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Arts Training in Education

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Introduction

The ways in which training in the arts and broader academic achievement and learning interrelate is receiving increased research attention and also heated discussion right now. Some of the most intense discussion is within the arts community itself (e.g. Eisner, 1998). As Dr. Constance Gee told me, when the arts community attacks those who doubt the value of arts in education, they are often like a firing squad that stands not in a straight line, but a circle.

These days when advocates of arts in education aim at one another, it is frequently over issues of value or role. The possibility that the arts will be valued for the wrong reasons (Eisner, 1998) is a matter of concern if one must choose between reasons for valuing the arts. But, I, and I hope many others, reserve the right to value the arts for more than one reason. I wish to review here increasing evidence that supports more than one path, in fact many paths for arts training to aid education. The paths do not seem to interfere with one another: the contrary is much more likely. I hope that as we learn more and more about roles and values of the arts in education, the debate will increasingly shift from choosing between paths to choosing among possible designs which exploit many values within the limitations of available budget and time.

Categories of Impact

Research on the role of the arts in education has added new information in the last few years, and relevant research continues and in fact is expanding. Presently, there is evidence for at least four ways in which arts can have value to education:

1. Values Specific to the Arts
2. Aid and Support for other Topics of Learning
3. Effects on General Attitudes and Skills for Learning
4. Aid in the Development of Useful New Specific Skills at Thinking (Mental Stretching)

1. Values Specific to the Arts are reason enough to insist on the arts in education: they also underlie the power and appeal that fuels other impacts we will discuss. Music, visual arts, dance, drama, as examples, provide tools and values which cannot be duplicated by other means. Why there are arts, how they do what they do, why and how they give such pleasure and meaning, are enormous research areas that have been approached in many different ways throughout human history and are again being studied actively at this time. Much is known, much not yet fully understood. It can be argued (e.g. Goodman, 1978) that the explorations, discoveries and insights from the arts are on a par with the sciences in giving sense and meaning to the world where we live. That arts are consistently a part of human society and history implies deep connection to what we are as humans, and what we wish from our world. Most agree that introduction to the arts and their specific values should be a part of complete education. But, even this can be hotly debated at times of budget stress. Beyond this point, there is less consensus. How extensively and in what ways should arts training be a part of an academic education? Many schools still feel that a brief introduction to various arts emphasizing appreciation is enough. We will return to this issue.

2. Aid and Support for other Topics of Learning: Even schools which offer only limited training in the arts often use them to illustrate, elucidate, create interest in, or in other ways help to teach some topic not directly part of arts training. Visual arts and music is often used, for example, to enrich the teaching of history or social studies. Songs or rhymes can help children to learn and remember numbers and letters. Even medical students use a slightly bawdy verse to remember the names of nerves. Advertisers have long since understood the value of the arts in getting messages to the public. Powerful new applications of this kind to education continue to be developed.

3. Effects on General Attitudes and Skills for Learning: My colleagues and I have developed some of the recent evidence (Gardiner et al, 1996; Gardiner, 1997; Gardiner, 1998a,b) that arts training can help to instill general behaviors, skills and attitudes concerning learning which can be more broadly useful to education beyond the arts programs themselves.

In a first study (Gardiner et al, 1996; Gardiner 1997), students in two Pawtucket, R. I. Elementary Schools, who participated in a test arts program, that developed not only appreciation but also arts skill, were found from their kindergarten achievement test scores to have begun first grade significantly behind controls who received a standard arts program for that district which placed less emphasis on developing arts skills. By the end of first grade, the test group had nevertheless caught up to their control peers in reading as measured by nationally standardized testing. These test gains in reading were found to parallel improvements in classroom attitudes and behaviors as assessed by Lickert scale questionnaires given to classroom teachers. A later study, based on a similar arts training pedagogy, of Minneapolis students of the same age (Gardiner, 1998b) has again found improvements in Reading that parallel closely improvements in classroom behavior as rated by the teachers. These differences from controls were seen even with very small increases in the actual amount of time devoted to the arts training, but with significant changes in what was done during arts training time.

The specific methods of arts training common to these studies is Kodaly Music training. The Kodaly training is a methodology for building skills in individual and group singing that, along with specific musical skills, gives the children an opportunity to practice and build individual attitudes of attention, learning and sensitivity to the group, and capabilities for working together. It is possible to hypothesize that attitudes and behaviors towards learning in this arts training helped to build the more general improvements in classroom attitudes and behaviors that were documented by the teachers (Gardiner et al, 1996) and were in turn closely related to improvements in reading. Teacher reports support this viewpoint, as does recent data showing greater improvements in classroom behavior in those students receiving more extensive Kodaly training (Gardiner, 1998b).

4. Aid in Development of Useful New Specific Skills at Thinking (Mental Stretching): The same studies cited above (Gardiner et al, 1996; Gardiner, 1997; Gardiner, 1998a,b) showed an even larger impact by arts training on learning in math than in reading. This greater impact is beyond what can be accounted for by improved attitudes or general learning behaviors. Furthermore, this greater impact on math has continued to appear in more recent studies in elementary children (Gardiner, 1998b), and in studies of 4th grade and

8th grade students based on other forms of music training than the Kodaly method (Gardiner, 1998a). Evidence of mental stretching due to arts training, specific to some aspects of reading but not others, can also be seen (Gardiner, 1998a,b).

A theory of Mental Stretching (Gardiner 1997,1998a) has been proposed to account for such extra boosts or asymmetries in learning. The theory proposes cross-fertilization of specific mental skills or capabilities from one area of learning (e.g. arts) to another (e.g. math) if the required mental skills to be developed are sufficiently closely related.

The following example can help to illustrate the value of Mental Stretching (Gardiner 1997,1998). First and second grade math students must begin to develop thinking in terms of the 'number line': i.e. this begins with realization that there is an order to numbers, '2' lying between '1' and '3', '2' greater than '1' and '3' greater than '2', etc. Learning how to think about numbers in this way is critical to understanding how best to do, and still more essentially, how to use addition and subtraction. To sing properly on pitch needs development of somewhat similar mental operations: i.e. development of thinking concerning a 'pitch line' that keeps track of pitch levels in relation to the levels of the musical scale. The Mental Stretching theory proposes that the thinking involved in ordering and other aspects of 'line' mentation and processing developed in one application (e.g. music) can help fertilized development in another (e.g. math).

Although the initial study (Gardiner et al, 1996) showed evidence, through control groups, of the effects of music learning on math learning, it is plausible that effects in the opposite direction could take place as well (Gardiner, 1998a). Dialogue within the brain could help to ratchet up capability in different areas of application. Investigation will continue into this possibility. While initial work has focused upon early elementary learning, further work (Gardiner, 1998a) has detected evidence of similar types of interactions between arts training and academic learning in late elementary and middle school students. These interactions are in relation to not one, but several types of arts training pedagogy.

It is important to emphasize that the Mental Stretching process and evidence of behavioral impact discussed above occurred in studies of inner-city children, where neither they nor their parents had a role in selection of the nature or extent of arts training. Interpretation of the extensive literature correlating higher academic achievement with arts training is often confounded by the difficulty of controlling level of exposure to the arts. Since more educated or affluent parents often place great value on arts training, arts training may be more a marker of family influence than a causal agent. The design and controls used in

Gardiner et al, 1996, and again in Gardiner, 1998b. appear to rule out such a problem of interpretation.

Cautions and Implications for Program Design

The current data reviewed above supports the idea that a variety of opportunities for arts programs can contribute significantly to education. Such opportunities should continue to be studied and developed. They do not mean that simply having arts programs within a total program will in itself guarantee benefits . To properly exploit arts training potentialities is as likely to depend on good design based on what is already known, good teaching, and continued research, and development of understanding of the factors involved and related theory, as is true of any other area of education.

Consider, for example, some implications of the findings concerning mental stretching reviewed here. The impact of arts training on math learning that have so far been documented are very specific: they have to do with the nature of the specific arts training used, the type of math skills students were learning, and the possibility that there was enough overlap in the kind of mentation that needed to be learned in the different topic areas that learning in one area could help support learning in the other. The degree to which similar effects on math learning can be expected with a different type of music training, or a different type of arts training such as painting, drama, or dance would depend, according to the theory proposed here, on the specific nature of arts skills being developed. And the possibility of impact on other areas of math, or on some other subject area, would again depend on the exact nature of mental skills in each area, and the degree to which they overlapped. From the viewpoint of this theory, we can anticipate that interrelationships between arts training and other areas of learning can change at different stages of learning. Recent data (Harland et al, 1998), though open to other interpretations, supports the possibility that in upper grades there can be strong interactions between music training and not only math but also verbal language skills, while drama training interacts with language, but not with math. Such a result is plausible when the types of specific training involved is kept in mind. It is plausible to think of interrelationships of mentation skills in upper grade music training to skills needed in both upper grade math and verbal language, or between drama and verbal language skills, but not so strongly between drama and math skills.

The current interest in using arts programs to help build more general creativity in students seems well founded. Arts programs clearly can be designed to require, and present opportunities to be creative with regard to art productions. It seems plausible,

from what is already known that through mental stretching and other paths, that capabilities for applying creative skill to topics outside of the arts may well develop as a result, though this remains to be demonstrated. However, there does not seem reason to expect magic bullets: research into mechanisms, good course design, good teaching will still be needed.

Arts Skill

An important feature of the research reviewed above is its focus on the impact of arts training where students are expected to not only develop appreciation of, but also skill with an art. As noted (Gardiner, 1998a) what is critical, in our theory and so far supported by our data, is that both appreciation and specific arts skills are developed. Some arts experiences (e.g. Eisner, 1998) can have different impacts than others, and I wish to propose that development of skill enriches impact in most of the paths that have been discussed.

At the present time, even in education programs where children are exposed quite extensively to the arts, very frequently only a small number are expected to develop more than rudimentary skill with the art form itself. In my view, this lack of emphasis on the development of skill can severely attenuate the full impact that arts training can have on learning, both within and beyond the art. Within an art, development of skills in and appreciation for an art are interdependent. We would not expect to learn much about math until we start to do math, or reading: why should the arts be so very different? I doubt that they are. From my experience as a teacher, I have seen that children especially value being able to learn through doing. They can be very poor observers unless they can begin to sense that this is something they can begin to do themselves: then, suddenly, you have their full attention. This is not to say that students must focus on skill at the expense of appreciation or enjoyment of the art: it is the enjoyment and appreciation of the art that, in our experience, strongly amplifies the motivation in the student to build skills. They want to be able to do what they admire, and will strive to do so.

Brain research over the last twenty years in which I have participated has developed enormous evidence that activity in the brain at work is very different from the brain at idle, and that what goes on in the brain changes very substantially as what we are doing increases and changes. The value of doing, not just observing, to learning may perhaps have partly to do with the special qualities of brain involvement.

We can look back, then, at the four types of impact outlined above. The impact of values specific to the arts can be expected to deepen, to improve in quality, as skill as well as appreciation develops. The impact from training of Attitudes and Skills for Learning and Mental Stretching depend specifically on development of skill in the art or arts. Only one type of impact, aid and support for other topics of learning, seems less sensitive to the development of skill as compared to appreciation. Even here, it is plausible that interactions between the arts and other academic subjects will increase as openness to training in the art develops. Furthermore, level of skill should increase as well. The important recent work of Frances Rausher and Gordon Shaw (e.g. Rauscher et al, 1993; Rauscher et al, 1997) provides further evidence of the impact of arts training on academic learning when training of skill is included. In their data, simply listening to music, as opposed to making it, appears to produce only brief impact in humans.

The training of skill in an art is still thought of by many as specialized learning that should be provided only to those with special gifts or who can afford private instruction. But there are pedagogical methods, for example Kodaly, which demonstrate that it is possible to develop significant arts skill within the time constraints of typical education programs. Although the Kodaly method was specifically developed for use in Hungary, it was adapted in other countries as a pedagogy which provided for every student as a part of their standard education beginning at kindergarten.

Research into teaching involving the arts in education is continuing. Along with other issues of integration, strong attention should be paid to making certain that students develop not only appreciation but also skill in the arts. Not only a small number, but all students can very likely reach a quite reasonable level of skill that is much higher than current expectations in most schools. The research above suggests that this can be valuable to students in a number of different ways. This may well require changes in the way teachers are prepared for careers involving the arts in education, as well as in the ways arts education is thought of in the schools, but this is a challenge that seems worth meeting.

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