

# Learning In and Through the Arts: Curriculum Implications

**JUDITH BURTON**  
**ROBERT HOROWITZ**  
**HAL ABELES**

*Center for Arts Education Research  
Teachers College, Columbia University  
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## OVERVIEW OF THE STUDY

*“You are talking to someone who had very little to do with the arts before I came here. This has changed me enormously. I have an appreciation for the arts that I never had before. I have seen youngsters come through here who perhaps weren't as motivated, and I have seen them take off and fly because we pulled them into an art and opened up new avenues. I couldn't work anymore in a school that wasn't totally immersed in the arts.”* Middle School Principal

Based on a study of over 2000 pupils attending public schools in grades 4–8, a group of researchers from Teachers College Columbia University, found significant relationships between rich in-school arts programs and creative, cognitive, and personal competencies needed for academic success.

The study began by asking three inter-related questions: What is arts learning? Does it extend to learning in other school subjects? What conditions in schools support this learning?

The researchers found that young people in “high-arts” groups performed better than those in “low-arts” groups on measures of creativity, fluency, originality, elaboration and resistance to closure—capacities central to arts learning. Pupils in arts-intensive settings were also strong in their abilities to express thoughts and ideas, exercise their imaginations and take risks in learning. In addition, they were described by their teachers as more cooperative and willing to display their learning publicly.

In schools with high-arts provision, these competencies and dispositions also emerged in other subject areas when particular tasks evoked them. In such schools, teachers of non-arts subjects, such as science, math, and language, frequently speak of what they see as the extended effects of arts learning on learning in their disciplines. They comment on abilities such as thinking creatively and flexibly, imagining ideas and problems from different perspectives, taking imaginative leaps, and layering one thought upon another as part of a process of problem solving. In arts-rich

schools, pupils are also seen by their teachers as curious, able to express ideas and feelings in individual ways, and not afraid to display their learning before their teachers, peers, and parents.

These responses frame what is interpreted in this monograph as a dialectical relationship between the different subject disciplines. Learning advances in depth through the challenge of traveling back-and-forth across subject boundaries.

The study found that the arts add the kind of richness and depth to learning and instruction that is critical to healthy development only in schools where arts provision is rich and continuous, administrators supportive, and teachers enlightened. The policy implications of this study are profound, particularly as they impinge upon in-school arts provision and teacher education.

## Methodology of the Study

The Learning In and Through the Arts study was undertaken by the Center for Arts Education Research at Teachers College Columbia University and examined the artistic experiences of over 2000 pupils in public elementary and middle schools.<sup>1</sup> The goals were to determine what cognitive, social, and personal skills are developed through arts learning, if these competencies have a more general effect on learning, and what conditions in schools support this learning.

We recognized at the outset that the practice of arts teaching in schools is extremely diverse. The arts are taught in a variety of ways and configurations and in the contexts of four disciplines—visual arts, music, dance, and drama. Some programs in schools integrate the arts, while others integrate the arts within the general academic curriculum. Still others teach them

<sup>1</sup> Support for this study was provided by The GE Fund and The John D. and Catherine T. MacArthur Foundation. Details of the procedures and analysis employed in this study can be found in Burton, Horowitz and Abeles (1999). Learning In and Through the Arts: Transfer and Higher Order Thinking. New York: Center for Arts Education Research, Teachers College, Columbia University. This report was prepared with the invaluable assistance of Barbara Salander, Research Associate of the Center.

as separate disciplines. Moreover, the arts can be taught by three different kinds of instructors, each of whom brings divergent goals, practices, and conceptions of arts learning. These are specialist teachers, general classroom teachers, and external arts providers such as artists and performers from cultural institutions. In light of this diversity we rejected a narrowly focused study of one program, art form, or behavioral outcome on the basis that such an approach would most likely be context specific and not reflective of a broad spectrum of learning.

We thus designed a study to examine a broad spectrum of arts learning as it is played out within public schools and programs. We combined several standardized measures, with paper and pencil inventories, designed to elicit the responses and opinions of pupils and teachers. Specifically, we administered the Torrance Test of Creative Thinking, which measures creative thinking abilities. We also employed the Self-Description Questionnaire, which measures self-concept, and we administered the School-Level Environment Questionnaire as a tool for evaluating aspects of school climate, such as the way teachers and pupils interact.<sup>2</sup> Where standardized measures did not exist, or were inadequate, we designed and administered our own measures.

<sup>2</sup> According to the test author, the Torrance Test of Creative Thinking measures creative thinking abilities, defined as a constellation of generalized mental abilities commonly presumed to be brought into play in creative achievements (Torrance, Ball and Safer, 1992). Although this test has been criticized in recent years for overly emphasizing fluency and not considering the intrinsic, personal meaning and value of creative thought, the researchers selected it because it has remained the most widely used yardstick for measuring the creative impact of arts learning. Other advantages are that it is relatively easy to administer and is normed for different age groups.

The Self-Description Questionnaire (SDQ-I) is based on a hierarchical model of self-concept developed by Shavelson (Shavelson, Hubner, and Stanton, 1976) and provides data on three areas of academic self-concept: reading, mathematics, and general-school (Marsh, Byrne, and Shavelson, 1988).

The School-Level Environment Questionnaire (SLEQ) was selected to measure factors associated with school climate. Several of these dimensions approximated potential outcomes of arts programming derived from our interview data, such as changes in teacher practice and teacher-student relationships (Rentoul, J. and Fraser, B. J., 1983).

Specifically, the research team developed a Teacher Perception Scale to measure teachers' judgments about qualities such as risk-taking and creativity on the part of individual children. The Classroom Teacher Arts Inventory assessed teachers' practices and attitudes regarding the arts, and the Student Arts Background Questionnaire determined how much in-school experience children had had with the arts.<sup>3</sup>

While these measures gave us a great deal of critical numerical data, we also sought to capture a more evocative picture of arts learning, to probe deeper meanings and to enlarge our understanding of the context in which the learning was taking place. Thus, we interviewed school administrators, general classroom, and specialist subject teachers in science, mathematics, and language. Over the two-year span of the research the team spent many hours in the schools talking with administrators, teachers, and children, observing classrooms, and attending a diverse range of performances and exhibitions. At team meetings we examined field notes, pupils' artwork, writing, and photo-documentation of in-school activities.

Before the study began, we assumed that we could find research sites where arts experiences would be variable but consistent within schools. The number of arts subjects offered in the schools we observed ranged from none to three or four arts subjects. Depending on the particular situation, arts instruction was offered by specialist teachers, taught by classroom generalists, or provided by visiting artists and performers.

<sup>3</sup> The research team developed the Teacher Perception Scale (TPS) to measure classroom teachers' viewpoints of individual children within four dimensions (expression, risk-taking, creativity-imagination, and cooperative learning). These dimensions were based upon analysis of teacher interviews, and reflect potential outcomes of arts teaching not directly measured by our other quantitative instruments. The Classroom Teacher Arts Inventory (CTAI) contains scales measuring classroom and academic teachers' practice and comfort level with arts education. It examines the degree to which teachers believe they integrate the arts, collaborate with other arts providers, and whether they intentionally use arts as a tool to teach other subjects. In the Student Arts Background (SAB) questionnaire, children were asked to indicate the number of years they had received in-school arts instruction.

We invited a broad cross section of arts educators to suggest elementary and middle schools that fit within one of five types reflecting this diversity of provision. By studying two schools from each type we believed we would be able to make comparisons among different approaches to arts teaching. We visited 28 of 150 nominated schools, often several times, and it quickly became apparent that schools did not fit easily into specific types. Instead, we found pockets of different kinds of arts instruction existing side by side in single schools, even across single grade levels. We found that children in many schools received unequal arts provision, sporadic teaching, and unevenly sequenced instruction.

In light of this discovery, we concluded that the best approach would be to treat each school as a complex combination of types of arts provision within which we could track the experiences of individual groups of children. Thus, we rated each school in our study on three seven-point scales, identifying the degree to which they were arts integrated, arts-rich or employed external arts providers.

We invited 18 schools to participate in a preliminary data collection for the study. Twelve schools were selected for more extensive study, and four of them became sites for in-depth case studies. In all, we examined the artistic experiences of 2046 children in grades four, five, seven, and eight. They attended public schools in New York, Connecticut, Virginia, and South Carolina.

## The Arts and Creative Thinking Abilities

We first examined our numerical data in order to see if there was a pattern to the kind of art experiences to which children were exposed in schools. We were particularly interested in how these experiences related to creative thinking abilities and to teachers' perceptions of artistic capacities. We found that there were significant associations among these measures. In order to explore this finding more fully, we looked at the number of years children had received in-school arts instruction and the range of different arts they

had studied during this time. These data were then assigned to either a high-arts exposure or low-arts exposure group. The high-arts group consists of the upper quartile of children based on the amount of in-school arts instruction they received. Similarly, the low-arts group consists the lower quartile of children. A typical 5th grader in the high-arts group might have received art and music instruction for at least three continuous years, as well as a full year each of drama and dance. A child in the low-arts group might have had one year or less of music and art, and no drama or dance instruction.

As we compared the experiences of the children in the respective groups we saw immediately that the high-arts group consistently outscored the low-arts group on measures of creative thinking and teachers' perceptions of artistic capacities. (See Figure 1)

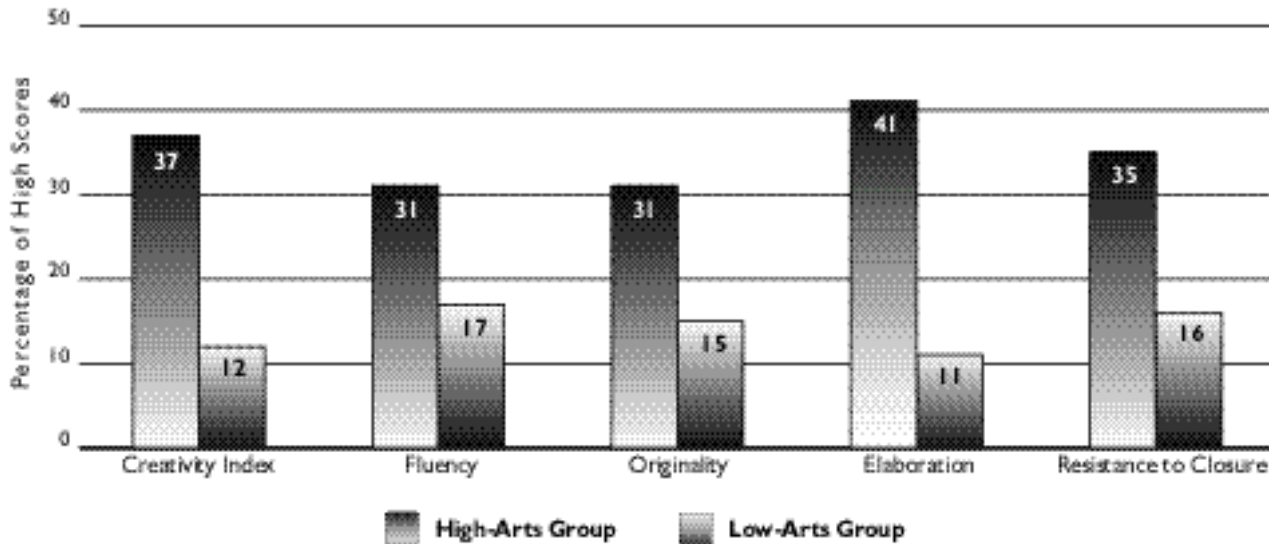
More detailed analysis showed that youngsters included in the high-arts groups scored well on measures of creativity, fluency, originality, elaboration, and resistance to closure.<sup>4</sup> In our many conversations and interviews with arts specialists, arts providers, and teachers of other subjects, we heard time and again how these same capacities are critical to arts learning as well as to other subject disciplines. In the arts, whether visual, music, dance, or drama, the ability to explore myriad ideas, envision and try out unusual and personal responses, consider objects, ideas, and experiences in detail, and be willing to keep thoughts open long enough to take imaginative leaps, are all important.

## Arts Involvement and General Competencies

Young people included in the high-arts groups also scored more strongly in terms of academic teachers' perceptions of their general competencies. As shown in Figure 2, data reveal that youngsters in the high-arts

<sup>4</sup> Fluency represents the number of ideas or solutions that a person expresses when faced with a stimulus or problem. Originality refers to the unusual quality of responses, while elaboration is the imagination and exposition of detail. Resistance to closure represents the ability to keep open to new possibilities long enough to make the mental leap that makes possible original ideas. The creativity index is an overall creativity score (Torrance, Ball, and Saftner, 1992).

Figure 1. Creative Thinking Abilities

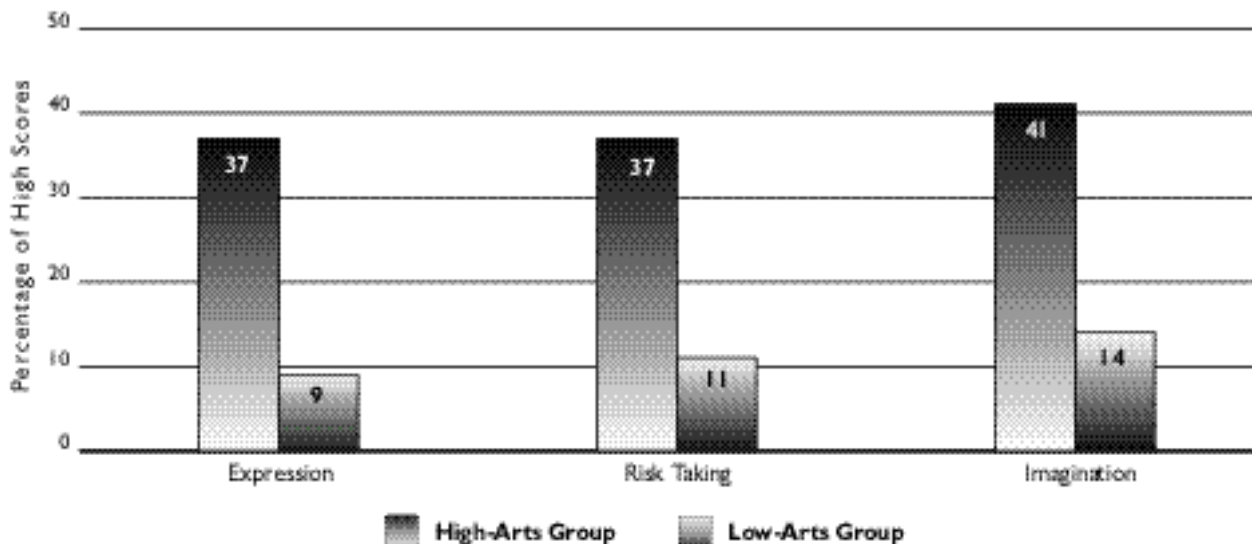


group were stronger than those in low-arts groups in their ability to express their thoughts and ideas, exercise their imaginations, and take risks in their learning. Moreover, they were also more cooperative and showed a greater willingness to display their learning before a community of their peers and parents.

Our interview and observation data offered a rich context for understanding these results. Teachers

emphasized that young people involved in the arts were able to unify divergent thoughts and feelings within representational forms that make it possible for them to express their ideas in many different ways. Similarly, arts subjects provide frameworks of learning where it is permissible, and desirable, to take imaginative leaps and to envision new possibilities and probabilities. Above all, the arts are subjects where young people can take

Figure 2: Arts Involvement and General Competencies



risks in their thinking as they try out new and unexplored arenas of learning.

We also speculated that the arts, by their very nature, require a great deal of collaboration and cooperation in their creation. Even the visual arts, usually thought of as solitary activities, can involve youngsters in collaborative enterprises such as painting murals and scenery, producing books, and organizing exhibitions. Pupils involved in arts learning come to know first-hand what it means to share and learn from each other.

Unlike other school subjects, the arts present a public face to learning. Paintings can be seen, music heard, and dance and drama experienced by everyone. Learning in the arts inevitably involves some measure of willingness to perform or display publicly, to reveal accomplishments, to garner appreciation, and to learn from the critiques of others.

**Arts Involvement and Perceptions of Self as Learner**

The data revealed some interesting differences in the children’s own perceptions of themselves as learners. High-arts youngsters were far more likely than their low-arts counterparts to think of them-

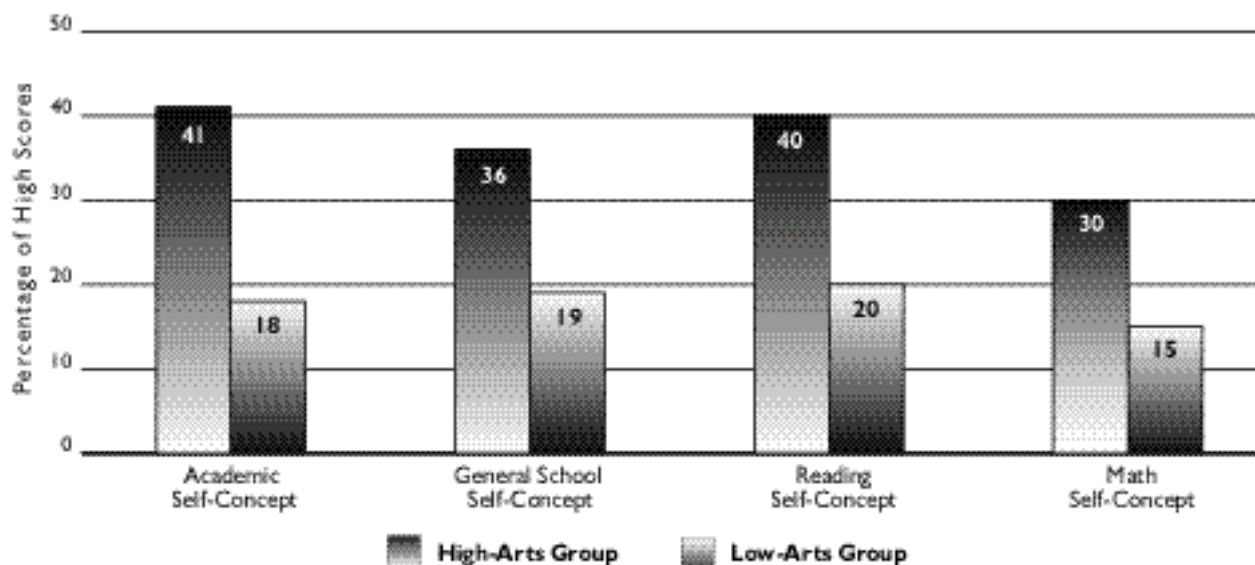
selves as competent in academics. They were also far more likely to believe that they did well in school in general, particularly in language and mathematics. (See Figure 3)

As with other findings, these results were validated by our observations of classrooms and in conversations with teachers and administrators. They confirmed that youngsters exposed to strong arts education acquire a sense of confidence in themselves that radiates beyond the studios and performance spaces. (See Figure 4) One might also speculate that the kind of persistence that it takes to be successful in the arts, particularly in the processes and organization required to represent thoughts and ideas, would have general cross-curriculum relevance.

**Arts Involvement and School Climate**

Administrators and teachers in high-arts schools attributed many positive features of their in-school climate to the arts. We found that schools with strong arts programs had supportive administrators who played a central role in ensuring the continuity and depth of provision. They encouraged teachers to take risks, learn new skills, and broaden their curriculum.

**Figure 3: Arts Involvement and Perceptions of Self as Learner**



**Figure 4:SDQ-I (Self-Concept) Scores Compared to The Number of Years of In-School Arts**

SDQ-I Scores	High-Arts Group	Low-Arts Group
Physical Ability S-C	29.65%	20.08%
Physical Appearance S-C	27.40%	24.31%
Peer Relations S-C	29.45%	23.26%
Parent Relations S-C	35.17%	24.31%
General Self-Concept	36.81%	27.48%
Reading S-C	40.49%	20.08%
Mathematics S-C	29.86%	15.43%
General School S-C	35.79%	18.60%
Total Non-Academic S-C	33.33%	24.31%
Total Academic S-C	41.10%	17.76%
Total S-C	34.15%	17.97%

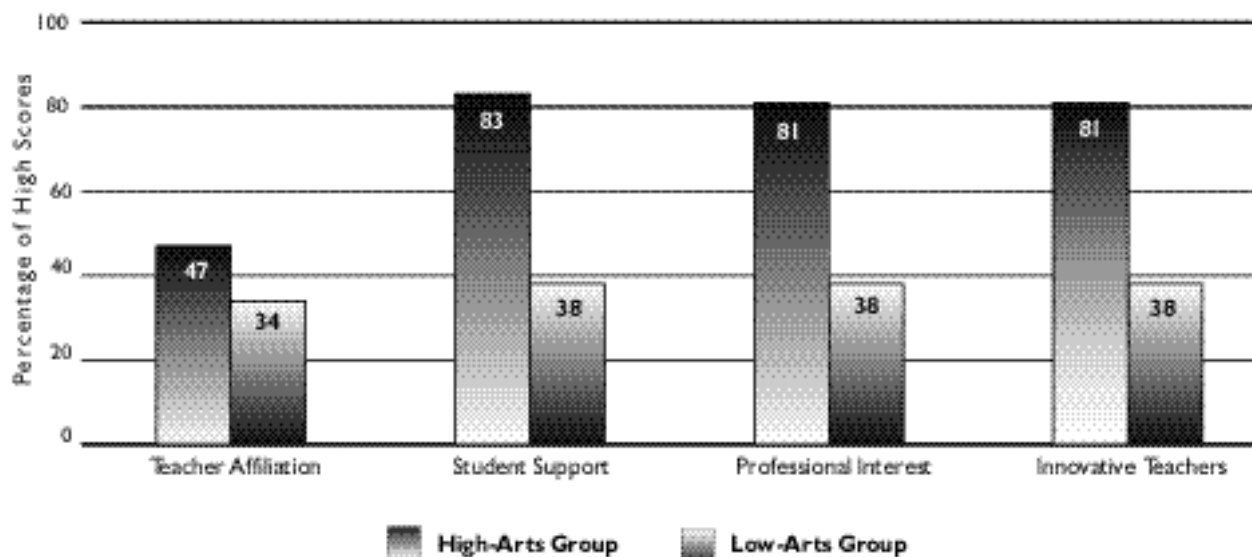
Similarly, we found specialist arts teachers who were confident in their pedagogy and practice, knowledgeable about pupils’ abilities and personalities, innovative in their approaches to learning, and who also enjoyed collaborating with other arts specialists and teachers of other subjects.

The findings of our study show that children in arts-rich schools are more likely than children in low-arts schools to have good rapport with their teachers. (See Figure 5) In a similar vein, the results show that teachers in arts-rich schools demonstrate more interest in their work and are more likely to become involved in professional development experiences. These teachers work in schools that favor change and experimentation. They also are more likely to be innovative in their teaching. The data on teacher affiliation show that such teachers tend to have good working relationships with other teachers in their school. In the high-arts settings, we found considerable flexibility in curriculum design, with less emphasis on conformity, formalization, or centralization.

Finally, it should be noted that when we examined our school sample for socio-economic status, we discovered that the results of our study were more firmly tied to rich arts provision than to high economic status.

A great deal of data came from our interviews with specialist teachers in language, science, and mathematics, as well as from our observations in classrooms and attendance at exhibitions and performances. While

**Figure 5: Arts Involvement and School Climate**



some of these data came from conversations and visits to our preliminary 28 schools, most of it came from our case studies in the four schools where we spent continuous time. These data were carefully coded according to their frequency across the entire sample, across each school, and in terms of their quality. These findings allowed us to expand on, and in many cases, clarify the meaning of our quantitative findings.

### Specific Dimensions of Ability

We found in schools with high-arts provision that teachers spoke of the effects of arts learning along five specific dimensions of ability. These were the ability to:

- Express ideas and feelings openly and thoughtfully;
- Form relationships among different items of experience and layer them in thinking through an idea or problem;
- Conceive or imagine different vantage points of an idea or problem and to work towards a resolution;
- Construct and organize thoughts and ideas into meaningful units or wholes; and
- Focus perception on an item or items of experience, and sustain this focus over a period of time.

### Arts Competencies and Other Disciplines

Taken together, our cumulative data offer a very evocative, complex, and multi-dimensional picture of arts learning. As we looked more closely at these data a consistent factor emerged, namely, that the appearance of arts competencies in other disciplines was found in contexts where, for example:

- There was a need for pupils to figure out or elaborate on ideas on their own;
- There was a need to structure and organize thinking in light of different kinds of experiences;
- Knowledge needed to be tested or demonstrated in new and original ways; and
- Learning involved task persistence, ownership, empathy, and collaboration with others.

For instance, these competencies were called upon when a theory in science could be understood more fully through the construction of a three dimensional mobile; or when a mathematical problem could be approached more easily through a closely observed drawing of a shell; or when a Pythagorean theorem became clear through the creation of a drama confronting social class; or when a moral dilemma could be focused more fully through the creation of an opera.

In subjects such as science, mathematics, and language, invitations to accommodate conflicting ideas, to formulate new and better ways of representing thoughts, and to take risks and leaps call forth a complex of cognitive and creative capacities. These capacities are typical of arts learning. Indeed, what is particularly interesting about this grouping of responses is that it reveals a rich interweaving of intuitive, practical, and logical forms of thought at work advancing the range and depth of children's thinking. This kind of mix of intuitive and logical thinking is, of course, highly typical of most creative artists, scientists, and thinkers in general. At a more mundane level, it also characterizes how we deal with the challenges of everyday living!

### Relationship of Arts Learning to Other School Disciplines

A number of recent studies have investigated the effects of learning in the arts upon other subjects.<sup>5</sup> Not only have the results of these investigations been unclear but they have been much in dispute. On the one hand, it has been argued that learning in the arts is context bound, specific and important in and of itself.<sup>6</sup> On the other hand, it has been suggested that learning in the arts is more general and plays a critical role in serving and supporting other disciplines.<sup>7</sup> Based on our findings we wish to offer another interpretation of the relationship between learning in the arts and in other

<sup>5</sup> See Catterall, 1998; Luftig, 1994; Moore and Caldwell, 1993; Redfield, 1990.

<sup>6</sup> See Eisner, 1998.

<sup>7</sup> See Perkins, 1994; Perkins, 1989.



subjects. But first, we need to complete the picture of arts learning that emerged from our study.

In essence, our study reveals that learning in the arts is complex and multi-dimensional. We found a set of cognitive competencies—including elaborative and creative thinking, fluency, originality, focused perception, and imagination—which grouped to form constellations in particular instructional contexts. These contexts elicit the ability to take multiple perspectives, to layer relationships, and to construct and express meaning in unified forms of representation.

In our study, we have come to call these competencies “habits of mind” rather than higher order thinking, as is more usual. We believe that this term captures more fully the flexible interweaving of intuitive, practical, and logical modes of thought that characterizes arts learning.

These habits of mind are accompanied by an array of personal dispositions such as risk taking, task persistence, ownership of learning, and perceptions of academic accomplishment in school. Since these habits of mind and dispositions are prevalent in schools where children have studied the arts continuously over time and have experienced learning in several arts, we argue that they are typical of arts learning itself.

As we have seen, this learning is not only characteristic of the arts but, in arts-rich schools, certain features of it are evident in other subject disciplines when specific task demands call them into being. Thus, we suggest that the relationship between arts learning and learning in other disciplines may not be as unidirectional—from the arts to other disciplines—as other studies have implied. Rather, the relationship may be more dynamic and interactive than is usually acknowledged. In other words we question whether transfer—or a one to one correspondence whereby one discipline serves another—is the only, or even an appropriate, way to conceptualize the relationship across disciplines. The unidirectional model is much too simplistic and ill serves the complexity of thinking involved in learning.

We speculate that the presence of habits of mind that emerge in both arts learning and learning in other

subjects consists of a dialectic involving the cumulative effects of participating disciplines. For instance, we observed a classroom where the study of Vietnamese art, music, and literature was combined with reading letters from soldiers who served in the war. This combination of learning activities created a context for a visit to the Vietnam War Memorial, and a subsequent discussion of the conflict between personal commitment, culture, and national loyalty, which unfolded in a group-authored play. In this example, the movement back-and-forth across disciplinary boundaries led to the accumulation of knowledge in a variety of disciplines. Even more importantly, however, it allowed for a measure of critical reflection on and within each discipline. What this example reveals is something akin to a continuous, ongoing conversation—a language exchange, in which reciprocity acts as a pre-requisite for new learning and the construction of meaning.

When well grounded in the kind of learning we observed, the arts develop children’s minds in powerful ways. In arts learning young people become adept at dealing with high levels of ambivalence and uncertainty, and they become accustomed to discovering internal coherence among conflicting experiences. Since young people live in worlds that present them with different beliefs, moralities, and cultures, schools should be the place where learning fosters the reconciliation of apparent differences.

In arts-rich schools, where conversations take place across the disciplinary boundaries, young people learn that mathematics might challenge the arts to examine relationships among objects in ways that extend their conceptions of number. Similarly, in the back-and forth between science and art, pupils learn that close observation and investigation of natural phenomena can proceed either according to prescribed theories or according to personal perceptions—and that both types of investigations offer fresh understanding of the same phenomena. The transmission of feelings and meaning captured in language learning offers a challenge to the arts to discover how such experiences assume new and different layers of

interpretation if encoded in images, movement, or musical sound.

In such cross-disciplinary conversations involving the arts, young people are given permission to go beyond what they already know and to move towards new horizons for their learning.

### Educational Implications of the Study

The results of our study offer empirical evidence that learning in arts-rich schools is complex and that it is most successful when supported by a rich, continuous, and sequenced curriculum. We also have clear empirical evidence that children, in what we have called the low-arts schools, are less able to extend their thinking. It appears that a narrowly conceived curriculum, in which the arts are either not offered or are offered in limited and sporadic amounts, exerts a negative effect on the development of critical cognitive competencies and personal dispositions. This conclusion brings to mind our original experience in choosing school sites for our study. In the many schools we visited, arts provision was almost uniformly inconsistent and sporadic.

Arts-rich schools offer a picture of a curriculum that is neither formalized nor centralized, but rather is open and flexible. Within these schools it was clear that teachers thought about, and accepted, a variety of different ways for pupils to be creative, to exercise skills and to think through problems, and exercise imagination in the construction of paintings, musical compositions, choreography, and plays. This suggests that a flexible curriculum which paces in-depth arts experiences to a sensitive appreciation of developmental needs leads to learning that combines the kind of persistence and confidence necessary for academic accomplishment.

Taking our cue from the arts-rich schools in this study, we might envision an ideal curriculum as one that offers in-depth, carefully sequenced teaching in several art forms for the entire span of young peoples' schooling. Teaching would be carried out by properly educated specialist teachers who are both committed

to their own art forms and knowledgeable about the socio-cultural background and development of the young people they teach. An ideal curriculum would enable arts teachers to collaborate with each other, with teachers from other disciplines, and with visiting artists and other arts providers. This kind of curriculum requires careful planning. Teachers need the time to collaborate in disciplinary and cross-disciplinary groups in order to research and frame the learning to which they will contribute. They will also need administrative support in arranging the daily timetable so that pupils have long stretches of time in which to research and try out ideas and to stretch their thinking as far as it will go—both within and across disciplines.

As part of this extended time for learning, pupils need to be able to use cultural institutions—art, science, and natural history museums, botanical gardens, concert halls, and so forth—much as they would use a library for research purposes. The arts-rich schools in our study were characterized by a flexibility, knowledge, and openness in the way that teachers planned and delivered instruction. One can only imagine what they might have accomplished, had they been able to restructure their school days in support of even greater expectations for learning.

One unexpected outcome of our study under-cuts the debate about whether or not the arts are core or ancillary to learning across the curriculum. Our findings led us to the conclusion that, all things being equal, the arts are neither ancillary nor core but rather that they are participants in the development of critical ways of thinking and learning. In schools with rich arts provision this argument can be sustained on the basis of the constellation of capacities that are nurtured in arts learning and that characterize the dialectical relationship between the arts and other subjects. By contrast, in schools with a paucity of arts provision the arts may well be considered ancillary because they do not have the capacity to promote the ways of thinking that, by interacting dynamically with other subject domains, offer children generative and complex

learning. If schools hope to offer a curriculum of study designed to help children develop as productive thinkers and citizens—and sometimes as artists—then they must not force them into narrow channels by depriving them of the kind of learning challenges that develop the richness of their minds.

### Policy Implications of the Study

Given the findings presented here, schools should develop and offer to their pupils a critical mass of arts subjects in visual arts, music, dance, and drama. Within this provision young people must be allowed to study as fully as possible across the arts disciplines. Our results show very clearly that the habits of mind and personal dispositions needed for academic success were nurtured in high-arts schools where young people had pursued several arts over a duration of time. There was a negative correlation between schools with a paucity of arts instruction and all cognitive and personal dimensions of our study. Thus, schools interested in nurturing complex minds should provide a critical mass of arts instruction over the duration of young peoples' school lives.

We need to stress that while arts learning is unique, in participation with other disciplines, it serves the cause of promoting the intellectual development of young people. The double face of arts learning—its simultaneous openness and closedness—gives it a special role in the curriculum. Educational policy, therefore, needs to bear in mind that in the best possible world neither arts learning nor learning in other subjects is sufficient unto itself. As is clear from our study, just because school subjects are different does not mean they are precluded from being able to work together beneficially.

### The Need for Well Educated Teachers

This study found that teachers in the high-arts schools were more open, flexible, knowledgeable, and engaged in their own ongoing learning than were teachers in the low-arts schools. It seems clear that if we want to develop complex arts instruction, with all

that it implies for pupils' learning and development, then we need a school arts policy that calls for a more rigorous and ongoing education for teachers.

We need teachers who—through their own experiences in the arts—are complex, reflective thinkers and practitioners, knowledgeable about the young people they teach and the cultures that define them. Arts teachers need to be able to balance teaching both in and across their disciplines, which implies the ability to be collaborative and aware of possibilities for learning beyond their own specializations.

### CONCLUSIONS

Arts learning, involving as it does the construction, interweaving, and interpretation of personal and socio-cultural meaning, calls upon a constellation of capacities and dispositions which are layered and unified in the construction of forms we call paintings, poems, musical compositions, and dances. Many of these same competencies and dispositions extend to other subject domains where they coalesce in equally distinctive forms—mathematical, scientific, linguistic—as pupils organize different kinds of meaning, insight, and understanding.

What is critical is not that capacities and dispositions transfer from the arts to other subject areas, as has often been argued, but that they are exercised broadly across different knowledge domains. Given this interpretation, no subject has prior rights over any other subject, for to diminish one is to diminish the possibility and promise of them all. If the arts are to help define our path to the future, they need to be become curriculum partners with other subject disciplines in ways that will allow them to contribute their own distinctive richness and complexity to the learning process as a whole.

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