 2000; Forgeard, Schlaug, et al., 2008; Vaughn, 2000); enhanced neural activity in the brain (Jensen, 2001); greater student creativity, lower drop-out rates, and positively enhanced social skills (Catterall, 1998; Luftig, 1995).

However, as will become clear later in the review, these reported benefits have served to devalue the intrinsic benefits of an education rich in the arts. Indeed, Eisner himself has witnessed these changes over time: His more recent writing calls for valuing the arts for the unique contributions of the arts – such as such as fostering an appreciation of nuance, and an ability to make decisions in the absence of clear rules (Eisner, 2002).

We appear to be in the early years of an era where once again the arts are appreciated for the unique qualities they offer, and for the ways in which they enrich our relationships and our lives. It is a perfect time to re-energize our approaches to arts education in schools, aligning educational practices and values with a contemporary version of Dewey’s progressivist views.

This review provides guidance for what such a re-energized curriculum might offer for the development of the whole child.

The Development of the Whole Child

What is meant by the “whole child”? There are as many definitions of the whole child as there are of the arts and arts education. Most definitions consider the intellectual, social, emotional, and physical development of children in an atmosphere that is supportive, challenging, and safe.

The Association for Supervision and Curriculum Development (ASCD) is a non-profit member-based organization, founded in 1943, with more than 175,000 members from over 100 countries. The ASCD develops programs, products, and services for educators. Early in 2007, the ASCD launched a Whole Child Initiative to help ensure that children are healthy, safe, engaged in learning, supported by caring adults, and academically challenged (Brown, 2008). There is ample evidence suggesting that the elementary school years are crucial for children to develop social, emotional, intellectual, and physical skills and sensibilities in order that they may lead healthy and active lives (Graber, Locke, Lambdin, & Solmon, 2008). Scholars, educators, and philosophers who hold a holistic view of child development share the view that education in elementary school should be education for life.

Dewey (1916/1966) also claimed that the role of education was not only to prepare students for later life, but also to engage students wholly in life at the present moment. For Dewey, this engagement was most effective when it involved what he called the four occupations of childhood: conversation, inquiry, making things, and artistic expression (Dewey, 1900/1956). Dewey described how children develop and learn through play, through movement, and through the creation of imaginary worlds. He observed how the instinct for investigation grows out of these early forms of play, claiming that there is “no distinction between experimental science for little children and the work done in the carpenter’s shop” (p. 44). Dewey regarded children’s artistic impulses as an expression of their need to communicate. These observations, made over a hundred years ago, are made every day by parents and teachers the world over as they watch children learn through play, through conversation, through constructions, and through investigation.

Like Dewey, Noddings (1992) suggests that many aspects of daily life should be explored as part of the formal curriculum. Such a holistic view of education also focuses on relationships, such as those between mind and body, teacher and student, and between various domains of knowledge (Miller, 1993; Noddings, 1992). The development of the whole child also means that elementary teachers must attend to what might be termed spiritual development – and arts education provides a vehicle to do this. As Shirley Thomson (1999), then Executive Director of the Canada Council for the Arts, noted over a decade ago:

We are fighting a new barbarism, not of dark ignorance but of information glut and too many diversions ... Arts education is essential to discernment and judgment, and in the broadest sense, arts advocacy is the fight for the return of the life of the spirit to the centre of our existence ... people forget that art and artists render life bearable. (p. 139)

Another aspect of the development of the whole child is that of developing a strong citizen with a finely attuned sense of social responsibility. Not coincidentally, some of the most prevalent movements in early childhood education were fueled by this aim. The approaches of Reggio Emilia, Montessori, and Steiner, while different in a number of defining respects, share fundamental features and histories; the founders of these three approaches each articulated an explicit vision and corresponding curriculum, still followed, to a great extent, in contemporary versions of these schools (Edwards, 2002). In addition, each approach was developed in Europe in direct response to violence, with the goal of creating citizens motivated by peace and civility. Teachers involved with these approaches recognize children as intelligent, creative, and complex beings with predictable patterns of intellectual, social, emotional, physical, and spiritual development (Edwards, 2002; Uppitis, 2010).

While it is beyond the scope of the review to engage in a full discussion of child development in the elementary grades, there are clear developmental patterns in children that must be both recognized and acknowledged in forming a strong arts curriculum. Many teachers with experience in Kindergarten and the primary and junior divisions have extensive theoretical and practical knowledge of child development that will guide their expanding work in arts education.

Why do the arts matter?

We have only begun to invent what will be possible ... Science has opened the door, but artistry and imagination will take us through it.

Paul Allen, Co-founder of Microsoft

Bertrand Russell was one of the greatest mathematicians and philosophers of the 20th century. In his final essay, written at the age of 95, Russell (1967) reflected that the time had come to ask whether his life's work had taught men and women "not to hate peoples other than their own". He concludes his final essay with: "There is an artist imprisoned in each one of us. Let [the artist] loose to spread joy everywhere."

Why did Russell, so late in his long and productive life, attach such importance to the arts? Perhaps he recognized that the arts enrich our lives. Perhaps it was because he understood, as Einstein did, that "the most beautiful thing we can experience is the mysterious ... the source of all true art and science" (cited in Clarkson, 2001, p. 6). Perhaps he had come to realize that the arts have formed a fundamental component of culture since the beginning of time - and that everything we think, feel, or know cannot be described by words alone.

Intrinsic Benefits of the Arts

Eisner (1991) describes imagination as "the engine of cultural and social progress" (p. 12). Experiences in the arts nurture imagination and creativity, both hallmarks of great thinkers and leaders: Many prominent scientists and inventors are also active in the arts (Zweig, 1986). But art doesn't benefit only the artist. The arts are beneficial not only to those who create art but also to those who experience those creations. Great works of art inspire, and the process of art-making can do the same. When a student writes a haiku poem, choreographs a dance, sketches a landscape, builds sets for a theatre performance, or improvises a piece of music with peers, the student has a chance to imagine, wonder, create, and learn. The arts provide daily opportunities for beauty and joy – for individuals in schools and in communities around the globe.

Studies in, about, and through the arts help students lead fulfilled lives. Students who lack arts experiences in their schooling will emerge undernourished by the end of their education. By contrast, those students whose schooling includes the arts will benefit throughout their lives, in a multitude of ways, by the intrinsic benefits that the arts bring to the quality of our lives.

Koopman (2005) provides an attractive and well-argued thesis on the importance of the arts. He claims that the arts are of fundamental value because of the "complete involvement from moment to moment when receiving, creating, or performing an art work. The arts present us with a manner of fulfilling our time" (p. 91). This notion of complete involvement from moment to moment is much like Csikszentmihalyi's (1990) notion of flow, that is, the sense of timelessness and absorption that can occur when one is deeply immersed in the process of art-making (see

also Custodero, 1998). Koopman (2005) continues with the claim that fulfilling experiences are a necessary condition for leading a happy life. He concludes:

Fulfilment reminds us of the temporal and dynamic character of our existence. To live is to live in time, from moment to moment, from episode to episode. The quality of our life is determined by the way we give shape to the abundance of time we have at our disposal. We have to engage in meaningful practices if we are to make something of our existence. If we do not, we are delivered - in Gadamer's words - to the tyranny of empty time: we are doomed either to a life of boredom or to a life filled with frenetic and futile activity. (p. 93)

The idea of the quality of life being embodied in the activities that occur moment to moment, or episode to episode, is mirrored by American author Annie Dillard's observation that how we live our days is, in fact, how we live our lives. Extending these claims implies that educating the child in the arts has, as its primary task, the provision of conditions whereby the child can take up worthwhile and engaging activities and see them through to completion – living moment to moment while engaged in those tasks. There is no question that there are basic forms of knowledge, skills, and dispositions towards learning that are essential to receive a full education and to function in society (what artist doesn't want her child to learn to read?) But people also need to develop habits and engage in activities that fulfill their time. That is, the conditions for leading a meaningful life are not only the static factors related to skill development, economic independence, or the possession of moral values (Koopman, 2005). The characterization of the quality of life also includes life as time lived. And it is perhaps in this latter respect that the arts matter most.

The Arts and the Development of Humanity

Ellen Dissanayake is a scholarly writer in the fields of anthropology, aesthetics, philosophy, and evolutionary biology. While some scholars take issue with aspects of her theoretical work (Davies, 2005), her main thesis – that art is essential to human life – is difficult to dispute. Dissanayake's examination of the place of arts in human life presents the view that the essence of art is "making special" (1995, p. 39), which she also calls "artifying" in later works (e.g., Dissanayake, 2000, 2003, 2007). She theorizes that the root purpose of all artistic activity, past and present, is to enhance particular aspects of the world and humanity by lifting out of the ordinary and "making special," whether it be with a birthday cake, a sculpture, or a Shakespearean play.

Dissanayake's definition of art, then, is as far reaching as the definition adopted for the purposes of the present review. She writes:

We now think of "art" as including its manifestations in all societies and all classes of people. We are more aware of art's communal and performative aspects and its frequently multimodal integrated nature in which song, dance, performance and visual spectacle all combine. Art is no longer considered automatically to be "distanced" from ordinary life and concerns. (Dissanayake, 2003, p. 245)

Dissanayake (2003) theorizes from an evolutionary perspective. She maintains that humans “have a specifiable biological nature that is the product of millions of years of adapting to the world in which they (and their ancestors) came into being” (p. 246). Her analyses demonstrate that art is one of the behavioural predispositions that fulfills our biological needs. She states, “Like language, [art] is inherent in human nature, and will emerge in every normal individual during normal development and socialization” (p. 246).

The most powerful part of Dissanayake’s argument is a set of five features that support her thesis that artification is adaptive to human evolution. The first of these is that *art-making is universal*, as it is “observable in every society or cultural group that is known, regardless of its degree of economic or technological development” (2003, p. 247). Second, the *investment of resources* in the arts – especially in pre-modern societies – is disproportionately greater than one would expect for a peripheral or unimportant undertaking. Dissanayake provides evidence that large amount of energy, time, and material resources were dedicated to the arts in pre-modern times, “often to the neglect of more apparently life-sustaining activities” (p. 247). The third feature is the *biological importance* of the events and conditions that are attached to the arts – that is, the biological importance of the aspects of daily life that are artified through ritual ceremonies concerned with “safety, subsistence, prosperity, health, social harmony, and the successful traversing of birth, death, and other life stages” (p. 247). Fourth is the fact that the *arts are associated with pleasure* – just like the other essential requirements of life such as food, sex, familiar surroundings, rest, conversation, and close relationships. People are drawn to decorated objects, music, dance, and well-told stories. Fifth, Dissanayake suggests that the *juvenile predisposition to the arts* – that is, the propensity of young children to spontaneously involve themselves in “artifying” or “making special” – is evidence that the arts are essential to the development of humanity. Without prompting, young children will:

make marks, decorate their bodies and possessions, move rhythmically to music, sing, make believe, engage in wordplay, and enjoy stories. If brought up in a milieu where others artify, these proclivities are easily developed. (Dissanayake, 2003, p. 247)

From this thesis, one can argue that it is the responsibility of the adults in the community – teachers, principals, and family – to provide a milieu that allows the child to develop his or her natural artistic proclivities.

What would such a milieu look like? Fundamentally, children’s art-making is supported when they are able to engage in the operations that characterize art-making in all modalities (i.e., visual, aural, and kineasthetic) and media (e.g., clay, pigment, wood, fibers; instrumental or vocal sounds; words; movements). Dissanayake (2003) identifies a set of five operations that allow the intentional act of making an ordinary object, material, or artifact extraordinary or special. These five operations are (a) formalization, (b) elaboration, (c) repetition, (d) exaggeration, and (e) surprise. So, for example, creating a musical composition involves *formalizing* the pattern or shape of the work, *elaborating* the composition through the embellishment of the melody with ornaments or supporting harmonies, *repeating* sections to bring coherence to the work, *exaggerating* aspects of the composition through changes in tempo or dynamics, and creating *surprise* by using an unexpected harmonic progression.

Fundamentally, then, Dissanayake (2003) holds that the biological predisposition to “artify” or “make special” through these five operations has been selected for humans, and further:

when expanded and utilized in ceremonies both relieves individual anxiety (individual-level selection) and aids group cohesiveness (group-level selection) so that individuals and groups who artified were more likely to survive and reproduce than individuals and groups that did not artify. (p. 254)

Csikszentmihalyi (1996) similarly claims that, “art helps us to construct meanings, not in the abstract sense of producing cognitive interpretations, but by producing personally relevant goals, responses, habits, and values” (p. 7). And should we need a daily reminder, the Gabrielle Roy quote that appears on the Canadian \$20 note will serve us well. Author Roy provocatively asks, “Could we ever know each other in the slightest without the arts?” This quote was selected by the Bank of Canada (2011) to emphasize that “arts and culture define who we are, as well as the system of beliefs, values, and customs we share as Canadians”. It is these customs and values that should form the backbone of arts education for the developing child.

It is true that there are other extrinsic – almost incidental – benefits of the arts that bear discussion. This discussion is important for two reasons. The first is that many educators, parents, politicians, and members of the general public surmise that the arts are valuable for the non-intrinsic benefits they bring to the study of other subjects. For this reason alone, the literature on arts and achievement bears scrutiny. But it is also important to consider the extrinsic or “bonus” benefits of the arts. Such ancillary benefits can bring additional strengths to the learning milieu of the developing child, especially if the arts help the child cultivate the dispositions and habits that bode well for learning in all forms. It is to these types of benefits that the discussion now turns.

The Arts and Achievement in Other Subjects

Perhaps there is no domain of education in which the issue of justification is so prominent as in arts education. The reason for this is the precarious position of the arts in general education. Arts educators are engaged in an ongoing battle to prevent the arts from being further marginalized, or even removed from the curriculum ... In such circumstances there is a great need for arguments demonstrating the importance of the arts in education... the overwhelmingly dominant type of justification of arts education appeals to its positive consequences for knowledge, skills, and dispositions that are not, or not typically, related to the arts themselves.

Constantijn Koopman, Royal Conservatoire The Hague, The Netherlands

A strident call to demonstrate how the arts might contribute to achievement in other subjects began in the 1980s and peaked in the 1990s, when arts programs all over North America were continually threatened with marginalization and removal from the curriculum. And while recent years have witnessed something of a return to “art for art’s sake”, the call for demonstrating how the arts are linked to achievement in other subjects continues. The genesis for this call was, in part, due to strategies developed by arts advocates to approach their local, regional, and provincial policy makers with evidence that would maintain or increase the presence of arts

education in schools in the wake of the strong conservative education policies described previously (Beveridge, 2010).

But the research evidence linking arts and achievement in other subjects is, at best, mixed. Fundamentally, one needs to ask – why would music teaching increase math scores better than direct teaching of math itself? And for that matter, who takes classical ballet lessons to improve their geometry scores? The limitations of this type of research are discussed later in the review. For now, an in-depth description of a Pan-Canadian study that avoids many of the pitfalls of arts and achievement research is offered.

Learning Through the Arts: Research Findings from a Pan-Canadian Longitudinal Study

One of the most comprehensive arts education programs in Canada – and certainly the one with the most long-term and extensive empirical research – was developed in the mid-1990s by The Royal Conservatory of Music. Since its genesis in the former North York District Board of Education, *Learning Through the Arts* (LTTA) has become firmly embedded in schools across our nation. LTTA has received overwhelming support – millions of dollars in funding, alone, attests to the endorsement of the program by both the public and private sectors.

Why has LTTA been so well received by teachers, students, parents, and investors? There are at least three reasons. First, the program is an imaginative partnership between artists, teachers, and the broader community, often involving full-school implementation and producing impressive results. Second, the program incorporates the arts as entry points for learning across the curriculum, so teachers can engage their students through the arts and also enliven and deepen the teaching of other subjects. Third, artist and teacher professional development are key aspects of the work.

In the LTTA elementary education model, professional artists work directly with students, applying an art form to the teaching of concepts in another subject area. For example, a dancer might approach the teaching of a Grade 4 geometry unit through movement and modern dance. The artists begin their work with the students after developing lessons and units with the classroom teachers, based on the curriculum requirements for the particular subject and province (Elster, 2001).

The earliest research studies on LTTA indicated that the program was positively received by students, and resulted in more use of the arts by teachers, as well as increased administrative support for the arts (Wilkinson, 1998). Other programs that use the arts in conjunction with the teaching of other subjects have similarly demonstrated that positive changes occur for students as a result of such an approach. As Esquith (2006) so provocatively suggests, if our educational objectives include joy, compassion, and excitement, then the arts can be naturally connected to other curricular areas to enhance active participation and creativity (D’Agrosa, 2008).

In 1999, a comprehensive six-year research study on LTTA was launched in Vancouver, Calgary, Regina, Windsor, Cape Breton, and Corner Brook – the largest study of its kind ever undertaken in Canada. Over 20,000 students and their parents, teachers, and principals took part in the LTTA research, and several thousand additional students involved in other specialized programs (e.g., programs with a technology focus) also participated (Patteson, Uptis, &

Smithrim, 2005; Smithrim & Upitis, 2005a; Upitis & Smithrim, 2003). The research design involved a link to the Statistics Canada National Longitudinal Study on Children and Youth (NLSCY 1997, 1999), which further increased both its scope and validity.

The research was designed to determine the effects of the LTTA program on students, concentrating in particular on the students who were in Grade 4 at the beginning of the study and in Grade 6 at the conclusion of the study. There was particular interest in determining, through a quasi-experimental design, whether increases in mathematics and/or language scores would result after a three-year exposure to the LTTA program. Beliefs and practices of parents, artists, teachers, and administrators were also ascertained. In addition, the design enabled the researchers to examine children's attitudes towards the arts and schooling in general, and to determine how the arts were linked to their out-of-school activities, such as videogame playing, taking part in sports, and reading for pleasure.

The student sample for the primary study consisted of nearly 7,000 students in Grades 1 through 6, including students from LTTA schools as well as from two types of control schools. There were no differences between the students from all three types of schools at the beginning of the study in terms of their mathematics and language scores, arts attitudes and activities, and socio-economic status, as indicated by household income and mother's education level.

At the end of the three-year period, there were no significant differences between the Grade 6 students in the LTTA schools and students in two types of control schools on most measures for mathematics and language. Thus, the researchers concluded that involvement in the arts does not come at the expense of achievement in mathematics and language (Smithrim & Upitis, 2005a). This is an important finding, for it provides evidence against the view that other subjects will suffer if more time is devoted to music, visual arts, drama, and dance, with less time spent on math and language. This finding is also important because the way that it is phrased does not exaggerate the positive association between arts learning and achievement in other subjects.

But this conclusion does not tell the whole story of the achievement results. While there were no differences at the end of the three years on several mathematical tests of geometry and of applications of mathematical concepts, in fact, the Grade 6 LTTA students scored significantly higher on mathematical tests of computation and estimation than did students in the two types of control schools, equivalent to a difference of 11 percentile points in raw scores. As noted above, there were no baseline differences in mathematics achievement or in socio-economic status of the students in the three types of schools. Further, there was no interaction effect between socio-economic factors and program type. Thus, insofar as there was a program effect, the benefits of the LTTA program occurred for children of all socio-economic classes. This finding is of particular social significance, as it indicates that the arts benefit all children. For those children who are not able to seek arts experiences outside of normal school hours, one could argue that the arts become even more important in the school context.

The qualitative findings, based on interviews, observations, and focus groups, suggest that involvement in the arts contributes to engagement in learning. Students, teachers, parents, artists, and administrators talked about how the arts motivated children, referring to the emotional, physical, cognitive, and social benefits of learning through the arts.

Activities outside of school were also related to student achievement in math and language. Music lessons outside of school and reading for pleasure were significant contributing factors for achievement in math and language, after the effects of socio-economic status and the LTTA effects were considered. The data also indicated that some kinds of student activities were more likely to group together than others. For example, children who read for pleasure and took music lessons were also likely to belong to clubs and engage in organized sports, and were unlikely to spend their leisure time playing computer and/or videogames. But these associations are not necessarily causal; it could be that the child who likes to read also likes to be physically active and has parents who support the practice of taking music lessons outside of school. It does not necessarily mean that taking music lessons *caused* the same children to become good readers or active in clubs and sports.

Nearly all parents (90%) reported that the arts motivated their children to learn. This was the case not only in LTTA schools, but also in the control schools following the regular curriculum and in the schools with other specialized programs. Less than 1% of the parents questioned the importance of arts programs. Indeed, parents were eager to talk about the positive effects of arts education on their children. Seventy-seven per cent of LTTA parents, when asked if their child had reported school arts activities, gave concrete examples of arts activities their children had talked about at home (15% higher than parents in the other two types of schools). Some of these examples described events that had occurred up to three years earlier, that both the parents and children still recalled in vivid detail. Parents claimed that the LTTA program helped generate interest in the arts outside of school, provided greater incentive for their children to attend school, increased the self-confidence and self-esteem of their children, improved their children's social skills as they became less shy and more outgoing, provided them with opportunities to thrive, increased their skills in various art forms, and increased their enthusiasm for attending school (Upitis & Smithrim, 2003). Artists similarly observed a wide variety of benefits to students engaged in the arts, including the development of arts skills, the exploration of curriculum topics through the arts, and the foundation for a lifelong love of the arts.

By the end of the three-year period, there were significantly more LTTA teachers, as compared to teachers in the control schools, who believed that the arts were an effective way to teach language, science, and math. LTTA teachers reported a number of changes in classroom practices that reflected their increased commitment to teaching through the arts, and their growing skills and confidence in embedding the arts in their teaching practices. That is, teacher transformation was another important outcome of the LTTA program. In an earlier study, using a different model for enhancing arts education in elementary schools, Upitis, Smithrim, and Soren (1999) concluded that fundamental changes to teachers' practices and beliefs arose when teachers worked directly with artists and experienced the artistic process while making their own art; lasting changes occurred for approximately 20% of the teachers after two or more years of professional development. Among the benefits teachers ascribed to the program were confidence to try new things; a new appreciation of the planning and work involved in art-making; a revitalization of teaching in other subject areas; and a commitment to provide more time, materials, instruction, and support for students' art-making. Data were analyzed using a three-level matrix—developed by Upitis, Smithrim, and Soren (1999) – to assess and describe teacher transformation. The first level of the matrix identified conditions that were necessary, but not sufficient, for teacher transformation (e.g., exploration of new art forms and media). The second

level identified the potential for sustained transformation (e.g., teachers' changing perceptions of artists). The third level identified ways in which profound changes in beliefs and practices were manifested (e.g., long-term pursuits of new art forms). Evidence for all three types of transformation were found with the LTТА program (Patteson, 2005; Smithrim & Uptis, 2005a).

Principals of LTТА schools were more likely than principals in the control schools to personally consider the arts as very important. School district superintendents confirmed the positive effects of the LTТА program. All of the LTТА superintendents viewed the arts as critical in education, and viewed the program as a partial solution to what they identified as chronic under-funding and lack of expertise in elementary arts education (Uptis & Smithrim, 2003).

As demonstrated by the results, students in the LTТА program benefited from the program in many ways. Some benefits lent themselves to measurement, such as gains in the computation test scores. Others were more ephemeral, as students' and teachers' lives were positively transformed through the unique contributions that the arts offer (Smithrim & Uptis, 2005a).

Other Research Studies Linking Arts Education with Academic Achievement

A comprehensive American study, tracking 25,000 middle school students over a ten-year period, indicates that for all students – but particularly for those in the lower socio-economic group – academic performance, attitudes, and behaviour are all positively correlated with high arts involvement (Catterall, Chapleau, & Iwanaga, 1999). Among students from low socio-economic households, 43.8% of those highly involved in the arts scored in the top two quartiles in reading, compared to 28.6% of students with little or no arts engagement. When the entire student sample was considered, 70.9% of students with high arts engagement scored in the top two quartiles in reading, compared to 46.3% of the students with low arts engagement. Catterall et al. also found that the probability of being highly involved in the arts is twice as high for economically advantaged students—not a surprise, of course, but an argument for the importance of the arts in the public school system.

In a study conducted in Georgia involving over 600,000 students, it was found that in those school districts where the arts were a priority, students had higher test scores, were more likely to graduate with college diplomas, and were less likely to drop out from high school (Music in World Cultures, 1996). However, like the study by Catterall et al. (1999), this study was correlational: One can ascertain that higher test scores go along with arts activities, but there is no evidence that one causes the other. It is possible that arts learning contributes to higher test scores because students are more engaged in their schooling as a result of being enlivened by the arts. But it is also possible that students who are already high achieving are attracted to studying the arts. It is not possible to say if one condition causes the other, or if there is another underlying cause or series of causes that could explain the link between art and achievement.

In addition to the LTТА research, another study that allows causal conclusions to be drawn was conducted in Austria and Switzerland with elementary-aged students (Overy, 2000; Weber, Spychiger, & Patry, 1993). Like much of the empirical research on arts-related outcomes on other subjects, this study involved examining the effects of music learning on performance in other subject areas. The study was designed to determine the effect of music classes on academic achievement in mathematics and languages. At the end of a three-year study, researchers found

that students who had five music classes per week, rather than the more common one or two classes, performed as well as their peers in mathematics and better than their peers in language. This result is even more impressive when one considers that the extra time devoted to music classes was created by shaving off instructional time in mathematics and language. It is also of note that these results did not occur until three years had passed. One of the commonalities of studies demonstrating any kinds of links between arts and achievement – whether correlational or causal – is that such links are only robust when students have had extended arts experiences. For example, the College Entrance Examination Board reported that, in 1995, students who had participated in three- or four-years of extended course work in the arts scored 59 points higher in verbal and 44 points higher in math on the United States' Student Achievement Tests (SAT) (Fowler, 1996).

One of the few carefully conducted empirical studies linking academic achievement and dance was carried out by researchers from DePaul University and the 3D Group in Berkeley, California (McMahon, Rose, & Parks, 2003). The *Basic Reading Through Dance* program is a 20-session program for first grade students, designed to help students improve reading skills in such areas as phoneme segmentation. Using an experimental design, the researchers determined that, in fact, the students who were involved in the *Basic Reading Through Dance* program performed significantly better on all of the reading skills that were assessed as compared to their peers who were taught by traditional methods. This study is of particular importance, as it was not only carefully designed in order to be able to make causal conclusions, but also, is one of the few studies that focuses on dance. The authors claim that dance has considerable potential in developing the whole child as it gives a form for ideas to be internalized through experience (Dimonstein, 1985), and can be used with students at all stages of development to expand on meaning, which in turn, might enhance both memory and reading comprehension.

Other researchers have reported that students involved in the arts may exhibit higher academic achievement than their peers who are not involved in the arts (Catterall, 1998; Deasy, 2002; Fowler, 1996; Hamblen, 1993; Hetland, 2000; Luftig, 1995; Moore & Caldwell, 1993; Murfee, 1995; Music in World Cultures, 1996; Welch & Greene, 1995). However, much of this research is correlational in nature. That said, it is not unusual for researchers and others to go beyond the evidence to make causal claims about the arts and academic achievement (Winner & Cooper, 2000). Indeed, there is a plethora of other studies linking arts education with academic achievement, but very few provide evidence that studies in the arts transfer to other areas. Put another way, few studies show that there is a direct link between studying the arts and learning in other subjects, known in the cognitive psychology field as learning transfer. Even the LTTA study only showed transfer on one mathematics measure – for close to a dozen other measures in mathematics and language, there were no significant differences between the students in LTTA schools and those in the control schools. And there is the deeper problem so eloquently expressed by Koopman (2005), that the arts become appealing not for their intrinsic values such as those described by Dewey, Eisner, Dissanayake and others, but for their ability to “enhance something valued” (p. 86). For example, music and visual arts become important for contributions they might make to reading, and drama becomes important for developing verbal skills, rather than for the intrinsic joys that music, visual arts, and drama might bring (Koopman, 2005).

Such claims not only misrepresent the research results, but also undermine the intrinsic benefits of the arts themselves. That is, by implying that the arts might serve as handmaidens to other subjects, there is a danger that the arts will not be valued for their distinct contributions to education (Winner & Hetland, 2000). Although some arts educators have tried to strengthen the position of the arts by claiming that the arts can enhance the learning of other subjects, Winner and Cooper (2000) argue that it is foolhardy to expect that the arts can be as effective in teaching another subject as direct teaching of that subject. They further argue that “advocates should refrain from making utilitarian arguments in favor of the arts [because] as soon as we justify arts by their power to affect learning in an academic area, we make the arts vulnerable” (p. 66–67). Any justification for the arts should be made in terms of the important and unique contributions that arise from arts education. As noted earlier, the arts are particularly important for experiencing the joy of creating; for making the ordinary special; for enriching the quality of our lives; for developing effective ways of expressing thoughts, knowledge, and feelings; and for developing our humanity (Dissanayake, 2000, 2003; Eisner, 1994, 2002; Greene, 1995; Howard, 1992).

The LTTA national research adopted the kind of quasi-experimental design that Winner and Cooper (2000) recommend for studies on arts education and achievement. In addition, the LTTA research took into account the effects of socio-economic status on achievement by the inclusion of household income and mother’s education level in the analyses. Also, the research was designed to ascertain the distinct contributions of the arts to the development of the whole child. As Eisner (2002) proclaims, work in the arts gives people experience with situations in which there is no known answer, where there are multiple solutions, where the tension of ambiguity is not only tolerated but appreciated as fertile ground, and where imagination is honoured over rote knowledge. These factors were included in the LTTA research because it was hypothesized that such factors may contribute to any achievement gains exhibited in other subjects, possibly because of transfer, or possibly because of overall increased engagement in school (Burton, Horowitz, and Abeles, 2000). By engagement, Smithrim and Uptis (2005a) referred to the involvement of the sensorimotor or physical, emotional, cognitive, and social dimensions – the same dimensions that were identified as important to the development of the whole child in an earlier section of the review (Csikszentmihalyi, 1997; Noddings, 1992). Csikszentmihalyi also describes a transcendent dimension in which “the very real feeling we have after an aesthetic encounter that some kind of growth has taken place, that our being and the cosmos have been realigned in a more harmonious way” (1997, p. 25).

Other Contributions of the Arts Towards Educating the Whole Child

Thus far, the discussion of the extra benefits of the arts has centred on the possible relation between the arts and academic achievement. Another way of looking at the contributions of the arts is through the three-tiered model proposed by Eisner (1999), in which he differentiated direct outcomes from studies in the arts with ancillary outcomes – such as those associated with achievement. By giving credence to this literature, it is not in any way to suggest that the intrinsic benefits are not important: Rather, one can take the position that it is because of the intrinsic value of arts activity that other ancillary benefits occur.

The three levels or tiers proposed by Eisner (1999) are (a) arts-based outcomes, (b) arts-related outcomes, and (c) ancillary outcomes of arts education. Arts-based outcomes refer to the outcomes directly related to the subject matter an arts curriculum was designed to teach, such as learning to read standard musical notation, presenting a soliloquy, or critically responding to works of art (Ogden, 2008). Arts-related outcomes require creative perception of features in the general environment in ways that respond to pattern, form, and the aesthetic aspects of the observed phenomenon (Ogden, 2008). An example would be to characterize as music the chorus of spring peepers, because of the musical elements and functions contained in their call. The ancillary outcomes pertain to the transfer of skills and learning strategies that may be evidenced in non-arts tasks; for example, one might apply the habits of reflection and questioning, developed through a study of perspective drawing, to solving a problem in geometry. Other ancillary outcomes could include development of a sense of responsibility to the community, commitment to a high level of performance standards, and development of self-esteem (Ogden, 2008). It is this latter type of ancillary outcome that is considered in the following section of the review.

Risk-taking, Social Skills, and the Development of Self-Confidence

There is mounting evidence that experiences in the arts develop self-confidence. Researchers report, for example, that arts learning fosters co-operative, focused behaviour, problem-solving, and the development of fair-minded citizens (Jensen, 2001). Others claim that arts learning develops a sense of connection with others (Davis, 2008; Noddings, 1992). Studies also show a positive relationship between studies in the arts and benefits for at-risk students (Flohr, 2010), including a reduced risk of violent behaviour and significant improvements in self-esteem (Respress & Lutfi, 2006).

Burton, Horowitz, and Abeles (1999) conducted an extensive study on the wide range of benefits associated with the arts for elementary-aged students. They explored the impact of arts education on 2,046 public school students in Grades 4 through 8. The study involved students and staff at 12 schools in New York, Connecticut, Virginia, and South Carolina. A mixed-methods approach to data collection was implemented – including questionnaires, perception scales, and inventories—which provided quantitative data, as well as interviews, observations, and document analysis.

Burton and her colleagues found significant links between rich in-school arts programs and the creative, cognitive, and personal competencies needed for academic success. The results showed that students in “high-arts” groups performed better than those in the “low-arts” groups on measures of creativity, fluency, originality, and elaboration (Burton et al., 1999). The high-arts students were more co-operative, more willing to display learning publicly, and more likely to think of themselves as competent in the other academic subjects. These capacities were developed through elementary arts experiences, including intra-curricular (learning in, about, and through the arts), extra-curricular (such as school musicals), and community and school-based arts partnerships. The researchers conceptualized the arts competencies, such as the interweaving of intuitive, practical, and logical modes of thought, as “habits of mind” (Ogden, 2008). Burton et al. found that these habits of mind were accompanied by increased ability to exercise imagination, express thoughts and ideas, and take risks. As a result of the positive outcomes of

arts education, they called for the arts to become curriculum partners with other subject disciplines, contributing in rich and complex ways to the learning process as a whole.

Ogden's (2008) study confirmed similar positive outcomes for adults who took part in musical theatre during their elementary schooling. Ogden interviewed and surveyed adults ranging in age from mid-20s to mid-80s about their experiences in musical theatre in their elementary years. Decades after taking part in such performances, the adults reported that taking part in school theatre helped them develop a sense of community both inside and outside the school, and contributed to their growth in self-awareness, self-esteem, and confidence.

Interestingly, it is these kinds of benefits of arts education that are now being identified by teachers and principals as important – more important than potential benefits to achievement in other areas. The Hill Strategies Research report (2010) prepared for the Coalition for Music Education in Canada, based on survey results from 1,204 Canadian schools, reported that self-esteem, self-discipline, creativity, and musical ability were the four benefits that received the largest number of “very important” rankings in their survey (over 70% each), while overall academic achievement, analytical thinking, and problem-solving were as widely regarded as “important”—that is, they ranked lower in importance than musical abilities and creativity. It is encouraging to learn that the achievement benefits seem to be less prominent than they were a decade ago, moving us a step closer to a place where the arts are valued for the unique contributions they offer to child development.

Metacognition and the Arts

Self-Regulation

Self-regulation refers to a set of mental habits that include monitoring, guiding, directing, and evaluating one's own learning (Zimmerman, 2000). A number of studies indicate that self-regulated learners may achieve better academic results than those learners who have yet to develop strong self-regulatory skills (Rogers & Swan, 2004). Self-regulated learning (SRL) is widely recognized as a core feature of metacognition. The extent to which a person recognizes what enhances his or her learning and consciously chooses strategies to learn more effectively marks the degree of self-regulation present in the learning process (Zimmerman, 2000). Reviews of research have shown that SRL skills can be taught at both elementary and secondary levels (Dignath & Buettner, 2008; Dignath, Buettner, & Langfeldt, 2008).

Three cyclical phases of SRL involve both metacognitive and motivational components. The forethought phase includes task analysis, goal setting, and strategic planning. In the performance phase, task strategies are foregrounded. The third phase, self-reflection, includes self-judgment and self-reaction (Zimmerman & Tsikalas, 2005). These phases of SRL are represented in the Ontario Arts Curriculum (Ontario Ministry of Education, 2009) under the description and depiction of the creative process that appears throughout the document.

Research has demonstrated how studying the arts can support the development of self-regulation. Self-regulation in the arts includes paying attention, using feedback effectively, problem-solving in a curricular context, taking risks, co-operating, and setting goals (Baum, Owen, & Oreck,

1997). Further, the general habits of practice, focus, and discipline have been found to transfer to other contexts when the teaching of self-regulatory strategies is an explicit instructional objective (Oreck, Baum, & McCartney, 2000). A recent study in two American high schools led to the identification of eight habits of mind associated with studio art-making (Hetland, Winner, Veenema, & Sheridan, 2007). Some of these habits of mind – most notably reflecting (which includes questioning, explaining, evaluating), persisting (or sustained attention) and envisioning – can also be described as self-regulatory behaviours.

In studies designed to assess how students use self-regulatory practices in learning to play a musical instrument, researchers have found self-regulation to be an important component of effective instrumental practice (Bartolome, 2009; Oare, 2011). Less skilled musicians have not developed the self-regulatory habits of advanced musicians (Nielsen, 2001). Advanced musicians are able to monitor their practice by focusing on aspects of their playing that can be improved, and by seeking help from others when facing difficulties (McPherson & Renwick, 2001). These instrumentalists employ other self-regulating strategies as well, including setting clear, measurable, and timely goals; creating effective strategies for practice; developing ways of self-monitoring progress and adjusting accordingly; structuring optimal learning conditions; seeking out advice and information as needed; and displaying persistence during times of struggle (Oare, 2011). Arguably, these habits of practice are ones that serve musicians well in other contexts, and may explain, in part, why there can be an association between engaged study in the arts and achievement in other subjects as described in the previous section of the review.

Memory, Motivation, and Attention

In a three-year study of young children aged two and a half through seven years, Posner, Rothbart, Sheese, and Kieras (2008) determined how training in the arts influences other self-regulatory processes through the underlying mechanism of attention. Children in the study were randomly assigned to control and experimental groups and data were collected through questionnaires for teachers and parents, along with observations of the children. The findings resulted in a general framework for describing how arts training influences cognitive processes. Posner et al. found that heightened motivation to perform or take part in an arts activity produced the sustained attention necessary to improve performance.

A quasi-experimental two-part study on musical skill and memory explored the effects that training in music and training in acting have on skills associated with long- and short-term memory (Jonides, 2008). The first study compared 22 college-aged participants who were matched demographically but differed in musical experience. Eleven of the study participants had at least ten years of musical experience, and at the time of the study, were already practicing at least ten hours per week. The other 11 had studied an instrument for less than a year. The second study compared 21 actors trained in live theatre performance with 24 demographically similar participants who did not participate in theatre. Verbal tests for both long- and short-term memory functions and fMRI (functional magnetic resonance imaging) were used to collect the data. The findings suggested that the musicians applied strategies of rehearsal to maintain information in memory more effectively than non-musicians. Similarly, the actors effectively applied strategies for extracting semantic themes from verbal material, and these strategies resulted in better memory of the material in question. Put another way, the development of these

particular arts-related skills led to heightened use of effective strategies for memorization, which in turn led to better memory.

In summary, there is research evidence supporting Eisner's (1999) three-tiered model for the effects of arts education, namely, arts-based outcomes, arts-related outcomes, and ancillary outcomes. That said, it is important, also, to remember that these justifications are fundamentally instrumental in nature, and do not speak to the unique contributions of the arts. As Koopman (2005) cautions:

Insofar as they can be substantiated, positive non-artistic outcomes can play a significant role in the justification of education in the arts. But as long as we rely only on instrumental values, on the ways the arts are beneficial to non-artistic aspects of life, our justification remains vulnerable; for it can always be questioned whether the benefits are really significant and durable, and whether the arts are the most efficient way of bringing about the results. (p. 96)

With this caution, the following section deals with the last of the instrumental outcomes for an arts rich education: outcomes that relate positively to the economy and the workplace.

The Arts, The Economy, and The Workplace

The great importance of education in the arts is the ability acquired to make connections between seemingly isolated events or concepts, sometimes referred to as lateral thinking.

Leonard Lee, President, Lee Valley Tools

The Canadian workforce requires employees to think critically and creatively, solve problems, communicate well, adapt to changing circumstances, and continue to learn throughout their careers (Conference Board of Canada, 2011). Indeed, those who think with imagination and engage in continuous learning – including online learning – will be the most valued workers of the future. An education rich in the arts nurtures precisely those skills and attitudes that are required in the contemporary workplace. Warren Goldring, co-founder of the Canadian investment company AGR Management, gave the following advice, “Don’t overlook education in the arts. There has been a tendency for students today to study the hard sciences, business, or computers. An arts training will provide the ability to think logically and that’s the commodity that is in the shortest supply in business ... studying the arts will develop skills that can help you in any career” (cited in Campbell & Townshend, 1997). Charles Baillie, former Chair and CEO of the TD Bank Financial Group, similarly heralded the importance of the arts, stating that by investing in children and the arts, “we are developing Canada’s great minds of the future.” This comment was made at The Royal Conservatory of Music on February 28, 2001, when it was announced that the TD Bank Financial Group was investing a further \$1.5 million in the *Learning Through the Arts* program. At the same press conference, Ontario Minister of Education Janet Ecker announced a \$3.65 million commitment to the same program, a provincial commitment that remained in place for years thereafter.

There are direct economic links between the arts and the economy as well. The Canadian Arts Presenting Association/l’Association canadienne des organismes artistiques (CAPACOA)

represents well over 100 professional for-profit and not-for-profit presenters, presenter networks, artistic companies, agents, managers, and other stakeholders comprising the presenting and touring arts sector in Canada. Their members represent more than 2,000 professional and volunteer organizations, associations, and companies. In a brief prepared by the CAPACOA (2009) to the Standing Committee on Finance, it was made clear that the arts and culture sector of the Canadian economy is vital to growth in prosperity. The CAPACOA cited studies indicating that the arts represent 7.4% of the gross domestic product, that the arts help promote an engaged citizenry, that the arts promote voluntarism, philanthropy and a sense of community, that the arts improve quality of life for Canadians, and that the arts account for 3.9% of national employment (CAPACOA, 2009). The CAPACOA report closes with the observation that the arts form the foundation on which the creative economy is built. They note that the cultural sector provides jobs to more Canadians than the automotive sector, and generates an ever-increasing contribution to Canada's GDP. It is important to note that the CAPACOA defines the arts much more broadly than is the case in the current Ontario curriculum, more in keeping with how the arts are framed in this review.

In those jurisdictions where cost-benefit analyses have been conducted to ascertain the economic impact of the arts and creative industries, it is abundantly clear that regions with thriving arts programs and industries benefit in the areas of job creation, city pride and prestige, increased property values, and support to other businesses (Economic Development Edmonton, 2005; Kelly & Kelly, 2000). In addition, numerous social benefits have been documented in these analyses. These social benefits include the building of community networks, contributing to the education of children, transforming the responsiveness of public service organizations, and contributing to quality of life for people with poor health (Kelly & Kelly, 2000). The arts and culture play an important role in seven of the 12 determinants of health defined by Health Canada, which include personal confidence, social connectedness, and supportive physical environments (Cooley & Associates, 2007).

We see, then, that the arts are essential to our economy, not only in terms of the revenue and employment opportunities generated in the cultural sector, but also in terms of the sensibilities that studies in the arts bring to a wide spectrum of employment opportunities (Tabet, 1998). They are also vital in terms of promoting good health. We are living in an age where self-directed, problem-based learning is becoming the norm throughout the workplace, and the arts have a role to play here. It is precisely in such an age that the skills and attitudes engendered by arts education are most valuable: Students who have an education rich in the arts will be best prepared to form the creative responses necessary to succeed and grow in the new learning and workplace, and in so doing, ultimately come to lead healthy and fulfilled lives.

How does research on brain function apply to arts education?

A cornucopia of research and published studies seem to focus on neuroplasticity, that is, on changes that occur in the brain as a result of experience.

Natalie Kuzmich, University of Toronto

Much furor has been generated by the research on brain structures and functions conducted over the past two decades. While more work needs to be done before the results of neuroscientific studies can be taken into the classroom, researchers, teachers, and neuroscientists alike agree that a child's brain needs to be stimulated in a variety of ways to foster development.

The brain is not fully developed at birth, or even in the first few months and years of a child's life. Research on brain development provides evidence that a variety of experiences in early childhood are needed in order for a child's brain to fully develop. At birth, a baby's brain contains trillions of neurons; while some of these neurons have specific functions already assigned to them; many others remain to be shaped by experience. Through experience, these unconnected or "pure" neurons become connected with other neurons, thereby becoming integrated into the overall circuitry of the brain. Without experience, the pure neurons die out (Begley, 2007). It is the connections that give the brain its power. The environment provides abundant stimulation for developing the neural circuitry, through objects, patterns, noises, and sounds (Bruer, 1998).

Even though there is strong evidence that the brain is most malleable during the first ten years of life, people can learn at any age because of what is termed the brain's *plasticity* – that is, the brain's ability to change and adapt throughout the human lifespan (Flohr, 2010; Greenough, 1997; Jensen, 2008). The brain is part of a much larger system, which includes the spinal cord and the peripheral nerves, sending and receiving messages from the brain. Further, the brain regulates the release of hormones into the bloodstream, and as such, extends throughout the body (Flohr, 2010). The notion that the arts embody physical learning is not just an academic concept: the physical nature of learning is hard-wired through our bodies.

The surge of interest in brain function began in the latter part of the 20th century, when sophisticated and readily available techniques for measuring brain activity were developed (Nelson & Bloom, 1997). These techniques allow for the measurement of cerebral blood flow (e.g., through positron emission tomography [PET] and functional magnetic resonance imaging [fMRI]; Flohr, 2010; Strickland, 2002) as well as electrical brain activity (e.g., using tests called event-related potentials [ERP] and electroencephalograms [EEG]; Strickland, 2002). By making such measurements, neurosurgeons and researchers are able to confirm that the brain changes as a result of experience. This much we know. But we know much less about how changes in brain activity or function are related to cognition, emotion, behaviour, and learning. These issues are of great interest to educators – so great that, as will become clear, the research on brain function is sometimes extended beyond the results of the empirical work.

Questions for Arts Educators

With the development of these measurement techniques – combined with the strong curiosity about brain function and learning described above – comes a series of questions directly related to educational policy and practice, such as these:

- Are there critical periods in human development during which certain experiences must take place, without which the individual will no longer be able to acquire certain skills? (Hollingsworth, 1981)
- What is the evidence for brain growth spurts and how do these growth spurts correspond to early childhood development? Are there optimal periods for development? (Epstein, 1978)
- How does experience, such as repeated musical practice, influence brain development? (Schlaug, Norton, Overy, & Winner, 2005; Kuzmich, 2011)
- What does brain research tell us about the relationship between cognition and emotion? (Reimer, 2004)
- What does brain research tell us about transfer of learning from one context to another? (Gardiner, Fox, Knowles, Jeffrey, 1996; Jensen, 2008; Overy, 2000; Strickland, 2002)

Some of these questions are examined in the next section on neuromyths, while others are discussed in the section that follows, which focuses on music, transfer, and literacy.

Neuromyths

In analyzing the recent brain research, as applied to arts education, several cautionary points must be considered. First, there remains a large gulf between research findings and direct classroom applications (Flohr, 2010). Second – and perhaps more important – there are a number of so-called neuromyths associated with brain research. Conditions that give rise to these neuromyths include: (a) oversimplification, (b) the overextension of research findings well beyond the contexts in which they were originally made, and (c) the publicizing of mistakes and misinformation (Hall, 2006). Examples of how each of these conditions lead to neuromyths that are applied to arts education are now examined.

Oversimplification

One of the most prominent examples of a neuromyth, based on oversimplification of research evidence, is that there are “left-brained” and “right-brained” children and further, that the two types of children can or should be taught in different ways. This neuromyth is clearly identified in a report from the Centre for Educational Research and Innovation (CERI, 2011) of the Organization for Economic Co-operation and Development (OECD).

The notion of hemispheric dominance, based in large part on split-brain research and post-mortem examinations of the brain, suggests that the left side of the brain is the rational, logical,

analytical, and verbal hemisphere. Thus, some educators assert that the left hemisphere has an affinity for detailed and structured information and is best suited for reading and writing, mathematics, and other tasks involving logical operations (CERI, 2011). The concept of hemispheric dominance claims that people who make primary use of the left sides their brains are rational, intellectual, detail-oriented, logical, and analytical, and excel on tasks that require these abilities, such as mathematics or engineering.

In contrast, the right side of the brain has attributed to it an intuitive, emotional, holistic, non-verbal, visual-spatial method of processing, and is regarded as essential in tasks that require the understanding of complex patterns (CERI, 2011). People who predominantly use the right sides of their brains are considered to be artistic, intuitive, imaginative, and visually oriented, and, it is claimed, can be expected to follow creative and artistic professional paths.

The problem with these left-brained and right-brained characterizations is that the idea of different hemispheric thinking styles is based on an erroneous premise, that is, that each brain hemisphere is specialized and therefore each must function with a specialized thinking style. This conclusion uses scientific findings regarding functional asymmetries for the processing of stimuli to form conclusions about hemispheric differences regarding cognition, emotion, and even personality. Deriving different hemispheric cognitive outcomes from functional asymmetries oversimplifies and misinterprets scientific findings (CERI, 2011).

Furthermore, there is no scientific evidence that supports a correlation between creativity and the activity of the right hemisphere (CERI, 2011). In a similar vein, a recent analysis of 65 neuroimaging studies on emotion found no scientific support for the hypothesis of an overall right hemispheric lateralization of emotional function (CERI). And on the other side of the brain, so to speak, there is no direct scientific evidence that supports an analytical, logical thinking style for the left hemisphere that would predetermine the left hemisphere as central to tasks related to mathematics, reading, and writing. While there are functional differences between the two sides of the brain, *the two hemispheres work together in virtually every cognitive task*. The CERI report concludes that, “using the conception of hemisphericity to guide and direct educational practice is highly questionable” (CERI, 2011, para. 18).

Overextending Research Findings

Another neuromyth – and an example of overextending findings – is the claim that listening to Mozart will make a child smarter (often phrased as the slogan, “music makes you smarter”). Since the 1993 publication of the results by Francis Rauscher and her colleagues (Rauscher, Shaw, & Ky, 1993), where it was found that particular spatial-temporal abilities were enhanced after listening to Mozart, all kinds of extraordinary overextensions have been made. For example, some government officials – such as the governor of the state of Georgia – decreed that newborn babies should be provided with Mozart CDs to give them an intellectual head start (Sack, 1998). In fact, the so-called Mozart effect has a very limited effect. It applies to simple spatial tasks and disappears after a short period of time (Upitis, 2011).

While listening to Rauscher lecture to a group of music educators in 1998, music educator and critic Bennett Reimer (1999) reflected that:

musical intelligence, musical cognition, musical perceptual processing, musical learning mechanisms, and the like lead me to be extremely curious about how our brains process various stimuli, musical and otherwise, in ways we are only now beginning to investigate ... [and] I find [Rauscher's] work provocative as research, but I also see that it leads to important unanswered questions. (p. 39)

Reimer (1999) continues with the observation that the unprecedented publicity given to Rauscher's research on the effects of music on spatial-temporal mental functions has placed music education in a vulnerable place. He further writes:

Spatial-temporal reasoning is thought to be foundational for success in higher mathematics, proportional reasoning (such as that used in engineering, structural design, architecture, and so forth), and other activities that require high mental ability (such as chess). These are high-stakes benefits, making others, such as opportunities to socialize and to meet partners, pale by comparison. Will music educators be placed in the position of having to justify music education on this new basis? If so, would they be held accountable to deliver the claimed spatial-temporal improvements? Would they, then, have to alter their curriculum of musical learnings in the direction of learnings most beneficial for developing spatial-temporal abilities? (p. 40)

Reimer's concerns about the overextension of the "Mozart Effect" spills over to other aspects of research as well. In another context, he characterizes the "bulk of modern-day brain research as hodge-podge ... and easily misinterpreted, as we witness so often by popularizations and advocacy attempts that are embarrassing in their unwarranted and misleading claims" (Reimer, 2004, p. 22).

Misinformation

Yet another type of neuromyth arises from misinformation. For example, some educators refer to critical periods and optimal periods in brain development as the same thing. They are not.

During critical periods, the brain requires certain kinds of stimulation in order to fully develop. For example, it is theorized that the maximum synaptic growth in the visual cortex occurs at four months of age in humans, thereby delineating a critical period for visual development in babies (Strickland, 2002). It should be noted, however, that much of what is known about critical periods comes from research on non-human subjects. For example, it has been demonstrated that if a kitten's eyes are covered during the critical period for visual development, thereby inhibiting visual stimulation entirely, the kitten will grow up unable to see despite the fact that there has been no direct damage to the eyes (Flohr, 2010).

Critical periods may also occur in musical development, although it is much more difficult to devise experiments to produce the evidence that would prove the existence of such critical periods for humans. Because so much of the brain research that is applied to educational contexts is based on experiments with animals, there is an inherent risk of both misinformation and overextension of research findings. Some of Rauscher's experiments, for example (Rauscher, Robinson, & Jens, 1998) describe the effects of early musical exposure on rats (perhaps it is easier to get rats to practice than it is to convince children to do the same).

In contrast to critical periods, optimal periods are those stretches of time in which development will be faster and/or easier than at other times (Flohr & Hodges, 2006). For example, it is easier to learn to sing in tune between the ages of three and six years than between 25 and 28 years of age (Flohr, 2010). Interestingly, some of the optimal periods of brain growth in humans occur between three to ten months, two to four years, six to eight years, and ten to 12 years, which roughly correspond with Piaget's classical stages of intellectual development (Hollingsworth, 1981). But just because a certain period is optimal does not mean all is lost if a child is not exposed to certain stimuli at that time – the brain's plasticity allows us to learn at any age.

Music, Structural Brain Development, Transfer, and Literacy

In addition to Dissanayake's bio evolutionary arguments espousing the centrality of the arts to human experience, there is physiological evidence that the arts form a fundamental part of the human experience. The prevalence of neuromyths notwithstanding, there is strong evidence that the brain has structures that respond to the visual and auditory stimuli associated with arts learning.

Of all art forms researched in connection to brain function, music has received the most attention (e.g., Levitin, 2007; Patel, 2010). This is not because music has any special place as an art form over, say, painting or dance. Rather, it is because researchers have found specialized neurons in the brain that are associated only with music, making music a natural subject for neurological study. Researchers have demonstrated that even very young babies – across cultures – respond in predictable and consistent ways to rhythm and melody, supporting the conclusion that some parts of the brain respond specifically to musical stimuli (Cohen & Trehub, 1999). Indeed, so many studies on music and the brain have been conducted that an online database for neuromusical research has been created (Edwards, 2008). The resulting database, titled the Musical Brain Imaging Research Database (*MusicBIRD*), houses close to [500 studies of neuromusical research](#).

For a period of almost ten years, a group of researchers from Harvard University, Boston College, McGill University, and Toronto's Hospital for Sick Children have been systematically determining how musical experiences affect brain development (Forgeard, Schlaug, et al., 2008; Forgeard, Winner, Norton, & Schlaug, 2008; Gaser & Schlaug, 2003; Hyde et al., 2009; Schlaug et al., 2005). Unlike the "Mozart Effect" study (Rauscher, Shaw, & Ky, 1993) – which had a relatively simple, short-term experimental effect – this series of intensive studies has been carried out over the long-term. The studies have not received the same media attention as those on the "Mozart Effect". Nevertheless, they provide credible evidence about the effects of music on the brain and on transfer to other forms of activity, most notably those associated with motor skills related to playing an instrument, auditory perception, and reading.

One of the core studies was a two-year longitudinal study on the effects of musical training on brain development and cognition in young children. The study was designed to determine whether there were pre-existing differences in brain structure or cognitive skills in children who were just beginning to learn a musical instrument compared with the peers who were not receiving private music instruction. A secondary purpose of the study was to determine whether children beginning instrumental training on the piano or violin between the ages of five and seven years would demonstrate brain differences and/or cognitive enhancements (Schlaug et al.,

2005). The 50 children taking music lessons were matched with a smaller control group in terms of age, socioeconomic status, and verbal IQ. All of the children completed the subtests for Object Assembly, Block Design, and Vocabulary from the Wechsler Intelligence Scale for Children (WISC-III). Some of the other baseline tests included Gordon's Primary Measures of Music Audiation (PMMA) to measure musical skill and aptitude, and motor tests to measure left and right hand speed and dexterity. Structural and functional MRI scans of the children's brains were taken.

There were no cognitive, musical, motor, or structural brain differences between the two groups when the study began. Thus, the researchers concluded that there were no pre-existing brain differences to suggest that some children would be more likely than others to choose to learn instruments. The researchers also concluded that the brain atypicalities displayed by adult musicians are likely a result of intensive music training, rather than pre-existing biological conditions (Schlaug et al., 2005). In addition, a cross-sectional comparison was made between nine- to 11-year-old musicians (with an average of four years of training) and a matched group of non-musicians. After an additional 14 months of training, differences between the two groups were already significant in terms of fine motor skills and abilities to discriminate various features of melodies. A similar study (Hyde et al., 2008) demonstrated that changes in brain structure in young musicians occurred within 15 months of the onset of musical training. These changes were also in the motor and auditory areas, and were correlated with improvements on motor and auditory-musical tests. In contrast to other research findings (e.g., Schellenberg, 2004; Rauscher et al., 1997), children did not show superior progress in visual-spatial and verbal transfer outcomes, possibly because 15 months of instrumental training was too short a period for such transfer to occur.

While the careful experimental studies conducted by Schlaug and his colleagues demonstrate that physical changes to the brain are caused by musical practice, claiming a relationship between these changes and other forms of learning remains highly problematic (Kuzmich, 2011). Like the studies on arts and achievement, there is a danger – when considering Schlaug's studies – of overextending the implications of benefits that might arise from music instruction. As Flohr (2010) notes, the transfer benefits of music instruction make intuitive sense when one considers that five areas of the brain are used in music, whereas only two or three of the same areas are activated for mathematical tasks. But it is not only music that engages the brain in multiple areas.

He writes:

One problem, of course, is obvious: If music shares areas of activation with other subjects, then perhaps physical education experiences ... might also influence overall learning ... if we try to justify music on the basis of the way it enhances general intelligence, we may find ourselves in a bad position, as other subjects, such as physical education, show similar results. (p. 15)

The brain research associated with music instruction is also related to the notion of innate talent – considered by some as another neuromyth of education and learning. Those who challenge the innate talent account have argued that in non-Western cultures, for example, where musical activities are a valued part of daily life, the musical achievements of the population as a whole are considerably deeper and more widespread than in North America and Europe (Howe, Davidson, & Sloboda, 1998). Also, most highly accomplished adult musicians show no early

signs of music excellence (Sosniak, 1997). Most important of all, very early experiences in music may be the cause of what is interpreted as early talent (Howe et al., 1998). Criticisms of the innate talent notion have also been levied in other domains (Ericsson & Charness, 1994), where it is evident that extended deliberate practice has an extraordinary effect on later achievement. In terms of educational implications, it would seem that even if there is such a thing as innate talent – based on prior physiological characteristics of an individual’s brain – there are other factors at play. The effects of practice and the environment are so strong that, with appropriate and extended educational opportunities, one can expect all children to develop artistically. This finding implies that we have a responsibility to provide rich arts teaching for all students. It is not the case that arts instruction should be concentrated on the so-called talented, as it is far more likely that experience, rather than genetics or brain structure, breeds accomplished artists. Indeed, this is a view that is held by many esteemed practitioners in various arts areas, including, for example, drama educator David Booth who has spent decades developing ways of bringing drama to the classroom for every child. His book, *Story Drama* (Booth, 2005), details ways of using drama and story to teach improvisation, mime, role playing, writing in role, and performing, among other skills, and shows how these techniques are relevant to drama, the language arts, social studies and other subjects. Throughout the work, Booth makes clear the benefits of drama education for all students.

Transfer and Literacy

The area in which music instruction has been most consistently linked with another subject is that of reading, particularly in terms of how musical training might transfer to skills associated with successful reading, such as the development of phonological awareness (e.g., D’Agrosa, 2008; Darrow, 2008; Forgeard, Winner et al., 2008; Forgeard, Schlaug, et al., 2008).

Forgeard, Winner, et al. (2008) make a careful differentiation between correlational relationships and experimental, longitudinal studies in their examination of the transfer of music training to other domains. They show that near transfer effects are common – for example, music training can transfer to music perception and to motor skills related to playing the instrument itself. Not surprisingly, these examples of near transfer are also related to concomitant changes in brain structure that were described previously.

On the other hand, far transfer – such as the hypothesis that learning to read music notation, might affect, say, a child’s understanding of fractions or improve reading – is notoriously difficult to demonstrate. In terms of these far transfer tasks, Forgeard, Schlaug et al. (2008) claim that a number of correlational studies show an association between music and language skills, but that the results of these experimental studies are equivocal at best. One set of experimental studies that they cite showed that phonological awareness in children with dyslexia improved after a singing and rhythm game intervention (Overy, 2000). However, another experimental study, which associated higher scores in verbal memory with students with musical training, was described as problematic because the children with musical training had higher IQ scores to begin with (Chan, Ho, & Cheung, 1998).

Forgeard, Schlaug, et al. (2008) conducted a longitudinal study with normal-reading children and children with dyslexia, which found that there was a strong relationship between musical-discrimination abilities and language-related skills. More specifically, skill at discriminating musical sounds and rhythms predicted phonological skills and reading skills for normal-reading

children, and skill at discriminating musical sounds predicted phonological skills for children with dyslexia. Phonological and reading skills were strongest for normal-reading children with musical training, who were also superior in the area of melodic discrimination. Forgeard, Schlaug, et al. (2008) concluded that music interventions designed to strengthen auditory-pitch and rhythm-perception skills for children with dyslexia may also help to remediate some of their language deficits. They call for further research to determine the types of music interventions that would be most effective in advancing both language and music skills.

The types of carefully designed studies exemplified by Forgeard, Schlaug, and Winner are exactly what we require to calibrate our knowledge about brain structure with task performance. Their work not only elucidates our understanding of how the brain functions, but also provides evidence-based strategies for improving instruction – in contrast to what Reimer calls the hodge-podge of approaches that currently populate much of educational practice.

How do out-of-school arts experiences influence children's development?

At the heart of this arts partnership lies the premise that the discipline, co-operation, creativity, and self-esteem developed in the arts are essential life skills, and that these skills can be taught by teachers and artists working in partnership.

Angela Elster, Vice-President Academic, The Royal Conservatory

The Contemporary Elementary School Child

The first section of this review argued the notion that educating the whole child requires attention to the physical, emotional, social, intellectual, and spiritual aspects of development. But what are some of the characteristics of today's child that interact with that development, especially as related to the arts? There is no question that personal music devices, readily downloadable music from the Internet, private violin lessons, cellular phones, figure-skating practices, and use of computer graphics programs form a cadre of arts experiences that children have outside of school, and influence their experiences of the arts in school. In this section, a characterization of children's experiences and attitudes towards the arts is developed, based on the national results of the LTTA study conducted from 1999 to 2005.

Children's Attitudes Towards School Music and Other Art Forms

In the baseline research for the Learning Through the Arts (LTTA) program, some deeply disturbing results emerged (Upitis, Smithrim, Patteson, & Meban, 2001). In Grade 1, only three out of five students report that they are happy singing. More girls are happy singing than boys – a gender difference that is entrenched as early as Grade 1. Put another way, by the time he turns six, there is a 50% chance that a boy will not enjoy singing – he will not enjoy the instrument that every one of us was born with, and carries with us always. This type of attitude was not found across art forms or across school subjects. For example, more than three-quarters of the Grade 1 children report that they are happy when they play with puppets, and 90% of Grade 1 children report that they are happy when they use computers.

By Grade 4, the gender gap for singing is even more pronounced, and overall pleasure associated with singing and music, in general, declines even further. By the end of Grade 4, only one boy in five believes that he is good at singing or good at playing an instrument. Girls don't fare much better: Only one in four thinks she is good at music.

It's not as if students don't *like* music. Of all of the out-of-school activities – such as watching television, playing sports, playing videogames, listening to music, and reading for pleasure – listening to music is the activity most favoured by boys and girls alike, with an overwhelming 83% of the Grade 4 students reporting that they like to listen to music in their spare time. It's *school* music that falls short of their expectations (Smithrim & Upitis, 2005b). This evidence, sadly, supports the view of philosophers who hold that music education has failed to pay attention to contemporary trends and behaviours of youth. These philosophers claim that failing

to modernize provides music education that is at best, irrelevant (Sloboda, 2001) and at worst, oppressive (Bowman, 2002).

School Subjects and Out-of-School Activities: Grades 1 through 6

In this section, students' views and experiences with the arts, both during and after school, are described. The descriptions are based on a factor analysis of the student responses in the LTTA national study (Smithrim & Uptis, 2005b). Various components were considered for each child (e.g., reading for pleasure, television viewing habits, subject preferences at school) to see which ones grouped or "loaded" with one another. Standard methods for data reduction were employed. (For statisticians interested in the details of data reduction techniques, principal component analysis was used as the extraction method, using the Varimax rotation method with Kaiser normalization. Factor loadings were for components at values of .30 or greater, with Eigenvalues all greater than one (Uptis & Smithrim, 2003).

Once the factors were determined, they were correlated to various other measures, including gender, household income, and achievement. The primary sources of data were student interest and attitude surveys, administered to students in Grades 1 through 6, as well as comments made by Grade 5 and 6 students during the focus group interviews.

The factor analyses indicate that there are strong and robust patterns of practice and views of the arts and schooling held by children as young as six years of age. These patterns deepen over time, and, while there is some diversification as children age, many of the basic patterns are in place by Grade 1.

When considering school and school subjects, three groupings emerge. The first relates to the enjoyment of school and the core subjects, the second relates to enjoyment of the arts, and the third relates to enjoyment of gym, computers, visual arts, and group activities. While the first school-based factor is largely gender neutral, more girls are associated with the arts factor, and more boys are associated with the factor relating to gym, computers and technology, visual arts, and group activities.

Consideration of the students' out-of-school activities produces similar patterns of results: Girls are more likely to engage in arts activities outside of school, while boys are more likely to engage in sports and solitary or screen-related activities involving television, computer games, and hand-held gaming devices.

Of the three sets of factors analyzed, the factors relating to the arts – both in and out of school – were the most complex. Generally, those students who enjoy school arts are not involved in arts activities outside of school, and those who are engaged in the arts outside of school indicate no desire for more school arts instruction. The one exception to this pattern is related to music: Students who are engaged in music outside of school are also likely to enjoy music in school. The complexity of this factor points to the importance of arts programs that are responsive to meeting the needs of children with differing experiences and preferences. Indeed, even though some students report that they don't like the arts in schools, teachers and artists commented over and over again how surprised they were that all students were able to involve themselves in the LTTA activities.

Several reasons for this discrepancy between the self-reported data and the response to the LTТА arts experiences come to mind. First, conformity to a group of peers can have a strong effect on self-reported preferences. It could be that students – especially boys – surprise themselves when they find they enjoy certain kinds of arts activities, even though they claim that don't like the arts. Many students commented that the artists were quirky, happy, and enthusiastic about their work. Experiencing the arts through the eyes of professional artists may seem more real and worthwhile than school arts experiences that might appear contrived or trivial. In any case, it is obvious that a variety of arts experiences are necessary in order to engage all students. Indeed, in a study of music education practices, Sloboda (2001) concluded that the key concept in a viable arts education for today's students is variety – in providers, funding, locations, roles for educators, trajectories, activities, accreditation, and routes to teacher competence. Sloboda suggested that arts teachers must take on a wider range and variety of roles: teacher, animateur, coach, mentor, impresario, fund-raiser, programmer, composer, arranger, and studio manager.

The results of these factor analyses indicate that classroom teachers, artist-educators, and specialist arts educators must be willing to expand their own views of what constitutes art. For example, Barone (2001) described an Appalachian art teacher who taught macramé, pottery, weaving, drawing, photography, silk-screening, papermaking, batik, stitchery, quilting, lettering, and airbrushing as part of his arts curriculum. Music education now includes, in addition to the traditional trio of choir, band, and orchestra, topics such as computer-assisted composition, steel band, fiddle, folk music, popular music, soundscapes, music from many cultures, jazz band, jazz choir, Orff, Kodaly, Dalcroze Eurhythmics, guitar, synthesized music, technological enhancement of sound, and more. With enough variety in arts curricula and modes of arts experience, gender differences in arts preferences might well decrease, and student preferences, engagement, and achievement could be changed for the better.

One of the key features of the LTТА program is that students are exposed to practicing artists—artists who are passionate about their work, sometimes eccentric, and almost always engaging. Despite the ubiquitous presence of hand-held devices in children's daily lives, the primacy of relationships remains. In addition to the artist-educator model offered by LTТА, there are a vast number of other opportunities to engage with artists outside of school. This kind of engagement can strengthen what happens *in* schools – if only indirectly – and it is this topic that is now explored.

Community Arts Programs

Community arts programs are not formally linked with schools, but nonetheless offer students myriad opportunities to take part in the arts. Such programs include dance instruction in hip-hop, ballet, jazz, and tap (Vellucci, 2009); Sunday church choirs; Saturday morning sculpting sessions at museums; and youth string groups, where a member from the local symphony works with young string players, providing them opportunities to play in ensemble. Many of these programs thrive for decades and, in some cases, serve as the central form of art-making activity for children. For example, a number of schools do not offer dance programs, but students who engage in the weekly dance classes at their local dance studios are provided with an ongoing venue to explore this art form.

Canadian researcher Kari Veblen has written extensively about the benefits of community art-making. Consider these two vignettes of community art-making (Veblen, 2000):

It's mid-morning at the Sunshine Day Care centre in Mississauga. A dozen small children have just had their crackers and juice and sit in a cosy circle on the red rug. While Mindy prompts them with gestures, they happily run through their fingerplay songs: "Little Rabbit Foo, Foo," "Itsy Bitsy Spider", and "Johnny Works with One Hammer".

Another Saturday night at the Plow and Stars Pub where an Irish session is in full swing in the back room. Fiddle, flute, tin whistle, guitar, and bodhran blast through the set of reels. This session is well known in the area and tonight several new players have shown up. Without a spoken cue, the musicians deftly flip from one tune to the next without dropping a note. (p. 8)

Community art-making exists simultaneously with more formal affiliations. The community venues and groups flourish, fade, merge, and reconstitute; often, they are structures that nourish music teaching and learning in a number of important ways (Finnegan, 1989). In order for a community group to flourish, each individual has responsibilities to the group, and the group, in turn, has an obligation to the individuals. Participants need to feel safe within the group, and need to have freedom to try things and show themselves as beginners and learners. Veblen argues that the feeling of safety that allows risk-taking "translates to other learning environments where the individual voice is encouraged in the common quest" (Veblen, 2000, p. 10). Community music can play an important role in promoting music-making for those people who do not make use of standard musical notation or arrangements (Koopman, 2007). It provides a form of process-directed, authentic learning; as such, it presents an effective venue for developing musical competence (Koopman, 2007).

Informal Arts Learning

Informal learning in the arts refers to knowledge gained by participants through their contact with peers and experts, through experiences in art-making activities, and through ongoing experimentation in the arts in the absence of a recognized or formal curriculum or instructor (Ogden, 2008). Music skills may be learned informally, primarily by making music with peers and by listening to recordings (Green, 2002; Jaffurs, 2004; Waldron, & Veblen, 2009). For example, Waldron and Veblen (2009) describe how a group of six players of traditional Celtic music learned new repertoire by using iTunes recordings, learning by ear rather than through music notation. However, the group also valued notation as an aid to their aural learning strategies.

Lucy Green (2002) interviewed 14 popular musicians to see how they acquired their considerable skills and knowledge. She found that they immersed themselves in the music and the musical practices of their surroundings. They did this by mimicking recordings by ear, which was their predominant way of learning new music. They also played with peers who shared their knowledge, skills, and musical interests, watching and imitating others as they were involved in music-making. Green observed that these musicians used various musical elements effectively, without having classical theoretical knowledge of concepts such as rhythm, pitch, timbre, and

tempo. Perhaps most impressive of all, in the early stages of this so-called informal learning, the musicians typically practiced five or six hours a day – simply because they were passionate about their learning.

To the observer, a young people's informal learning rehearsal can seem like a fragmented undertaking (Upitis, in press). There can be several conversations going on at once, even while music is being played; disagreements can sprout up that appear to have no immediate resolution; false starts abound; and all of this activity is punctuated by bursts of laughter and boisterous exclamations of criticism or praise. But the outcome is often impressive. So-called basement or garage bands are often composed of members who display considerable skills as instrumentalists. These bands frequently form strong ensembles, capable of evoking emotional responses from their audiences.

This kind of informal music learning has been characterized as “learning-in-the-making, in which relationships are made between the past and present, the inner and outer, the self and others” (Christou, Davis, DeLuca, Luce-Kapler, & McEwen, 2007, p. 64). In the arts, this learning-in-the-making almost always involves physical objects – instruments, paints and brushes, costumes, paper, wax, and metal – harkening back to both Dewey's and Dissanayake's observations about the process of art-making or artifying.

Students who engage in art-making outside the context of formal schooling or private instruction often adopt strategies for learning that are vastly different from the strategies associated with typical school learning. Green (2002) concludes that classroom teachers could – and should – adapt some of these practices, including learning by ear, working with peers, and selecting repertoire based on student choices. For, if we ignore the powerful personal connections students have to music and other art forms, we miss an opportunity to expand their arts literacy beyond the art forms that are already ubiquitous in their lives. Such expansion can help ensure that the arts are experienced deeply. And it is only through deep connections to the disciplines, to one another, and to physical ways of knowing, that students will develop the sensibilities and skills they need to thrive (Upitis, in press).

Arts and the Home Environment: Private Arts Instruction

Parents who engage in arts activities during their leisure time – including dance, drama, music, and other fine and performing arts, and also gardening, sailing, cooking, and other domestic and outdoor arts – wield an enormous influence on their children in terms of their art-making inclinations and activities (Upitis & Smithrim, 2003). Children of parents who take part in arts activities are significantly more likely to be involved in arts lessons outside of school (Upitis & Smithrim, 2003).

Studies estimate that up to 30% of elementary-aged students engage in arts activities outside of school. These activities include taking private music, dance, or art lessons, singing in community choirs, and participating in theatre productions (National Longitudinal Survey of Children and Youth, 1997). Of these, private music lessons are the most popular (National Longitudinal Survey of Children and Youth, 1997; Upitis & Smithrim, 2003).

Private or studio teaching refers to the process of learning to play an instrument through private lessons, one-on-one, with an independent music teacher, whose practice typically includes a community of 15 to 40 students (Gaunt, 2008; Kennell, 2002). Many of these teachers have completed pedagogical and/or performance conservatory certification and prepare their students through a conservatory system. Some scholars claim that a shortcoming of conservatory systems is the overriding emphasis on technique and repertoire, with scant attention given to composition, sight-reading, and overall musicality (Gaunt, 2008). Music teachers incorporating these latter aspects into their teaching help students set more holistic goals as developing musicians, often incorporating the music of the students' choice and of popular culture into their private study (Upitis, Abrami, Brook, Troop, & Catalano, 2010).

While the Ontario Arts Curriculum (Ontario Ministry of Education, 2009) makes explicit reference to out-of-school lessons as important vehicles for supplementing classroom learning, it also implies that these lessons should be regarded as an extra opportunity for the so-called talented students to engage more deeply in the arts. However, additional, out-of-school arts instruction benefits children of all abilities and social classes and, therefore should not be limited to those children already exhibiting strength in the arts. Further, innate talent in the arts is highly questionable: It is experience that contributes most to children's art-making abilities. And taking arts instruction outside of school has a further possible benefit – when generalist and specialist teachers make explicit efforts to link children's out-of-school lessons with school activities and curricula, they strengthen the learning in both venues. These links can be especially effective when students use technology to support their learning and creations – technology that can be accessed both at home and at school. This topic will be revisited in the final section of the review.

Where Do Arts Partnerships Fit In?

I think the arts are very important because when you were working with all those artists, you just think, "WOW! There is so much more to art than you would have thought of before. It's not just painting, it's not just drawing, it's so much more."

Grade 6 student, Windsor, Ontario

In order for the arts to thrive in elementary schools and beyond, the arts must also thrive in the communities and practices that surround and support schools. Put another way, the arts – as defined here – are pervasive and complex, and should involve the whole village in supporting the development of the whole child. One of the ways in which communities can contribute to arts education is through school-based arts partnerships.

School-based Arts Partnerships: Advantages and Challenges

Although the benefits of the arts to the development and well-being of adults and children alike have been widely reported (Dewey, 1934; Dissanayake, 1995; Gardner, 1973, 1983; Greene, 1995), in many elementary schools virtually no arts instruction takes place. It was once possible to rely on the specialist teachers to provide arts experiences, but schools in Ontario no longer have arts specialist teachers in every elementary school (Hill Strategies Research, 2010) and

resources for arts education are limited. Further, our teacher education programs do not emphasize the arts (Upitis, 2001; Vagianos, 1999). Thus, at present, lively system-wide programming in the arts is not available to many children. But we are beautifully poised to make it so.

In recognition of the importance of the arts, and in response to the declining support for arts programs in schools, some public schools have become specialized arts schools with teachers and students selected for their arts interests and experiences. Although there are benefits to students attending such schools, as Pitman (1998) observes, “Setting up elite arts schools for those who see their future employment in the arts does not address the main concern – that every child must be brought to a level of arts literacy that will make life joyful and productive” (p. 60).

Several models have been developed to increase the level of arts literacy in public schools through school-based arts partnerships, such as the *Learning Through the Arts* (LTTA) program. Other Canadian programs include the *Calgary Arts Partners in Education Society* (CAPES) program in Calgary, Alberta, which was formed to infuse the arts into school curricula to “enhance learning and citizenship for all students [by promoting] learning through the arts as a means to teach the core curriculum” (Vagianos, 1999, p. 20). Similarly, the national initiative *ArtsSmarts* seeks “to promote the active participation of young people in the arts...through local school-based and community-based projects ... [to integrate the arts] throughout the curriculum” (Vagianos, 1999, p. 26). In Ontario, the *Milkweed Collective*, a group of artist-teachers work with teachers and students in schools in West Toronto to provide arts enrichment to over 4,000 students (Clarkson, 2011). These kinds of programs have increased in number over the past several decades, often to bring new energy and life to schools with depleted arts programs, but also to provide important breadth and depth to schools that are already strong in the arts (Burnaford, Aprill, & Weiss, 2001; Hanley, 2003; Irwin & Chalmers, 2007).

These arts partnerships can be highly successful, as demonstrated by the LTTA research. But they can be problematic as well. It is not uncommon, for example, for schools and principals to resist having “outside” artist-teachers involved directly in the teaching of children. And even when schools embrace the talents of the local community, welcoming artists into the school under the supervision of trained teachers, it is a complex matter to schedule visits, develop curricula, and assess the learning that has taken place. Another problem with school-based artist programs is that, in some schools, the presence of an outside artist allows teachers and administrators to feel that the arts are therefore “taken care of” – and as a result, to not become deeply invested in arts education.

There are other potential complexities. One question that is rarely asked in the context of arts education partnerships is whether the artist's and the school community's conceptions of an art form are compatible. For example, in the case of the visual arts, most elementary school art programs emphasize modernist conceptions of art (Meban, 2002; Wolcott, 1996), that is, art forms that emphasize Western Eurocentric traditions. This modernist perspective is in stark contrast to the postmodern contemporary art world (Clark, 1996; Duncum, 1999; Meban, 2002) where artists use such devices as metaphor, allegory, and the juxtaposition of images and media to create art that serves to critique particular social and political features of culture and society. Postmodern art, typically, requires a different form of interpretation or reading than what is

practiced in schools. As a result, an artist with postmodern sensibilities may have a less than comfortable experience working in a school.

This was the case for Meban (2002) when she became an artist-in-residence at an elementary school in Kingston, Ontario, and found herself censoring the content of her work. Meban claimed that this self-censoring resulted in shifts in the style and purpose of her art-making with students, and therefore affected the nature of the educational experience. Meban began to accommodate the immediate interests of the students, which resulted in a visual arts program that emphasized the skills of drawing and painting, with little or no attention given to the social functions of art. This outcome begs the question of whether artists generally feel that their work is compromised as a result of an educational partnership, particularly if there is a clash between their perspectives and those of the schools.

Another complexity is apparent with school-based partnerships. When arts interventions, such as the LTTA program, are introduced in schools, it often takes years to travel the road from conceiving of oneself as a novice in the arts to feeling capable of conveying artistic skills and knowledge in a classroom setting (Patteson, 2005; Upitis, Smithrim, & Soren, 1999). Research suggests that the most effective way to develop teacher confidence in the arts is through sustained, hands-on art-making, and that the best guides are practicing artists who know their art form intimately and who are committed to sharing both their expertise and their passion for the arts (Catterall & Waldorf, 1999; Naples, 2001; Patteson, 2005; Upitis, Smithrim, & Soren, 1999; Vagianos, 1999). Support from a school's administration and the other teachers can also have a powerful influence on a teacher's willingness to use the arts in the classroom in school-based partnerships (Oreck, 2002; Patteson, 2005; Smithrim & Upitis, 2002; Upitis & Smithrim, 2003; Upitis, Smithrim, & Soren, 1999; Vagianos, 1999).

Then there is the matter of the developing relationship between the artist and teacher. While these programs are initiated, in part, to enrich the arts offerings in schools, there is also a professional development aspect that occurs for both artists and teachers. This is not always an easy relationship. As Kind, de Cosson, Irwin, and Grauer (2007) note:

In artist-in-residence programs, artists are often seen as serving the needs of the school, teachers, students, or curriculum. Yet as artists and teachers work together, both influence each other and shape each other's experiences, teaching, and artistic practices. Learning is not uni-directional, moving from artists to teachers, or even from teachers to artists. It is far more complex and interdependent and fits within bell hooks' (1994) understanding of an engaged pedagogy where learning is a shared, reciprocal act. (p. 841)

Kind et al. (2007) claim that the quality of the artist-teacher partnerships in the LTTA program had much to do with its success as a professional development model for teachers. They observed that when the teachers and artists developed strong working relationships and a comfortable rapport, they learned a great deal from one another. Artists positively responded to teachers' insights about education and child development, and teachers became excited about what both the arts and the artists themselves had to offer students. As the artists developed skills as educators and were able to engage in self-regulatory and reflective practices, the teachers'

respect for the artists grew, which in turn contributed to the success of their relationships. Other researchers have also found that the strongest teacher-artists partnerships develop over an extended period of time, sometimes years (Burnaford et al., 2001; Catterall & Waldorf, 1999).

Thus, it is an intermingling of institutional, curricular, pedagogical, and relational factors that contribute to the success of school-based partnerships in the arts (Kind et al., 2007; Oreck, 2002; Patteson, 2005; Smithrim & Upitis, 2005b; Upitis, Atri, Keely, & Lewis, 2010). One could say the same about the mix of factors that constitute successful learning environments at all levels.

A Continuum of School-based Partnerships

A publication titled *Creating Capacity: A Framework for Providing Professional Development Opportunities for Teaching Artists* was derived on the basis of extensive conversations with educators and administrators involved in nine high-profile arts organizations in the United States (Gradel, 2001). The work delineates a continuum of artist involvement in educational settings in the United States, which applies equally well to Canadian settings.

On one end of the continuum, artists may be involved in schools by giving performances or creating exhibits for students and teachers, but the artist is not expected to engage audiences in interactive learning experiences. An artist acting in this capacity is considered a “performing artist”. Next in the continuum is the “interacting artist”, who, in addition to performing and exhibiting, engages audiences in pre-performance or post-performance discussions, possibly interpreting the artistic work within the educational context. The “collaborating artist” may perform or exhibit his or her work and engage in discussions of that work, but is also engaged more deeply in the school setting as an artist-in-residence, planning instructional and assessment strategies collaboratively with classroom teachers. Using this framework, the visual artist described earlier (Meban, 2002) would have been considered a collaborating artist, as would most artist-educators involved with the LTTA program. At the far end of the continuum, the “master instructional artist” is deeply involved with curricular planning with the school partners, and acts as a leader in program design and as a mentor to other artists working in educational partnerships. Artist-educator leaders from the LTTA program would be considered master instructional artists in the Creating Capacity framework.

This document identified challenges for artists involved in educational partnerships, including the need for more time to plan and communicate with teachers, difficulties in planning assessment strategies that resonated with the school system, and conflicts between individual artistic endeavors and philosophies of the educational settings.

In addition to Gradel (2001) other researchers have identified the institutional challenges inherent in arts partnerships (e.g., Bumgarner, 1994; Burnaford et al., 2001; Hanley, 2003; Irwin & Chalmers, 2007; Patteson, Upitis, & Smithrim, 2005). These challenges are also echoed in the general literature on teacher development and change, where it has been documented that institutional influences have substantial effects on the success of educational partnerships (Fullan, 1982, 1991; Sarason, 1999). Some of these influences include teacher autonomy, availability of resources, time for planning, support of administrators, school commitment to

professional development, and provincial policies regarding curriculum, assessment, and testing (Elster, 2001; Fullan, 1991; Gradel, 2001; Patteson, 2005; Sarason, 1999).

The specific challenges identified over two decades ago by an administrator in the Kentucky Center for the Arts are still relevant today (Rowlett, 1986). Challenges that are ongoing – even with successful and sustainable programs – must always be considered in the design of educational partnerships. Rowlett (1986), a school principal whose teachers were involved with the Kentucky Center for the Arts over a period of several years, claimed that a thriving art program requires the full support of the local and regional administrators as well as the entire school staff, along with individuals to champion the program. Like others (Fullan, 1982; Sarason, 1999), Rowlett also identified the importance of procuring appropriate funds and materials, and of supporting professional development of teachers through financial support and time freed up from teaching. Rowlett noted that the objectives of the particular arts partnership had to be clearly articulated, in keeping with the sentiments expressed by Bumgarner (1994).

However, the area that Rowlett emphasized most in terms of arts partnerships was the need to involve the greater community, arguing that without the support of the community, the arts programs that he implemented would not have thrived.

Despite the cautionary tales of artist-school or artist-teacher partnerships, there is no question that these partnerships can be both successful and sustainable in the long-term. Schools with weak arts programs and schools with strong arts programs both stand to enrich their offerings through well-structured partnerships (Hanley, 2003). The very real constraints on those partnerships, if acknowledged and acted upon in the early days, will not only create a foundation for a strong alliance, but also make it possible for the alliance to continue – after the initial champions move on. Indeed, in all cases where there are thriving arts programs that rely on highly energetic and committed champions – whether arts partnerships, musical theatre traditions, or strong dance programs – it is crucial that consideration is given to systemic approaches to sustain such programs.

How can we best teach the arts?

Education in the arts is essential to students' intellectual, social, physical, and emotional growth and well-being. Experiences in the arts – in dance, drama, music, and visual arts—play a valuable role in helping students to achieve their potential as learners and to participate fully in their community and in society as a whole. The arts provide a natural vehicle through which students can explore and express themselves and through which they can discover and interpret the world around them.

Ontario Grades 1–8 Arts Curriculum (2009)

Teaching the Arts Through Multiple Means

There are many ways to bring the arts into the classroom on a daily basis. But how to do it? On the basis of the review, it is clear that there are compelling reasons to nurture arts education in the elementary years. And it is also clear that there is no single approach best suited for all students; what is required is a multiplicity of approaches. Here are four reasons for cultivating a wide number of strategies for embedding arts education into the fabric of children's daily lives:

- Children differ from one another and, consequently, often learn in profoundly differing ways, even within the arts.
- Cultural and regional characteristics require flexibility in approaches to teaching and learning, in order to maximize opportunities for children to thrive in their communities.
- Teachers bring differing strengths and areas of expertise to the teaching of the arts.
- Arts education must include learning in, about, and through the arts, and these different approaches to the arts require differing levels of resources and expertise.

British researcher John Sloboda (2001) similarly concluded that the key component to a viable arts education for today's students is variety – variety in providers, in funding, in locations, in roles for educators, in trajectories, in activities, in accreditation, and in routes to teacher competence. His response to the multiple ideas about the function of arts education is to create multiple forms. Fox (2000) makes a plea for what she calls an integrated delivery system, where there is a shared responsibility to provide the best possible experiences for young learners by bringing together funding sponsors, researchers, educators, parents, and families.

The revised Grades 1 through 8 Ontario Arts Curriculum (Ontario Ministry of Education, 2009) provides a clear structure for teaching the arts in a multiplicity of ways. The process of self-regulation described earlier in the review is embedded throughout the curriculum in what is called the “creative process”. The approaches to arts education include learning in, about, and through the arts. The justifications for teaching the arts include both the intrinsic and extrinsic benefits that have been outlined previously. The importance of parental and community involvement is stressed. And there is considerable scope for using technology and creating artist-

teacher partnerships embedded in the document. Even the thorny issue of assessment has been thoughtfully discussed within the confines of the Ontario assessment structures. Further useful tools for assessing arts learning can be found in the Canadian book *The arts as meaning makers: Integrating literature and the arts throughout the curriculum* (Cornett & Smithrim, 2000).

This final section of this review highlights some key ways to support a curriculum rich in the arts, which in turn supports the development of the intellect, emotions, social skills, physical body, and spirit of the whole child. There are other ways to support an arts-rich curriculum, but the ones discussed here are both possible and timely, and have great potential for long-term impact. Thus, particular attention is now given to the role of musical theatre in elementary schools, the use of technology to support teaching and learning in the arts, and the ways that specialist and generalist teachers can blend roles and skills to provide exceptional arts opportunities to reach all of the children they teach.

Extra-Curricular Arts Activities: Making a Case for Musical Theatre

One of the most long-standing and effective extra-curricular arts activities is participation in musical theatre. There are many accounts of the value of taking part in school musicals, based on verbatim comments of children and teachers, photographs, and student-generated artifacts. These accounts provide vivid descriptions of how students learn to trust one another, take risks, become part of a larger community, learn to interact more effectively with their peers, form a deeper and more sophisticated sense of creative identity, and gain ownership over the creative process and product (Ogden, 2008; Uptis, 1990, 2010). The kinds of outcomes that are associated with school musicals in the short-term (Uptis, 1990) are evident in the long-term as well (Ogden, 2008; Uptis, 2010).

Musical theatre has a long and continuous history in elementary schools. As Ogden (2008) notes:

Teachers are not mandated to organize musical theatre productions and yet something compels them to do so. Perhaps it is because teachers see the benefits of musical theatre ... that they are willing to give up free time to provide the opportunity for their students. Further, parents and community members who have themselves participated in such activities promote and encourage youth to become involved in musical theatre.

Ogden surmises that teacher and parental involvement in musical theatre can be linked to Erikson's (1968) notion of generativity. In Erikson's work, generativity is used to refer to the way in which people strive to make a difference, to create something to be passed on to future generations. According to Erikson, "generativity vs. stagnation" is the seventh of eight stages of the human life cycle – the stage associated with the middle adult years. Ogden claims that generativity is about educating young people by assuming the role of the responsible adult, guiding and fostering the development and well-being of individuals and social systems that will outlive the self, through parenting, teaching, and mentoring. Generativity is also about being a responsible citizen and a contributing member of a community (Erikson, 1968; O'Neill, 2006). Musical theatre encompasses all of the fine and performing arts, and encompasses some of the domestic and outdoor arts as well. As such, it is one of the most comprehensive forms of art-

making that is possible in the elementary school context. Students act, dance, sing, learn to tell a story, and interact with one another, both in rehearsal and on stage (Ogden, 2008; Upitis, 1990). Memorization of lines and action are essential to the process; even for those members of the cast who are not speaking the lines, knowing the script intimately is important for proper timing of speech and song. But participation is not limited to those performing onstage; other students may choose to be involved offstage, as scriptwriters or musicians. Yet others may prefer to be involved with the stage, itself, coordinating and creating sets, costumes, props, and lighting design – all forms of construction and design that fit well with the broad definition of arts used in the present review.

The magnitude of musical productions, including the costumes, the tickets, the rehearsals, the make-up, and the overall detail makes the experience real for the children. Indeed, the “realness” of musical theatre is one of its key attractions (Upitis, 1990, 2010). The social interaction and collaboration that accompanies this form of situated learning is also important; interdependence of the performers is key (Ogden, 2008). Musical theatre requires effective social negotiations between the cast and the crew, the children and the adults, the school and the community. It is collaborative in nature: Not only do the arts come together, but so, too, do the people. Elementary musical theatre involves students, teachers, musicians, parents – on stage and backstage, in the audience and in the community – acting, singing, learning, building, advertising, and selling tickets. Musical theatre is collaborative learning at its best: Group members must work interdependently in order to create the performance.

The generation of shared meaning amongst group members through an iterative discussion process is an essential element that defines true collaborative learning (Webb & Palinscar, 1996). Musical theatre nurtures this type of learning. Working collaboratively requires social skills such as “active listening, talking, compliments and constructive criticism, taking turns, reaching consensus, and conflict resolution” (Ogden, 2008, p. 30). These skills are required in all aspects of musical theatre.

Another form of learning – that of embodied learning – is inherent in musical theatre as well. Embodied learning has been used to describe those experiences that engage the body, senses, emotions, and imagination, as well as the intellect (Bresler, 2004). The notion of embodiment unites mind and body in learning. It provides a way of conceptualizing learning that is supported by the research on brain function and is also in line with Dewey’s definition of art (Jackson, 2002).

In a report on creative drama and young children, Pinciotti (1993) maintained that engagement in drama integrates mental and physical activity, engaging the whole child in improvisational and process-oriented experiences. Dance educator Ann Dils (2007) described how all of these forms of knowledge also intersect in the study of dance. She writes:

At its boldest, then, dance literacy reconfigures the dance curriculum as a set of interconnected knowledges through which we understand the body and movement, how these operate in various dance traditions, and what meanings they might hold for us as individuals and societies. As an activity in which people participate as doers and observers, dance conceived of as a literacy might spill over into many subject areas with

any number of outcomes: individual physical, creative, and intellectual accomplishment; improved problem-solving skills in individual and group settings; improved observation and writing skills; critical understanding of the body and dance as social constructs; social integration; historical and cultural understanding; and sensual, critical, intellectual, and imaginative engagement. Dance underscores the importance of bodily experience as an integrative agent in all learning. (p. 107)

The simultaneous incorporation of thinking, feeling, seeing, acting, knowing, and creating offers a compelling way to think about how children learn, how teachers teach, and how school activities might be organized. Indeed, Ogden and her colleagues were so taken by the positive effects of musical theatre that they created an opportunity for pre-service teachers to mount their own musical theatre as an extra-curricular experience in the teacher training program (Ogden, DeLuca, & Searle, 2010). The response was overwhelming: Close to 20% of the pre-service teachers volunteered to take part. Data collected from the participants through rehearsal observations, a post-production questionnaire, and focus group interviews indicated that participation created a sense of community and belonging for the participants, and that the authenticity of the experience resulted in immense pride on the part of the pre-service teachers. Most important of all, the research showed that as a result of taking part in the musical during their teacher training year, the pre-service teachers felt that they had both the confidence and the skills to bring musical theatre opportunities to their students.

Technology and the Creative Process

Numerous studies have demonstrated that students' explorations in music and other art forms can be enriched by the use of Information and Communications Technology (ICT) (Crawford, 2009; Savage, 2007; Sutherland et al., 2004). A recent study by Ward (2009) showed that music students were more inventive and motivated when they were given the opportunity to use ICT in their creative work. Ward found that while students were in the process of creating compositions using MIDI technology and sequencing software, they could "hear the piece as it [was] being invented, [and] the creative process [was] made transparent. Pupils [were] motivated to continue by instant feedback, and [could] capitalize on spontaneous and accidental action" (p. 155). The kinds of self-regulatory processes that support meaningful learning are also evident in informal music learning situations like those described previously. Researchers have found that informal learning works best for students who already possess considerable knowledge of music. When this knowledge of music is coupled with the self-regulatory skills that many of these students also possess, they are able to uncover musical patterns and incorporate them in their own creations (Green, 2002).

In a study of 11- to 16-year-olds, the perceived benefits of using music technology included more active involvement in music-making on the part of students, as well as increases in pride, motivation, and enthusiasm for their music learning (Savage, 2007). Other important findings focused on the ease with which students approached technology, the new approaches students used in their compositions, and the students' increased interest in pursuing further musical studies. In summary, Savage found that students' musical abilities were enhanced through the use of ICT, and that their creative processes flourished. Using technology in music teaching, in particular, must be considered against a background where musical performance is emphasized

(which is not always pleasurable) over other aspects of music, most notably those that involve creative expression or composition. We have seen that both scholars and practitioners claim that music-making is an ability that everyone possesses to some degree, and that the challenge for schooling is to make improvisation and composition a central feature of music education rather than an add-on (Campbell, 1998; Hargreaves, 1986; Kratus, 1989; Upitis, 1990, 1992). Indeed, it is no coincidence that powerful tools for composition have emerged in the popular culture in the form of computer-supported software and hardware (Upitis, 2001). If schools fail to embrace the importance of composition, and the technology that goes with it, students will *still* find ways to make music, because making music answers a call of the human condition. Put another way, garage bands will simply become more sophisticated, and move yet another step away from school experiences (Upitis, 2001).

Despite the acknowledged benefits of using ICT in arts education, it is not unusual to meet resistance on the part of arts teachers as they begin to incorporate ICT into their teaching. There are two major causes of this resistance. First, tools like midi-sequencers and electronic portfolios support a student-centred and creative approach to music teaching, challenging the traditions of the teaching approaches in arts education, which are often curriculum and repertoire driven, and top-down in nature (Gaunt, 2008). In addition, teachers may struggle with using the technology itself, while their students may find the tools relatively easy to use. Students often have more fully developed ICT skills than their teachers, because they have considerably more exposure to the web and to multimedia tools (Crawford, 2009; Sutherland et al., 2004). They may also have easier access to mobile devices and music software, and have a different range of knowledge and awareness of musical styles than their teachers. In the hands of a teacher who is ready to capitalize on these student strengths, and with the support of web-based tools, these student characteristics can serve to strengthen students' music-making and other art-making activities, potentially engaging them more deeply in their studies.

Using Web-based Technologies to Support Self-Regulation and the Creative Process

In many jurisdictions throughout Canada – including many parts of Ontario – students and teachers are required to use portfolios to shape and document their learning. An electronic portfolio is a digital container for storing and organizing text, images, video, and sound. Electronic portfolios can also be designed to support learning processes (Abrami & Barrett, 2005; Abrami et al., 2008). Electronic portfolios that are web-based provide remote access to facilitate learning in any number of environments. Research demonstrates that when students use portfolios, they assume more responsibility for their learning and set goals accordingly (Avraamidou & Zembal-Saul, 2003; Montalvo & Gonzalez Torres, 2004; Riedinger, 2006; Zellers & Mudrey, 2007).

Electronic portfolios, such as ePEARL, (**E**lectronic **P**ortfolio **E**ncouraging **A**ctive **R**eflective **L**earning) have been shown to contribute to students' abilities to self-regulate their learning, and also to enhance literacy skills and communication skills (Abrami et al., 2008; Wade, Sclater, & Abrami, 2005). Another advantage of using electronic portfolios is that they provide a way of storing work that is less cumbersome than traditional portfolios in the arts.

ePEARL is one of a suite of tools in *The Learning Toolkit* developed by the Centre for the Study of Learning and Performance at Concordia University, and is used throughout Canada and other

parts of the world. ePEARL focuses on developing student self-regulation. Long-term studies demonstrate that ePEARL not only produces gains in educational competencies and self-regulation in students, but also supports changes in teaching practices to help students become more self-regulated in their learning (Meyer, Abrami, Wade, Aslan, & Deault, 2010; Abrami et al., 2008).

A two-year study made use of ePEARL to promote self-regulated learning with Grade 5 students in a public elementary school in Toronto. Students learned about energy and ecology through an arts-based approach to these topics (Upitis, Abrami, & Patteson, 2009; Upitis, Abrami, & Patteson, 2010). Topics such as wind turbine energy and solar power were explored, and the students used the artistic medium of dance to portray some of their learning. Data were compiled through classroom observations; interviews with students, teachers, and the artist-educator involved in the project; and comparisons of responses to a pre- and post-questionnaire, designed to ascertain the degree of self-regulatory practices used by the students. Findings supported the conclusion that an electronic web-based portfolio supports both the process and products created. The portfolio supports the learning process by providing students, parents, and teachers with opportunities to set goals, create strategies, and reflect on learning. Because the portfolio is web-based, students, parents, and teachers can access the portfolios both at home and at school. Products are also supported by the portfolio, as the videos created by the students were easily stored and shared. Students expressed considerable enthusiasm for the tool and demonstrated significant growth in understanding how to set goals and critique the work of their peers.

By using ePEARL – whether to study music, dance, visual art, cooking, or science – students can personalize their portfolios; set general and task-specific goals; create new work; reflect on, edit, and share work; and respond to feedback from teachers, peers, and parents. A specialized version of ePEARL has also been developed for music teaching and instruction, called iSCORE (a web-based learning portfolio) (Troop, Brook, & Upitis, 2011). iSCORE differs from ePEARL in that music content is embedded in the software, and special tools, such as a music editor and a rehearsal calendar function, form part of iSCORE. The three phases of self-regulation described earlier are embedded in both ePEARL and iSCORE under the titles *planning*, *doing*, and *reflecting*—and these titles mirror the creative process described in the Ontario Arts Curriculum (Ontario Ministry of Education, 2009).

In order for web-based portfolios and other ICT tools to be effective, teachers need to have ready and reliable access to technological resources (Ward, 2009). One of the advantages of web-based tools, such as ePEARL, is that access to the tools is ubiquitous: As long as teachers and students have web access, they also have access to their work. In addition to ready access, teachers also need to receive appropriate technical support as they require it, and to have multiple opportunities to develop their professional skills (Ward, 2009). The lack of such support can easily prevent teachers from being enthusiastic about including technology in their teaching practices.

One of the most powerful possibilities with the use of web-based portfolios such as ePEARL and iSCORE is that they allow students to link the various aspects of their art-making, both in school and outside of school. Hundreds of thousands of Canadian students take private weekly lessons to learn to sing or to play a musical instrument. But the vast majority of people who take lessons

in their youth do not play their instruments when they become adults. Worse yet, students often quit just as they reach a level of proficiency that would make it possible for them to play throughout their lives. Research indicates that the students who take a more active role in their private music instruction, and also link it to their informal learning and classroom experiences, are more likely to be engaged in their learning in both the short- and long-term (Upitis et al., 2010). These students, in turn, are more likely to continue to be involved in art-making as adults – activities that provide fulfillment throughout life.

The Elementary Teacher

Teachers' Direct Experiences with Art-Making

It has been emphasized that the arts are important for experiencing the joy of creation, developing attention to detail, attaining fulfillment during school and beyond, and learning ways of expressing thoughts, knowledge, and feelings beyond words (Eisner, 2002; Greene, 1995; Howard, 1992; Koopman, 2005). It is these contributions that teachers must experience directly, in order that they may bring similar benefits to the classroom.

There are many ways for teachers – both generalist classroom teachers and arts specialists – to experience the arts in ways that honour the very essence of artistic work. The first way is to be involved in the arts in one's non-teaching time – whether that involvement is gardening, boat-building, sculpting, cooking, or playing the fiddle. We have seen, throughout this review that the power of arts experiences lies in the engagement of the whole being. Teachers must themselves be thus engaged if the arts are to attain their transforming power. Uniting teacher and artist is not a new idea (Szekely, 1978), but it is an important one. In Franklin's (2000) exploration of Toronto teachers' phobias about teaching music, he suggests that, "If the child is to feel the art alive within themselves, so must the teacher" (p. 33). Such direct arts experiences, if they bring life and joy to the teacher, are also likely to find a place in the classroom. This is true for all teachers – specialists and generalists alike.

Adult Learning in the Arts

Mezirow's (1996, 2000) research demonstrates that meaningful adult learning is a complex and multi-staged process, in which beliefs and actions stem from new personal experiences. The goal of transformative learning is for the adult to arrive at "a more inclusive, discriminatory, and integrative perspective" (Mezirow, 1996, p. 167). According to Mezirow, it often takes a powerful catalyst to prompt an adult to engage in the "partial dissolution of identity required by the transformative learning process" (Patteson, 2005, p. 12). Mezirow calls this catalyst a disorienting dilemma. It is often after encountering such a dilemma that the adult is plunged into a new meaning-making process.

In her research on teacher transformation through art-making, Patteson (2005) demonstrates that art-making, even in an informal way, can itself serve as a disorienting dilemma. Livingstone (2000) – who reports that Canadians spend an average of 15 hours a week on informal learning, much of it in art-making activities – claims that perspective transformation can provoke a concentrated period of informal learning. The findings of these two scholars together suggest that

informal learning can lead to perspective transformation, and conversely, perspective transformation achieved in some other way can lead to increased interest in informal learning. Both informal learning and art-making are central features of successful professional development programs for teachers, where new skills are developed and self-regulatory strategies are enhanced (Upitis, Smithrim, Garbati, & Ogden, 2008).

Generalist and Specialist: Partners in the Dance

In recent years, North American educational reforms have focused on shortfalls in the areas of language, mathematics, science, and technology. At the same time, there has been a reduced commitment to arts education among policy-makers and educational leaders (Oreck, 2002). Even in schools with strong commitments to the arts, the political pressure to raise standardized test scores and the lack of on-going training serve to weaken teachers' efforts to teach in the arts, particularly when arts specialists are no longer present in schools to carry the mantle of arts education (Hanley, 2003; Hills Strategies Research, 2010; Stake, Bresler, & Mabry, 1991). This is a deeply systemic problem. One would be hard-pressed to find a teacher education program in Ontario that provides substantial preparation for lasting engagement with the arts. In some universities, graduates with teaching degrees have had no coursework in teaching methods for the arts, and as the Hill Strategies Research (2010) report on music education indicates, 58% of the classroom teachers in Ontario do not have a background in music. Further, at the same time that many Canadian school districts have eliminated arts specialists with a single subject focus, generalist teachers are required to implement extensive arts curricula that require specialized skills in multiple art forms. While it would be exceedingly difficult to change the entire pre-service structure in Ontario universities, we might do well to consider infusing the arts into the pre-service program in other ways. As described above, pre-service teachers may benefit by participating in a voluntary extra-curricular school musical; they may also benefit from the use of web-based portfolios, such as ePEARL. No matter how it is done, more emphasis on arts education in teacher education is essential: for too long we have neglected the arts and teachers and students are being deprived of a full education as a result.

For most classroom teachers, the curriculum demands of the arts are daunting. This is particularly true for music. For teachers unfamiliar with music notation, the entire music curriculum can seem unwelcoming and threatening. But it need not be the case – especially if the teacher has some direct experience with an art form of some kind, as described in the opening of the review. Teaching the arts from one's own strengths in the arts, broadly conceived, can be both inspiring for students and satisfying for teachers. When teachers approach the arts from areas of personal strength, they are likely to bring excitement, integrity, and even passion to the classroom. When these same teachers approach the arts by beginning with the curriculum guidelines, they often are accompanied by feelings frustration and incompetence, which are then transferred to the students they teach.

In addition to the dearth of specialist music teachers in Ontario, the lack of funding to buy appropriate instruments, and the challenges in finding time during school to schedule music and other arts activities are prevalent (Hill Strategies Research, 2010). The Hill Strategies Research survey confirmed that Ontario was not among the stronger of the provinces in terms of music support. The research found:

Three regions of the country have a very large percentage of elementary schools with a specialist music teacher: Quebec (87%), the Atlantic provinces (86%), and British Columbia (83%). In contrast, Ontario elementary schools rely very strongly on general classroom teachers with no music background. Ontario has the highest proportion of elementary schools where music is taught by general classroom teachers with no music background (58%). (p. 9)

In contrast, Quebec, British Columbia, and the Atlantic provinces have relatively strong support for music education as evidenced not only by the presence of specialist teachers, but also by higher levels of funding, adequate and appropriate instruments and space, and support from classroom teachers, parents, and administrative colleagues (Hill Strategies Research, 2010).

These deficiencies in resources for teaching the arts – both human and material – are long-standing. In response to these widespread and long-term deficiencies in arts teaching, professional development programs have been launched to increase the level of arts literacy of teachers in public schools in the United States (Mitchell, 2000) and in Canada (Babineau, 1998; Vagianos, 1999). The full range of such programs includes summer institutes, short courses in the arts, and other partnerships involving teachers, artists, arts organizations, ministries of education, and school districts. Some of these programs are at the school district level, where regional resources are harnessed to form collaborations between teachers, artists, and cultural institutions (Babineau, 1998). Others are national or even international in scope (Mitchell, 2000). The purpose of these programs is “not to transform classroom teachers into arts specialists. Rather, the aim is to increase teachers’ understanding of ... the arts ... and to promote creative teaching and learning” (Oreck, 2002, p. 2). Whenever possible, elementary classroom teachers should be supported and encouraged to take part in these programs. The Hill Strategies Research (2010) report echoes this theme, stating, “Ministries of Education and school boards need to do a better job of promoting and supporting professional development amongst those who are required to teach music but may not have a strong music background” (p. 10). They also call upon universities to enhance both pre-service and in-service offerings.

In addition to receiving the necessary training to provide arts instruction, elementary classroom teachers can – and must – provide classroom environments conducive to art-making. Creative and meaningful learning in, about, and through the arts is more likely to happen when teachers make learning active, enable learning through social interaction, provide multi-sensory experiences, and promote practices that help students develop skills in self-regulation (Rettig & Rettig, 1999). We need elementary teachers who are willing to engage in professional development opportunities, to take part in their own informal learning, to learn from artists and specialist teachers, and to contribute to the learning of those artists and specialists in turn. In these ways, the elementary classroom teacher has much to contribute to the development of the whole child through the arts.

But making this contribution can be hard. With competing academic demands – like raising math scores – drama and dance often take a back seat to math and science in the regular classroom. Coupled with many teachers’ lack of confidence and the fact that, as one child put it, “No one cares what they get in art or music”, it is no wonder that the arts are underrepresented in the daily school life of the child – regardless of what it says on the timetable. For this reason alone, specialist arts teachers are vital to the development of a school culture that values the arts in all

forms. The arts will thrive only if they are regularly scheduled and fully integrated into the school culture, and it is much easier for that scheduling to occur when specialists are assigned to the arts subjects. Further, we cannot expect classroom teachers to be expert in all subjects—mathematics, art, science, language, dance, history, music, drama, and physical education. Specialist teachers are the ones who can concentrate on learning in and about the arts, working closely with classroom teachers to develop powerful curricula for learning through the arts. Indeed, the Hill Strategies Research (2010) report found that, for music at least, “the strongest music education programs have appropriate funding, student interest and time, a strong specialist teacher, appropriate instruments and space, as well as a supportive principal and parents” (p. 2). While all of these components matter, it is clear that the specialist teacher plays an undeniably important role, as illustrated by this observation:

I should say that my school really has a good music program because I [the principal] have an incredible and qualified teacher. I do not think that I will be able to say the same thing next year, because she is moving and there is no one else qualified to teach music in our school. (Hill Strategies Research, 2010, p. 3)

Arts specialist teachers, in order to be most effective, need deep preparation in one or – preferably – more art form. But they also require an understanding of general classroom and teaching issues and both the preparation and mindset to work both in and through their art form. In other words, they need to be ready to teach children how to dance, draw, compose, perform, and appreciate art, as well as to teach children about other subjects, through the arts and in partnership with others in the school community. The most effective specialist teachers also show a continued commitment to personal and professional development in teaching and in the art forms in which they specialize. Indeed, this can be said for any teacher who remains vibrant over the course of his or her career.

And it is this continued commitment of teachers – both personal and professional – that forms the backbone of strong schools. When committed teachers are supported by parents, administrators, artists, and students, when teachers and their colleagues have the time and resources they require to do their jobs well, and when teachers deeply understand the lifelong contributions that the arts make to living and learning, only then will they be able to provide a rich arts education – one that will develop the intellectual, emotional, physical, emotional, and spiritual potential of the children they teach.

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