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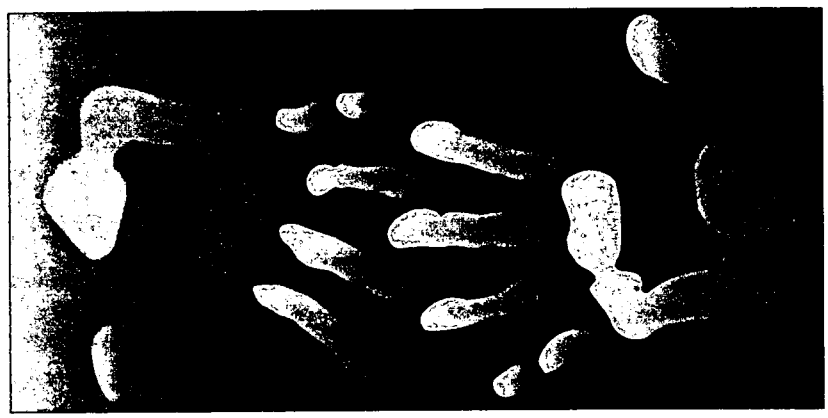
ABSTRACT

This report seeks to build a case for the potential value of arts-centered cross-disciplinary approaches as a possible way to integrate an often-fragmented high school curriculum. Stressing that there is no universal panacea for the complex and multi-layered issues of school reform and change, the report suggests a possible vision that could lead to a new milieu for what teachers teach and how students learn in U.S. high schools. Sections of the report include: (1) "Purposes and Premises of the Report"; (2) "Cross-Disciplinary Study"; (3) "The Arts and Cross-Disciplinary Study"; and (4) "Current Contexts and Future Prospects." Two appendices and a 105-item bibliography accompany the text. (EH)

Connections



The Arts and the Integration of the High School Curriculum

The College Board and The Getty Center for Education in the Arts

Connections

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Bruce O. Boston

College Entrance Examination Board
Getty Center for Education in the Arts
New York, 1996

The College Board is a national nonprofit association that champions educational excellence for all students through the ongoing collaboration of nearly 3,000 member schools, colleges, universities, education systems, and associations. The Board promotes—by means of responsive forums, research, programs, and policy development—universal access to high standards of learning, equity of opportunity, and sufficient financial support so that every student is prepared for success in college and work.

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I am most grateful, too, for the insight, direction, mediation, and above all, the patience of Karen Masters-Wicks of the College Board. She has been a sympathetic sounding board as well as the source of many good ideas.

The merits of this document are thus the work of many; its flaws are those of the writer.

Bruce O. Boston

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Introduction

Purposes and Premises of the Report

This report chronicles a story in which several episodes have been written but that is far from having a concluding chapter. It is a story about what has become the common experience of high school students, teachers, and administrators throughout the land who labor under an often fragmented and incoherent program of various subject matters all vying for instructional time and resources.

It is a story about the potential of inter- or cross-disciplinary approaches to help navigate an educationally productive course through the sometimes turbulent waters of disciplinary competition. It is a story about the arts and the central role they might play in the restructuring and integration of that curriculum.

This story is based upon many years of research, advocacy, and practical experience by a wide variety of educators. They range from art and curriculum specialists in high schools to teacher–educators and theorists in universities. The collateral interests and experience of numerous groups are also involved: museums and performing arts organizations, parents and school boards, the business community, and civic organizations. What all of these stakeholders have in common is their determination to improve America's schools.

The hope of the sponsors of this report — the College Board and the Getty Center for Education in the Arts (College Board-Getty) — is that everyone concerned, including teachers, school administrators, policymakers, parents, and community supporters will consider that there may be enormous facilities and resources close at hand in the arts, and cross-disciplinary approaches for addressing much of what ails the curriculum of our secondary schools.

A working definition of inter- or cross-disciplinary learning is needed at the outset because of the centrality of the concept to the discussion that follows:[1] ***It is an approach to learning that seeks to develop and build student competence by consciously applying and utilizing the knowledge, skills, and methods of more than one discipline or subject matter to inquire about and explore an object, central theme, concept, topic, problem, issue, or experience.***

At the same time that this report seeks to build a case for the potential value of arts-centered cross-disciplinary approaches, it also represents the starting point for a major long-term research and development initiative by the sponsors to determine the viability and value of cross-disciplinary teaching and learning with the arts at the core of the high school curriculum.

Beginning in early 1996, students and teachers at five different high schools throughout the nation, aided by a broad spectrum of other educators and personnel in the school, university, and larger community, will explore how learning can be made more organic, coherent, fulfilling, and engaging. The cross-disciplinary strategy is to make connections and to acquire knowledge by accessing the links that connect all knowledge at broad and thematic levels.

This is the kind of learning that educators would expect from students who have been taught to think, who have become problem-solvers, and who learn to work creatively. But the road to such learning and fluency is not easily traveled. It requires that in many schools the faculty and student body chart unfamiliar terrain. This requires vision, planning, and a generous outlook. This is a world in which the disciplines of the arts, history, language, and science all work together to furnish a view of the world that is holistic, organic, and integrated.

This report is the first of several that are to be issued during this long-term enterprise, the first "map," as it were, of that yet-to-be-explored terrain. As such, we wish to briefly outline some initial premises and assumptions that have guided the design of the project and the preparation of this report:

1 The report does not begin with fixed conclusions based upon extensive empirical research on arts-centered cross-disciplinary approaches. Rather, this document brings together theory, ideas, speculation, and some firsthand experience in the field, to present a case for consideration, and to create awareness and interest in an audience of stakeholders who are vitally concerned with the outcomes of the present impulse toward school reform and restructuring.

2 The report does not contain a full-blown theory or comprehensive or singular view of education, complete with interlocking sets of hypotheses that are now to be tested. Instead, the report frames the issues, raises some possibilities, and offers the thinking of a number of writers and teachers for analysis and consideration.

It is actually unlikely that a single theory will emerge from this effort, given the many differences among the five high schools involved. What they do have in common is that they are all secondary schools committed to exploring cross-disciplinary approaches to curriculum integration in which the arts are the integrating agent. Nonetheless, the College Board-Getty Project, and this report that heralds it, begin with a variety of suppositions. Some of these deal with why cross-disciplinary approaches might stimulate holistic thinking and facilitate problem solving, while others focus upon the central and core disciplines that remain at the root of the cross-disciplinary model. The point is to set up a theory/practice loop in which field tests are designed to provide data that refine and extend the theory of cross-disciplinary arts approaches and whatever utility they may have for unifying the high school curriculum.

Why Cross-Disciplinarity and the Arts?

At the core of the current debate over school reform is a curricular issue: What do students need to learn and how ought teachers to teach it? There are many different answers to such a large question, and no doubt the practitioners of individual disciplines entrenched in the traditional high school program are all sincerely eager to speak up for their particular interests.

But the fact is that the educational itinerary is overloaded. The school day simply cannot bear more weight or more curricular demands placed on a finite period of time. Comparisons with other nations are pointless: it is highly unlikely that in the foreseeable future Americans will expand the school day or school year to follow the Japanese model. So what else to do but consider how we might reconfigure learning? How might we make use of the contributions of different disciplines but organize them in a more cohesive, collaborative, and efficient fashion?

That is why the concept of cross-disciplinary study makes so much sense for a fragmented and crowded curriculum. The entire point is to look for mutual interests and opportunities for collaboration and team teaching and to identify the overlapping and linking ideas that tie subjects together and bind them to common, overarching themes.

What the arts can provide to foster and enrich cross-disciplinary study is an important topic in this report. Some would suggest that the arts are a tremendous unexploited curricular resource for restructuring school learning along educationally profitable lines, especially because of the important role that works of art in music, dance, theatre, and the visual arts can play in thematic learning. But cross-disciplinary studies and the arts have quite different histories and may not always be seen as natural allies.

Furthermore, some advocates of the arts have sought to characterize arts education as rigorously discipline-based. This move towards the rigor and sense of definition provided by disciplines is not incompatible with the product of a cross-disciplinary approach. In fact, the value of discipline-based approaches in building a foundation for successful cross-disciplinary curricula is widely accepted.

There is a sense in which both disciplinarity and cross-disciplinarity coexist in a learning program, much as do the particle and wave theories of light, which explain an apparent paradox of physics by acknowledging that the nature of the phenomenon may depend upon the perspective of the viewer.

In fact, there have been numerous efforts over the years to meld cross-disciplinary or comprehensive approaches using arts education as the catalyst or vehicle. Yet it must be admitted that none of these is so compelling as to automatically earn the sobriquet of "unifier of the high school curriculum." After all, despite a checkered history of some accomplishments (again, depending primarily on who the observer

is and where he or she is standing), the status of the arts in schools has been and continues to be precarious.

Some encouragement for a facilitating role for the arts in unifying the secondary school curriculum arises out of recent efforts to develop national standards for education in the United States. The enhanced status of the arts in policy circles can be seen as laying the foundation for their taking a prominent role. Of course, some arts education advocates may well feel they have priorities other than supporting cross-disciplinary approaches. Another, rather instrumental reason for giving specific attention to the role of the arts in a cross-disciplinary framework is the interest of the business community in skills that, as this report seeks to show, both the arts and cross-disciplinary learning seem to foster.

But ultimately the case for arts-centered cross-disciplinary studies must be based on intrinsic reasons as well as instrumental ones: How do such curricular approaches stimulate new and beneficial forms of communication and cognition? How do they contribute to the essential ends of education? How do they create knowledge, understanding, and appreciation in the school curriculum leading to the fusion of learning and providing students with an incisive and accurate picture of the world?

In addition, we must ask two essential questions: Why are the arts especially well-suited for a unifying role in the curriculum and what might we expect from their strategic and efficient deployment? Assuming that the arts are not the only candidate for such a task, why saddle them with such responsibility?

Two key arguments will be made in the following pages that will be mentioned here briefly. The *cognition argument* suggests that the arts promote both the broad and deep thinking necessary for sophisticated cross-disciplinary study. The arts potentially provide a series of pathways through which students can learn to create meanings that exist on many levels and that are expressed in various ways. These require the exercise of imagination resulting in such metacognitions as metaphor and figurative understanding. To interpret, to critique, to analyze, to see hidden likeness, and to create new ideas are all aspects of the artistic process. In the twenty-first century, such abilities are likely to become increasingly important in an information-loaded, highly technological, and multicultural global society.

Such thought processes are a welcome part of the synergy required for cross-disciplinary explorations; they facilitate and ease the movement across barriers that may impede switching from one discipline to another. Thus, the arts are boundary breakers and offer assistance in overcoming the traditional turf and territorial structure of the high school curriculum.

The other case made in this report is the *curriculum argument.* It states that the arts, by virtue of their capacity to embody and share the rich diversity of human experience (especially across time, space, and cultures), are prime sources for meaningful themes and curricular centers for

inter- or cross-disciplinary approaches.

This argument, along with the cognition or ways of knowing argument, depends a great deal on the opportunity for students and teachers to have a fruitful and continuing set of artistic experiences, more than most individuals have had in their high school educations. For the arts to display their powers, they must be embedded and valued in the curriculum.

Contexts and Prospects

Educational reform and restructuring loom large in schools as educators, parents, and community leaders search for ways to reinvigorate and sustain these institutions in which America's future citizenry are to be nurtured. No one should be under any illusion that there is a universal panacea for the complex and multi-layered issues of school reform and change. But we can make progress in trying out what appear to be good ideas. For too long the conventional response to educational dysfunction has been to simply do more of the same. Bold and imaginative constructs have involved a level of risk that all but the most independent and adventurous have declined to take. A basic premise of the College Board-Getty Project and of this report is that no one has all of the answers, but that different solutions to curriculum gridlock should be attempted and investigated in different settings.

Ultimately arts-centered, cross-disciplinary approaches, whatever their permutations, must compete in the marketplace of education change. Should they offer the promise of success, a track record of "on-the-ground" demonstrations will be indispensable to widening the circle of adherents. Nonetheless, much will remain to be done as the consequences become clear for teacher professional training and development, for assessment, for subject-matter collaboration, and for the technology of supporting instructional materials.

Leadership is needed to shape all visions of the future. We must look beyond the immediate horizon. Secondary schools are undergoing rapid transformation. This report outlines a vision or a view that could lead to a new milieu for what teachers teach and how students learn in U.S. high schools.

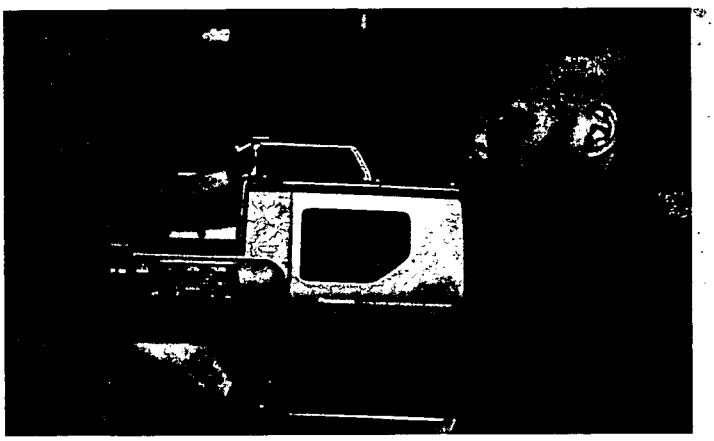
STEPHEN MARK DOBBS
Chair, National Advisory Committee
The Role of the Arts in Unifying the
High School Curriculum

NOTES

[1] While some practitioners make a distinction between cross-disciplinary and interdisciplinary curricula [see, e.g., Heidi Hayes Jacobs, "The Growing Need for Interdisciplinary Curriculum Content," in Heidi Hayes Jacobs, ed., *Interdisciplinary Curriculum and Implementation* (Alexandria, VA: Association for Supervision and Curriculum Development, 1989, p. 8)], this project embraces both terms as being compatible.

CHAPTER 1

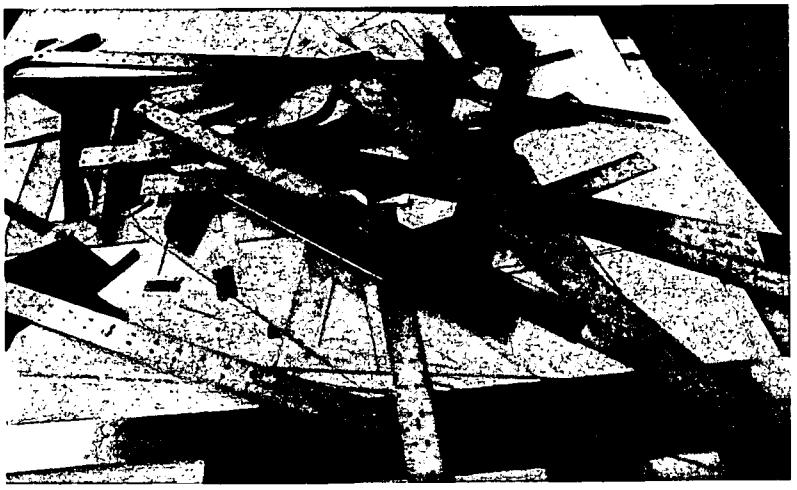
Cross-Disciplinary Study



In the wake of school reforms, educators have begun looking at cross-disciplinary programs as an antidote to curricular fragmentation.

Making Connections

The most gratifying learning experience of all is seeing something that was not seen before, the "click" that establishes a new relationship. Unfortunately, too much of school is devoted to the learning of isolated facts or performance of sterile operations. The process often produces a disconnection; students fail to see the importance, often even the point, of what they are asked to learn in relation to the



rest of their lives. Faced with a 13-year-old's asking "Why do I have to learn geometry?" most of us, whether parents, teachers, or merely concerned adults, are too often at a loss. Small wonder that so many children who arrive at school such prodigious learners leave with relief as teenagers. They have ingested much but are still uncertain about what any one thing has to do with any other, or what all of it has to do with the world in which they are expected to make their way.

Facts and operations are not unimportant; they are crucial to learning and to life. The problem is that too much of education involves "What?" and not "Why?" But when learning is structured so that students can readily make connections from one idea to another, from one subject to another, it becomes more interesting, more relevant, and more rewarding.

The College Board's National Center for Cross-Disciplinary Teaching and Learning and the Getty Center for Education in the Arts have joined together to undertake a ground-breaking, national education-reform initiative to study the kind of learning that helps students make new connections across disciplines. The intent is to support and work with programs that are attempting to unify the high school curriculum utilizing the arts in an inquiry-based approach, as the informing principle.[1] A primary goal is to demonstrate that the arts can strengthen and bring greater unity to the curriculum. *The Role of the Arts in Unifying the High School Curriculum Project* is a multiyear endeavor that will develop, test, and disseminate information about a range of approaches. Five schools from across the country have been selected to develop and apply curriculum frameworks that will bring greater unity of purpose to the badly fragmented high school curriculum and will clarify how the arts are central to any such effort. It is hoped that this will be the beginning of a larger network. (See Appendix A for a list of participating high schools.)

The project will bring together educators involved in the development of comprehensive, arts-centered cross-disci-

plinary learning. A national advisory panel composed of distinguished educators representing a range of disciplines and recognized for their demonstrated experience in cross-disciplinary work, is responsible for planning and direction. (See Appendix B for a list of the Advisory Committee and project staff.) A resource faculty expert in cross-disciplinary teaching and learning with the arts at the core will provide assistance in developing and field testing proposals at the selected sites. Opportunities will also be provided for involved educators to share information through the online services of the Getty Center for Education in the Arts (*ArtsEdNet*) and the College Board (*College Board Online*).

Given that cross-disciplinary initiatives, particularly in the K–12 curriculum, are in a formative stage, the aim of the project is broad, with a focus on the arts as the unifying element. Particular emphasis is given to:

- the contribution of the arts in the overall curriculum;
- the role of the arts in cross-disciplinary learning;
- the ways in which arts-centered approaches can contribute to overall education reform; and
- new forms of assessment of student learning in cross-disciplinary curricula.

Additional concerns will include:

- that the program be truly cross-disciplinary and emphasize the connections among disciplines;
- that a relationship exist among faculty from distinct disciplines in planning the program;
- that multicultural concepts and approaches be included; and
- that community resources be an integral part of the approach.

The report that follows provides information about the current status of cross-disciplinary studies in the high school curriculum and describes how subjects can be combined in new — and even startling — ways utilizing the arts as the vehicle to achieve curricular coherence. The report is premised on the conviction that the fragmented curriculum secondary students are now experiencing can be revitalized through cross-disciplinary teaching and learning in which the arts are the catalyst for bringing about needed change.[2] It is our hope that the information provided will assist others in developing new curricular approaches.

The Current Impulse Toward Cross-Disciplinary Curricula

In response to the accelerated rate of change in contemporary society, many school practitioners are attempting to re-envision what they do and how they do it, with the aim of better preparing students to live, work, and learn in the twenty-first century. The resulting reform efforts do not follow a single script, but they do share a common concern that already overburdened and fragmented educational programs not be made even more incoherent by the proliferation of demands made on schools, teachers, and students. In fact, in many localities, administrators and teachers are seeking to displace the "add on" approach that has generally passed for "curriculum development" in schools over the course of this century and to replace it

instead with programmatic frameworks that more adequately take into account the connectedness of learning.[3]

In practice, it is neither likely nor desirable that an impulse toward educational coherence will result in a single model for the school curriculum. On this score, it may be helpful to keep in mind that the dictionary gives two meanings for coherence: (a) the quality of sticking or holding together; and (b) a quality or state of logical or orderly relationships of parts. These are not mutually exclusive definitions, but the former takes account of the fact that there are many ways in which things "hold together" other than through formal arrangements or rules of logic. Therefore, it is this first, broader meaning that is most relevant to school-reform efforts, because educational coherence can take a variety of valid forms. Nevertheless, coherence remains a problematic concept when applied to educational practice.

The modern school curriculum is rooted in the idea of "disciplines." A "discipline," in the sense of "a separate field of study," came into prominence in America's colleges and universities during the late nineteenth century, as leading institutions sought to imitate the German approach to higher education. Over time, faculty and administrators built distinct, intellectually autonomous academic circles, each focusing on progressively more concrete subjects, gradually leading into the compartmentalized university departmental system.[4]

As disciplinary boundaries gradually took precedence over whatever shared elements held the disciplines together, they commanded more resources and gained more power to order knowledge. Thus, the discrete disciplines have gradually developed their own canons, methods, and procedures; their own modes of investigation; their own methods of assessment; their own languages and jargons. They also yielded discipline-specific curricula, teachers, texts, and intellectual turf.

The centrifuge of disciplines has become the source of a peculiar educational paradox, in which the promise of more extensive knowledge carries with it a greater sense of personal disconnection from a truly integrated center. The academic discipline, once itself an agent of educational reform, has ironically given birth to intellectual fragmentation that creates confusion for many of today's high school students.

It should be noted that, even though school-based subjects generally follow historically accepted partitions of knowledge, they are not themselves disciplines in any strict sense. They are more like what James Beane calls "institutionally based representations of disciplines";[5] they generally deal with selected portions of what is already known in a given field of inquiry rather than with the essence of the discipline itself as understood by professionals. This state of affairs further exacerbates the confusion of the high school curriculum.

Despite notable exceptions, the tendency in American education has been to pay scant attention to the overall sub-

stantive cohesion and connectedness of the school curriculum. As noted above, the prevailing trend has been to create curriculum by accretion, by adding on with little concern about how subjects are related, thus producing curricula that are "overcrowded," "congested," and lacking in any informing sense of the large questions, agreements, and disputes that drive learning in the world.[6] Students move from year to year and course to course (for that matter, from hour to hour) with only vague impressions about what animates the whole (see sidebar next page). In these conditions, transference of key cognitive competencies is often weak because little attention is focused on how these competencies are nurtured within and across subject areas.[7] Instead, learning is often mechanical, routine, and viewed as preparatory for some later task that will somehow, almost magically, make use of all the disconnected facts, figures, and algorithms that students encounter in the course of schooling. For all too many students, this "task" never comes, leaving them with what David Perkins calls "fragile knowledge," which lacks in flexibility, resilience, and the connected sense of inquiry that might drive further learning.

Moreover, without opportunities to synthesize information and contextualize knowledge, students often fail to understand the relationships between disciplines. Ruth Mitchell gives an example from our everyday experience: "the disposal of waste is simultaneously a chemical, biological, social, political, economic, and aesthetic problem: it would be misrepresented if studied solely through the lens of these disciplines. It must be seen through them all."[8]

Oddly enough, this "warehousing" approach to knowledge continues to predominate in school practice at a time when the structure of tasks in the world outside and beyond school is increasingly characterized by active interplay and interaction among disciplines. This is true both in collegiate learning and today's workplace. In workplace tasks particularly, disciplines and specializations almost never function separately as "closed systems," but rather thrive through their interactions, interrelationships, and interdependencies.[9] Scholastic arrangements that separate and wall off subjects take this into account far too little and instead sustain an inverse relationship to the ways in which knowledge is utilized outside of school.[10]

To understand the impetus in higher education toward cross-disciplinary study, we will briefly examine some of the reasons for this trend in the next section.

Cross-Disciplinary Ideas in Higher Education: The Search for Breadth and Coherence

The earliest colleges in America offered a uniform, classical education, a tradition emphasizing educational unity that has never entirely died out, even though it has lived in tension with disciplinary proliferation. Indeed, widespread revivals of "general education" or "core studies" programs have occurred three times in the twentieth century — after World War I, following World War II, and in the midst of the post-Vietnam experience of the late 1960s and early 1970s.[11] Well-known commit-

MARIANNE'S DAY

Marianne, a student in a high school of about 2,000 students, goes to school from 7:30 a.m. to 2:00 p.m. She moves through a class schedule of eight 45-minute periods a day, one of which is lunch and another is a home room/study hall/activities period. In her six academic periods she takes U.S. History, Chemistry, American Literature, Algebra II, and French I every day. In the one remaining academic period she takes Physical Education two days a week, Family Studies two days a week, and Driver's Education one day a week. Since she plays the clarinet, she uses her activities period for band.

Marianne is frustrated by the arbitrariness and meaninglessness of the way her day is broken up. Her learning is squeezed into six 45-minute units. Often, "just when things gets going" in a class discussion or project, the bell rings and she has to move on. As she puts it, "I am tolled through my day."

When she thinks about it, she realizes that her frustration has many sources. Most frustrating is that every day she has to shift her mental gears completely every 45 minutes, for hours on end. No matter how simple or complex the subject, everything gets the same amount of time, which strikes her as "dumb." She has started to think of her schooling as a kind of jigsaw puzzle; there are a lot of different pieces, all parceled out in equal sizes, but the problem is that not one of her teachers is helping her to put the pieces together to form a whole picture. Although she can see the routes of progress she has followed in history (that's easy, it's mostly chronological), or in Algebra, French, and Chemistry, where one concept builds on another, she cannot see clearly what any one thing she is studying has to do with any other thing—how they fit together. Maybe they don't. In talking this over with some of her friends, she finds that others feel the same way.

Another of Marianne's frustrations is that there are a lot of subjects she would like to take that she can't; there is no time left. She would like to try an art class, or the new class in beginning economics, or an elective in public speaking. And she knows she could benefit from a computer course. And where, in the middle of all this, is she going to learn some of the "workplace skills" she hears people talking about?

ments to a broader-reaching, integrating experience for undergraduates have been launched by schools as diverse as the University of Chicago, St. John's College in Maryland, Alverno College in Milwaukee, and the University of California at Santa Cruz.

Thus, although the pressures for compartmentalization in American higher education have been strong, so have the counter-pressures.[12] Inter- and cross-disciplinary study is now a well-established part of higher education in America, and the trend appears to be strengthening again at the present moment (see sidebar). In 1993, for example, Harvard President Neil Rudenstine noted that:

> "... at the present moment, many scholars are convinced that, in order to progress in even quite specialized fields, they must learn much more about — and borrow from — fields other than their own. For many, the actual process of discovery is forcing an even greater integration of knowledge, rather than increasing subdivision and separateness... [This tendency] has now become general enough to constitute a genuine shift in outlook."[13]

Making a successful shift in outlook does not rest only on the shoulders of cross-disciplinary study to the exclusion of other approaches. Success in education seems, however, to point increasingly in the direction of cross-disciplinary approaches. But even though colleges and universities, organized along departmental lines, academic majors, and distribution requirements, have found cross-disciplinary *breadth* attractive, many have found that breadth alone is not enough. Many departments have combined studies to emphasize a *coherent curriculum* that expects students to acquire:

- a generous orientation to the intellectual expectations, curricular rationale, and learning resources of the institution;
- critical reading and writing skills that function across the curriculum;
- learning about other cultures and the diversity within their own culture;
- an ability to integrate ideas from the discrete disciplines to illuminate cross-disciplinary themes, issues, and problems;
- some in-depth knowledge of subjects other than their major;
- an opportunity, near the end of a student's academic career, to pull learning together in some senior seminar or project; and
- the experience of a coherent course of study that is more than the sum of its parts.[14]

INTER- AND CROSS-DISCIPLINARY STUDY IS GROWING IN HIGHER EDUCATION

In an attempt to develop an accurate picture of the extent of inter- and cross-disciplinary study in American colleges and universities, the Association for Integrative Studies surveyed institutions in the mid-1980s. The resulting publication presented complete information on 237 programs, about half of those positively identified. The compiler, William Newell, offers a for-the-record "conservative estimate" that the nearly 500 schools identified in 1986 have today roughly doubled and "are probably at least 1,000."

Source: *Interview with William Newell, (ed.),* Interdisciplinary Undergraduate Programs: A Directory *(Oxford, OH: Association for Integrative Studies, 1986), February 23, 1995.*

So strong has the impetus for breadth, coherence, and inter- and cross-disciplinary study become in American higher education that some believe it is now approaching a near intellectual and organizational parity with discipline-oriented curricula. Interdisciplinarity reached a peak in higher education amid the academic ferment of the 1970s, paused for breath in the 1980s, but has been again rising in the 1990s, especially in general and liberal education programs. Such areas as international studies, multicultural and ethnic studies, environmental studies, women's studies, and the study of the history of ideas are in the forefront of creating new approaches.

The motive force behind much of the spread of cross-disciplinary study is the growing recognition, as Rudenstine suggests, that much *new knowledge itself is produced through cross-disciplinary effort.* Hybrid fields and integrated approaches — international studies, multicultural studies, environmental studies, and women's studies, to name a few — are proliferating. This development parallels both the institutional shift in higher education from the hierarchical to the multicentered, as well as hybrid systems of organization and the "knowledge-team" approach taken by many manufacturers and research organizations. In many ways, then, the disciplinary dynamic that launched the modern era seems to have slipped into reverse gear.

At the K–12 level today, the pendulum is swinging once more, as the impact of what has been happening in higher education for nearly a generation is again being felt. Many education professionals are now seeking coherence by turning to cross-disciplinary curricular structures, which we will examine in the following section.

What Is a Cross-Disciplinary Approach?

In contrast to a subject-based approach, cross-disciplinary study seeks to *connect* the disciplines, to find points of attachment in the form of central themes, topics, problems, issues, ideas, objects, and experiences. Its broad intellectual aim is synthetic, which complements the analytic ethos of discrete disciplines. It seeks to unify understanding by organizing study along lines of connection and convergence, rather than along the lines of divergence and differentiation.

An illustration of this unity is provided in *Art and Physics.* Author Leonard Shlain deftly shows the interpenetration of art, music, and physics in connection with the invention of musical notation. The very act of visual representation, complemented by horizontal and vertical axes and measurement, cuts across the disciplines, bringing them together in a conceptual family:

> Musical notation allowed the invisible vibration of sound waves to be converted to black marks on white paper . . . Once music could be seen, its undulating essence could be stilled and analyzed. Much like the anatomists who were their contemporaries, fifteenth-century composers began to dissect harmony in an attempt to learn its underlying structure . . . Music could now be considered a three-dimensional aural geometry that was structured by the flow of time . . . Words such as "scales," "measures," "meters," "parts," and "pieces" [came to be] used in music as they were in science.

> Music, art, and physics shared other important parallels, chief among which was the organization of all three based on an intersecting horizontal and vertical. Soon after artists began laying out the coordinates of horizontal and vertical, composers refined the coordinates of musical notation, key, and counterpoint, using horizontal bar and vertical staff. Almost simultaneously, scientists were greatly aided in their work by the widespread use of scientific graphs which plotted functions, not otherwise visible, on abscissa and ordinate.[15]

Another example of how a work of art can be used as a launching pad for cross-disciplinary study can be found in *The Intelligent Eye.*[16] In a detailed examination of the woodcut *"The Volunteers"* by Käthe Kollwitz, author David Perkins helps the reader understand the multiple levels of interpretation that exist in the work itself. But his examination also provides insight into how the work might evoke interpretations from the disciplines of psychology, sociology, ethics, and even music. Cross-disciplinary study looks to build links and lines of connection between and among disciplines. It uses these lines of connection to guide student effort and to instruct students.

Cross-disciplinary education through the arts offers students a chance to create, from the disparate array of subject matter that confronts them, a fundamental integrity for their own learning. From that sense of wholeness-in-diversity, they can forge the tools they will need to address the world. Our schools, if they provide students with nothing else, should provide them with ways to connect

— to themselves and to one another,
— to meanings and the enduring values of learning, and
— to a future only they can create.

Those are the connections that promise life itself. "Only connect!" urges E. M. Forster at the conclusion of *Howard's End.* "Live in fragments no longer." He might well have been talking about education.

The Volunteers by Käthe Kollwitz

A Caveat: Cross-Disciplinary Study Is Still in the Formative Stages

It is useful to remember that disciplines can be brought together through a range of curricular options. In moving along that spectrum, many use the terms "interdisciplinary" or "cross-disciplinary" without fully defining them, or they use such terms to characterize educational activity that, on closer examination, simply presents interesting juxtapositions or combinations from different disciplines without any effort to have the disciplines inform and act on each other. Various names are used to express several shades of meaning, or to describe

what happens when disciplines interact, e.g., inter-, cross-, multi-, pluri-, and trans-disciplinary.

As Mitchell observes, if students are grounded in disciplinary content, while at the same time they are learning how to synthesize their knowledge, then the cross-disciplinary or interdisciplinary design is valid. The ability to synthesize information from different fields of inquiry is the key missing element in American students' educational experience.[17]

Heidi Hayes Jacobs offers a helpful negative guideline in this regard. She warns that interdisciplinary study is neither "potpourri" nor "polarity." It is not, on the one hand, a sampling approach, in which a study of ancient Rome includes a bit of history, a bit of literature, and a bit of architecture. Such an approach is not really inter- or cross-disciplinary because it undermines the integrity of disciplines rather than connecting them. However, the design of cross-disciplinary study should not so emphasize individual disciplines that teachers compete for curricular territory.[18]

Design of a Cross-Disciplinary Curriculum

The integration promised by cross-disciplinary study happens neither automatically nor accidentally; *it must be thoughtfully constructed.* Here, several factors have been suggested as being important in successful cross-disciplinary programs:

1 Have a carefully conceived design encompassing scope, sequence, and strategies that encourage and focus thinking skills;

2 Provide students with learning experiences that are both grounded in the individual disciplines *and* allow the disciplines to engage, interpenetrate, and reinforce one another;

3 Base the program on standards of excellence; and

4 Assess the depth and breadth of student knowledge and understanding.

As indicated, it is not desirable to prescribe what a cross-disciplinary curriculum ought to look like. However, several authors have suggested a few general guidelines:

- *All cross-disciplinary learning requires some unifying theme, issue, object, or idea.* This theme should not only relate in some way to the disciplines, but be important to them as well.
- *Scope and sequence are as appropriate to cross-disciplinary study as they are to the separate disciplines themselves.* Strong design is therefore both the most essential and one of the most difficult tasks in building cross-disciplinary curricula. Students must be provided with the right learning tools from the disciplines involved, pointed in the right direction, and equipped with concepts and skills upon which to build. At the same time, a cross-disciplinary curriculum is not a one-size-fits-all solution to the problem of constructing a learning environment. It is most useful when fragmentation and students' perceptions about relevance are in question.
- *Students in cross-disciplinary studies should be exposed, at appropriate levels of understanding, to epistemological issues.* Secondary students

can profitably deal with such questions as "How can I know?"and "What can I know for sure?" But even at the primary level, students should understand why their learning space is organized the way it is and made aware of the kinds of choices they are asked to make and why they should make them.

- *Cross-disciplinary curricula should meet the same standards for educational excellence as discipline-based study.* In the current climate, that will mean fashioning curricula that take cognizance of the national subject-area standards already developed (e.g., in the arts, foreign languages, geography, history, mathematics, science) and those yet to be developed (e.g., English). One strength of cross-disciplinary approaches is their ability to incorporate disciplinary rigor.
- *Cross-disciplinary curricula should be designed to build knowledge and skills across the disciplines.* Problems and themes should accommodate methodology from more than one discipline. In this way, students are simultaneously involved in searching for solutions and consciously acquiring learning tools that they recognize as distinct.
- *Cross-disciplinary curricula should incorporate multicultural content.* This reinforces the point that knowledge can be approached from a wide variety of perspectives. Equally to the point, a student who grows to adulthood without any experience and understanding of other cultures grows up educationally impaired.
- *In cross-disciplinary learning, the integrity of the disciplines should be maintained.* Any discipline, the arts disciplines included, has its own roots — intellectual, methodological, epistemological, and aesthetic. The distinctive characteristics of disciplines are primary foundations and sources in cross-disciplinary teaching and learning.
- *Cross-disciplinary curricula can benefit by drawing on technology,* including CD-ROM, laser discs, videotape, CAD-CAM, and the Internet, as well as the cornucopia of software now available. The possibilities are endless if teachers and school systems become technologically adept. Here, the cross-disciplinary connection not only shows relationships among subject areas, but how authentic sources can be incorporated into the curriculum using the tool of technology.[19]

Albrecht Durer

One writer on the subject, David Ackerman, has suggested several criteria for assessing the efficacy of a cross-disciplinary approach, including whether the curriculum in question:

- *Maintains its standing within the individual disciplines from which its elements are drawn.* This criterion parallels the concern for disciplinary integrity noted before, but with a different shading. Themes and concepts should be related not just to specific subject areas, but also should be *important* to those subjects.
- *Ensures mutual benefit to the disciplines that are being brought together.* One way to approach this aspect is to ask whether students learn particular concepts and skills more effectively in a cross-disciplinary context than in the context of single disciplines.
- *Produces a result in which the whole is greater than the sum of its parts.* The curriculum

content pushes students to a level of understanding that is more than simply the accretion of what is already known.

- *Makes some contribution to broader outcomes, equipping students to think flexibly and adopt multiple points of view.* Just as important, it should teach them to *value* doing so.[20]

Impact on Teaching and Schooling

There are also practical considerations in designing a cross-disciplinary curriculum. Principal among them are issues such as time, budget, space, and scheduling. Political issues must also be taken into account. Cross-disciplinary work falls outside the dominant paradigm of schooling and, therefore, has to fight for a share of time and resources. Finally, there are the challenges of the intellectual effort required of teachers to shift to a cross-disciplinary perspective, the time commitment required to make the effort pay off, and the level of cooperation that cross-disciplinary teaching entails.[21]

Introducing cross-disciplinary education into a school environment will require bringing participants into a new consciousness about why cross-disciplinary study is a "good thing." Both teachers and administrators need to be convinced about the value, as do parents, other constituents, and often even the students themselves. They will look for proofs of success and evidence of more learning (e.g., benchmarks, diagnostic tests, or college entrance examinations). The ultimate practical concern involves a change in a school's culture and focus such that cross-disciplinary work eventually comes to be seen as a valued curricular option.

Design Options

The effectiveness of any cross-disciplinary curriculum stems from strong design. In thinking through the design problem, it may be useful to examine a variety of options. Among the obstacles to curriculum design is the tendency to believe (quite wrongly) that there is no middle ground between the status quo of specialization by disciplines and the revolution of full interdisciplinary or cross-disciplinary integration. This misconception is an unnecessary restriction. A range of choices exists that moves from little or no integration at all (students move through a school day segmented in time blocks by discipline) toward a fully integrated curriculum (the entire day is taken up with integrated study — e.g., alternate blocks of mathematics/sciences and humanities). This and similar continua can be adopted within a classroom, among teachers of different disciplines, across a grade level, entire school, or throughout a district.

Curriculum designers offer a range of options. Heidi Hayes Jacobs, for example, has developed a "Continuum of Design Options" from least to most integrated (see Figure 1) — *discipline-based, parallel disciplines, multi-disciplinary, interdisciplinary units, integrated day,* and *complete day.*[22] The different stages of the continuum are not mutually exclusive; there is room for overlap and flexibility of implementation. Each step along the continuum offers its own characteristics, advantages, and disadvantages. The primary sorting mechanism is the degree of engagement between and among the disciplines as one moves across the continuum.

In Jacobs' model, the instructional objective in a *discipline-oriented* curriculum is to present each subject's core knowledge base. In a *parallel discipline* design, teachers agree to offer simultaneous instruction in their own disciplines about connectable subject matter. In a *multi-disciplinary* design, content is re-shaped so that disciplines that share similar concerns are brought together. In fully *interdisciplinary* or *cross-disciplinary* units or courses, themes are employed to engage the full range of disciplines within the school program. The *integrated day* design involves no isolated subjects; disciplinary content is adapted to the activities and interests of students. In a *complete program* design, the student's life essentially becomes the curriculum.

A similar but graduated continuum is put forward by Robin Fogarty in "Ten Ways to Integrate Curriculum," in which he discusses a variety of models or options for integration: *fragmented, connected,* and *nested* models (*within* single disciplines); *sequenced, shared, webbed, threaded,* and *integrated* models (*across* more than one discipline); and models that focus on integrating study *within* and *across* learners themselves (*immersed* and *networked*).[23] Upon close examination, readers will not only see a great deal of overlap but will also find that the differences between the models are more formal than real. In addition, descriptions do not distinguish between skill-building connections and those that simply integrate subjects.[24] But Fogarty's point is useful. "A faculty," he says, "can easily work with [the models] over time to develop an integrated curriculum throughout the school" by having individual staff members choose different models to work with and exploring the connections between them.[25]

As with any evolving approaches to learning, cross-disciplinary designs and options are still fluid and will likely remain so until a body of practice arises to provide clear lines of definition and demarcation. For the time being, the degree of engagement between and among disciplines will remain the defining element among options.[26] Future sorting mechanisms may include, for example, epistemological assumptions or methodological approaches.[27]

This Project and the Continuum of Design Options

As mentioned at the outset of this report, *The Role of the Arts in Unifying the High School Curriculum Project* is an attempt to support an exploration of the continuum of cross-disciplinary options at the secondary-school level. Many cross-disciplinary approaches to curriculum integration already use the arts as integrating instruments; many schools would like to try this approach and need encouragement. The

Figure 1

CONTINUUM OF DESIGN OPTIONS FOR INTERDISCIPLINARY CURRICULUM

(From Least to Most Integrated)

Discipline Based	Parallel Disciplines	Multi-Disciplinary	Inter-Disciplinary Units/Courses	Intergrated Day	Complete Day

(Jacobs, "Design Options for an Integrated Curriculum," op. cit., p. 14.)

project has therefore been designed as a theory-practice loop, in which conceptually well-defined programs are being supported with a view to implementing, testing, and refining a variety of possibilities in cross-disciplinary education. The practice generated by such a variety will be assessed on a continuing basis and on two accounts: (1) their progress in implementing effective cross-disciplinary curricula, and (2) their progress in utilizing the arts in unifying the curriculum across disciplines.

An important consideration of the College Board-Getty initiative is the recognition that schools tend to be change-resistant environments; therefore, it is likely that movement from less to more integration will be incremental. A continuum of options or models in such an environment makes both good instructional and good political sense. It enables curriculum designers to adopt a gradualist approach that can nevertheless generate the logic, weight, and momentum needed to effect productive curricular change. This is an approach recommended by Tyack and Cuban, based on their analysis of a century of school reform.[28] Given what has been learned from recent efforts at school reform, we know that the culture of the school itself is among the most important factors impinging on the development of models for cross-disciplinary learning. Creating an environment in which new ideas can flourish is thus a primary aim of the project.

As the arts are utilized to bridge disciplinary divisions, the learning environment within a school can move gradually from parallelism to multi-disciplinary efforts at first, while achieving more integration along the way. Combining cross-disciplinary options is in itself an option, one that may provide excellent opportunities for success. Above all, it seems clear that at this point there are no right or wrong choices, only a range of options. Through this continuing effort, it is hoped the project will delineate those options with solid, field-based data that carry with them diagnostic value for the whole of secondary education.

NOTES: Chapter 1

[1] An inquiry-based approach focuses on instruction and learning in the arts and on how inquiry processes of the arts disciplines can serve as the basis for identifying themes and ideas in cross-disciplinary study. Taking the visual arts as an example, an inquiry-based approach draws its content from the concepts and inquiry processes that contribute to the creation and understanding of art: studio art, art history, art criticism, and aesthetics. When an inquiry-based approach systematically integrates ideas, skills, knowledge, and creative activity from the four art disciplines, students develop their creative abilities for making art (studio art), evaluating the qualities of visual imagery, making informed judgments about art (art criticism), understanding art's cultural and historical contexts (art history), and raising questions about the nature of art (aesthetics). An inquiry-based approach can take many forms to serve the particular needs of the community in which it is taught.

[2] The art forms discussed in this report are dance, music, theatre, the visual arts, media arts, folk arts, architecture, and design arts. Literature has not been included as part of the discussion. Clearly literature is, in addition to being one of the humanities, a form of art. Equally clearly, those who wish to pursue cross-disciplinary education

can make use of literature in much the same way as is discussed here for the other art forms.

[3] See, e.g., *Toward a Coherent Curriculum: ASCD Yearbook* (Alexandria, VA: Association for Supervision and Curriculum Development, 1995).

[4] See Christopher Jencks and David Riesman, *The Academic Revolution* (NY: Doubleday, 1968), pp. 523–525.

[5] James A. Beane, "Curriculum Integration and the Disciplines of Knowledge," *Kappan* (April 1995), p. 617.

[6] See, e.g., James A. Beane, "Curriculum Integration and the Disciplines of Knowledge," *Kappan* (April 1995), pp. 616–622; Heidi Hayes Jacobs, ed., *Interdisciplinary Curriculum: Design and Implementation* (Alexandria, VA: Association for Supervision and Curriculum Development, 1989); *Prisoners of Time* (Washington, DC: National Education Commission on Time and Learning, April 1994); David Tyack and Larry Cuban, *Tinkering Toward Utopia: A Century of Public School Reform* (Cambridge, MA: Harvard University Press, 1995).

[7] See, e.g., David Perkins and Tina Blythe, "Putting Understanding Up Front," *Educational Leadership* 51, no. 5 (February 1994), pp. 4–7.

[8] Ruth Mitchell, "Interdisciplinary standards and curriculum: promises and perils for the.K–12 educational system." A paper prepared for the Bauman Foundation by the Council for Basic Education, p. 1.

[9] See, e.g., Peter Drucker, *Post-Capitalist Society* (NY: HarperCollins, 1993).

[10] John Dewey, *The Way Out of Educational Confusion: The Inglis Lecture.* 1931. Reprint. (Westport, CT: Greenwood Press, 1970).

[11] It is worth noting that each of these periods has been one in which the nation has sought to reintegrate and redefine national purposes on the level of basic meanings after deeply traumatic experiences.

[12] Renewed interest in the once largely forgotten Eight Year Study of the 1930s, which focused on the relationship of integrated curricula and student achievement, is a sign of the emerging concern for coherence described in this report. (See, e.g., Joe Nathan, "To Improve High Schools, Change College-Admissions Policies," *Education Week*: [February 15, 1995] 30, 32).

[13] Neil Rudenstine, "The President's Report," (Boston, MA: Harvard University, 1991–1993), p. 25.

[14] This list has been adapted from Jerry G. Gaff, "The Revival of General Education," in *Strong Foundations: Twelve Principles for Effective General Education Programs* (Washington, DC: Association of American Colleges, 1994), p. 5.

[15] Leonard Shlain, *Art and Physics* (NY: William Morrow & Company, 1991).

[16] David N. Perkins, *The Intelligent Eye: Learning to Think by Looking at Art,* Occasional Paper No. 4 (Santa Monica, CA: Getty Center for Education in the Arts, 1994), pp. 20 ff.

[17] Mitchell, p. 4.

[18] Jacobs, "The Growing Need for Interdisciplinary Curriculum Content," pp. 2, 8.

[19] These suggestions and guidelines have been adapted from: David B. Ackerman, "Intellectual and Practical Criteria of Successful Curriculum Integration," in Jacobs, ed., *Interdisciplinary Curriculum,* pp. 25–37; Susan M. Drake, *Planning Integrated Curriculum: The Call to Adventure,* (Alexandria, VA: Association for Supervision and Curriculum Development, 1993); Jacobs, "Design Options for an Integrated Curriculum," pp. 13–24; *The Balanced Mind* (Washington, DC: Center for the Arts in the Basic Curriculum, 1994); Mitchell, pp. 10–15.

[20] Adapted from Ackerman, "Intellectual and Practical Criteria of Successful Curriculum Integration," pp. 26–30.

[21] Ibid., pp. 30–31.

[22] A synthesis of these ideas can be found in Jacobs, "Design Options for an Integrated Curriculum," pp. 13–24.

[23] An elaboration of these ideas can be found in Robin Fogarty, "Ten Ways to Integrate Curriculum," *Educational*

Leadership (October, 1991), pp. 61–65. See also Robin Fogarty, *The Mindful School: How to Integrate Curricula* (Palatine, IL: Skylight Publishing, 1991).

[24] See Mitchell, p. 3, for a discussion of Fogarty's models.

[25] Ibid., p. 65.

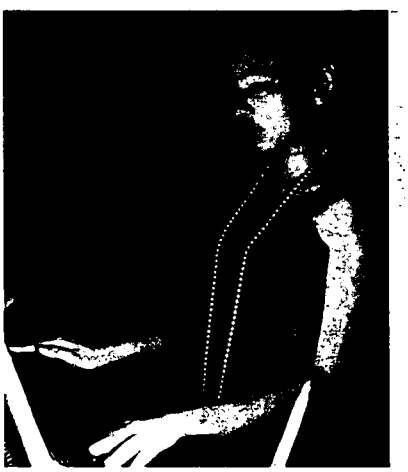
[26] As stated earlier in the discussion, the working definition of inter- or cross-disciplinary study in the College Board-Getty Project is the following: *It is an approach to learning that seeks to develop and build student competence by consciously applying and utilizing the knowledge, skills, and methods of more than one discipline or subject matter to inquire about and explore an object, central theme, concept, topic, problem, issue, or experience.* This definition does not rule out the possibility of adapting a continuum of approaches to integrating learning across the curriculum.

[27] An annotated list of resources for exploring the design of inter- and cross-disciplinary curricula can be found in Michael Sadowski, "Integrating the Curriculum: Moving Beyond Traditional Subjects Requires Teachers to Abandon Their 'Comfort Zones,'" *The Harvard Education Letter* XI, no. 5, (September/October 1995), p. 4; it is summarized here for easy reference. — James A. Beane, *A Middle School Curriculum: From Rhetoric to Reality* (Columbus, OH: National Middle School Association, 1993); *Educational Leadership 49*, no. 2 (October 1994); Robin Fogarty, *The Mindful School: How to Integrate the Curricula* (Palatine, IL: IRI/Skylight Publishing, 1991); Heidi Hayes Jacobs, ed., *Interdisciplinary Curriculum: Design and Implementation* (Alexandria, VA: Association for Supervision and Curriculum Development, 1989); Susan Kovalik, *ITI: The Model Integrated Thematic Instruction.* 3rd edition (Kent, WA.: Books for Educators, 1994); Tarry Lindquist, *Seeing the Whole Through Social Studies* (Portsmouth, NH: Heinemann Publishers, 1995); John H. Lounsbury, ed., *Connecting the Curriculum Through Interdisciplinary Instruction* (Columbus, OH: National Middle School Association, 1992); Richard E. Maurer, *Designing Interdisciplinary Curriculum in Middle, Junior High, and High Schools* (Needham Heights, MA: Allyn & Bacon, 1994); Chris Stevenson and Judy F. Carr, eds., *Integrated Studies in the Middle Grades: Dancing Through Walls* (NY: Teachers College Press, 1993); Sean A. Walmsley, *Children Exploring Their World: Theme Teaching in Elementary School* (Portsmouth, NH: Heinemann Publishers, 1994). Other sources include: Philip Panaritis, "Beyond Brainstorming: Planning a Successful Interdisciplinary Program," *Kappan* (April 1995), pp. 623–628.

[28] Tyack and Cuban, *Tinkering Toward Utopia.*

CHAPTER 2

The Arts and Cross-Disciplinary Study



National standards for arts education offer a potential mechanism for unifying and integrating the school curriculum.

Why does this project consider the arts to be capable of unifying the curriculum? Do special qualities inhere in the arts disciplines or do they have a "connecting power" that makes them particularly valuable for this purpose? This chapter will explore some of the reasons that the arts appear to be well suited to play a unifying role in an inter- or cross-disciplinary approach to education.

The Arts and the Disciplines

Although most state departments of education have statements of intention about the arts in their curriculum frameworks, only about 30 of them have followed through at the policy level with a high school graduation requirement in the arts. Given the often minimal nature of the requirement, *Toward Civilization* argued in 1988 that if an education in the arts were defined in the same way as education in other school subjects, i.e., to include sequential instruction by qualified teachers, then "basic arts education does not exist in the United States today."[1] The report went on to say that "there is a major gap between the stated commitment and resources available to arts education and the actual practice of arts education. Only nine states require arts courses per se for all students," while "13 accept courses in domestic science, industrial arts, humanities, foreign languages, or computer science as alternative[s]."[2] That little progress has been made was corroborated by a College Board survey conducted in 1994.[3]

A possible stimulus to educational change is the growing use of cross-disciplinary concepts in the high school curriculum. In the search for more effective curriculum coherence the potential for exploring these concepts is well worth examining. Such curricular innovation, in all disciplines, can lead to broader and deeper understanding of the subjects under study and to improved analytical and thinking skills. However, it should be remembered that advocates of both cross-disciplinary studies and arts education agree on the fundamental importance of the disciplines themselves. Many arts educators concerned with policy issues, for example, base their thinking about cross-disciplinary use of the arts on the maxim that "it must be rooted in the art form," i.e., that "the work of art *as content* is a guiding principle in determining what is appropriate" in the cross-disciplinary context.[4] A comprehensive, inquiry-based approach that goes beyond art production and performance in the service of other subjects must inform a cross-disciplinary arts program.

There is now a growing body of evidence that the arts can be utilized successfully in creating cross-disciplinary curricula that also take the arts seriously as disciplines. Many magnet schools use the arts in this way quite fruitfully, as do a number of other experimental programs. But these efforts are not coordinated and their results to date, as is true of cross-disciplinary studies generally, are not conclusive.[5] Arts programs are also rendered even more tenuous by their marginal status in the schools.

Nonetheless, because the arts have been included as a core subject in the

National Education Goals and in the Goals 2000: Educate America Act,[6] they can play a more central and productive role in creating cross-disciplinary curricula. This has been reinforced by the development of both content standards (*what students should know*) and performance standards (*what students should be able to do*) for core art forms — dance, music, theatre, and the visual arts (see sidebar). The arts standards have the potential to strengthen the perception of educators, decision makers, and parents concerning the academic rigor inherent in the study of the arts. To the degree that there is lingering concern about cross-disciplinary study, the presence of strong disciplinary standards, in the arts and other areas, can help answer skeptics. Teachers can draw on these standards in designing cross-disciplinary programs.

One frequent criticism of disciplinary standards is the perception that they work against cross-disciplinary studies by reinforcing disciplinary lines. That argument misses the mark because it fails to account for how standards in the arts can be resources in the design and evaluation of cross-disciplinary efforts. Standards are benchmarks against which to measure students' progress. Without standards, assessment of student learning is compromised, and the accountability of a program is undermined. Standards also define what is important for students to know and be able to do. Rigorous standards in the arts identify the fundamental, basic knowledge that is characteristic of the disciplines. With this foundation, curriculum developers can more effectively draw out significant ideas from the arts for use in cross-disciplinary teaching and learning.

THE ARTS STANDARDS

The *National Standards for Arts Education* point to five areas of competence:

- **Communicate at a basic level in the four arts disciplines;**
- **Communicate proficiently in at least one art form;**
- **Develop and present basic analyses of works of art from historical, structural, and cultural perspectives;**
- **Acquire an informed acquaintance with exemplary works of art in the four arts disciplines from a variety of cultures and historical periods; and**
- **Relate various types of arts knowledge and skills within and across the arts disciplines.**

Arts and Cross-Disciplinary Education

Business Raises Some Possibilities.

A further sign that the arts can play a vital integrative role in creating cross-disciplinary curricula is the interest of the business sector in the quality of U.S. education.[7] The educational dimension of the "high-performance workplace," as defined by business, proceeds from a simple premise: better schools are essential to improving the competitiveness of the American workforce and the nation's economic health. The

United States Department of Labor, through the Secretary's Commission on Achieving Necessary Skills (SCANS) has concluded that

> Good jobs for American workers increasingly depend on people who can put knowledge to work. Disturbingly, half our young people leave school without the knowledge or skills required to find and hold a good job. Creating workplace know-how demands two elements: *competencies* and a *foundation of personal qualities*. To establish this foundation and achieve these competencies, the nation needs to reinvent its schools, foster work-based learning, reorganize the workplace, and restructure educational assessment to include the certification of needed skills (see sidebar).[8]

Business has an obvious interest in education. The nation's schools produce its customers, employees, and leaders. As Peter Drucker points out in his book, *Post-Capitalist Society*, we live in a time when the basic economic resource is no longer labor or capital, but knowledge itself. The pursuit of knowledge is increasingly the basic business of American companies and that fact has profound implications for education.[9]

As the twenty-first century dawns, the definition of an "educated person" is

THE SCANS COMMISSION'S EDUCATIONAL FOCUS

The Five Competencies

- Students should be able to identify, plan and allocate resources, such as time, money, materials and facilities, and human resources;
- Students should exhibit the interpersonal skills of being able to work with others, including participating as a team member, teaching others new skills, serving clients/customers, exercising leadership, negotiating, and working with people from diverse backgrounds;
- Students should have information skills, especially the skills of acquiring and evaluating, organizing and maintaining, interpreting and communicating, and using computers;
- Students should be able to understand, monitor, correct, design, and improve the complex interrelationships presented by systems; and
- Students should be able to work with a variety of technologies, including selecting and applying technologies, as well as maintaining and troubleshooting equipment.

The Three-Part Foundation

- Students should have these basic skills: reading, writing, arithmetic and mathematical operations, listening and speaking;
- Students should have these thinking skills: creative thinking, decision making, problem solving, seeing with the mind's eye, knowing how to learn, reasoning;
- Students should have these personal qualities: responsibility, self-esteem, sociability, self-management, integrity/honesty.

Source: What Work Requires of Schools *(Washington: U. S. Department of Labor, 1991), pp. xvii-xviii.*

changing profoundly. It can no longer apply to those educated in only the humanities, the sciences, or the arts. Today, the term is more deservedly earned by those who can bridge the gap between liberal learning and applied knowledge, who live as productively skilled members of a global society and economy, who can integrate knowledge and skills across more than one area of academic content, and who can function effectively as members of many organizations and communities.

These changes have implications for the themes of this report and the College Board-Getty Project. For example, both Drucker and Peter Senge, author of the best-selling book on management, *The Fifth Discipline,* express concern about one particularly underdeveloped skill for putting education to work in the real world of defining and solving problems, namely, *the ability to see and think in wholes.* Making a point that has serious ramifications for how the arts and cross-disciplinary learning can reinvigorate education, Senge writes:

> From a very early age, we are taught to break problems apart, to fragment the world. This apparently makes complex tasks and subjects more manageable, but we pay an enormous price. We can no longer see the consequences of our actions; we lose our intrinsic sense of connection to a larger whole. After a while, we give up trying to see the whole altogether.[10]

The perceptual faculties and analytical strategies described by David Perkins, Edmund Burke Feldman, and Harry Broudy all speak to this issue. Perkins argues for the necessity of developing the abilities inherent in what he calls "orchestrating the eye," i.e., training perception to reach out, describe, analyze, reflect, interpret, and make judgments—in other words to look and think more broadly, deeply, clearly, deliberately, adventurously, and holistically.[11] It is a perspective that can also be found in music, dance, and theatre, as well as in other art forms.

For business, better schools are viewed as important means to improving the competitiveness of the American workforce and the nation's economic health. As the basic economic resource of society shifts from labor to knowledge itself, individuals prepared to be part of the high-performance workplace are essential. To help fulfill this aim, schools will need to foster skills associated with creating and utilizing new knowledge in contexts that are increasingly integrated and interrelated. The arts provide unique contexts for exercising those skills and the content for teaching these capacities.

Beyond Instrumentality to Intrinsic Values.

Frequently, rationales for the contribution of arts education relate to enhancing students' workforce readiness and the nation's competitiveness in the international marketplace. Increasingly, business leaders are joining arts and cross-disciplinary educators to argue that both arts education and cross-disciplinary studies are highly relevant to the workplace. An education in the arts, as Senge puts it, nourishes "the ability to think in wholes," "the expanded capacity to create," and "new and expansive patterns of thinking." This newfound appreciation of the arts can heighten

awareness of their value in bringing curricula together. As a result of this convergence, advocates for both arts education and cross-disciplinary studies have begun to find new allies in the business community.

Other instrumental arguments for the value of the arts for education focus on the contributions they make to acquiring an understanding of diverse civilizations and cultures, the fostering of creativity, the teaching of effective communication, or the teaching of critical assessment of what one sees, reads, and hears.[12]

In the end, however, rationales for arts education — specifically for why the arts and cross-disciplinary studies should be brought together — must rest as much on intrinsic arguments as instrumental ones. Both the arts and cross-disciplinary studies are worth knowing about, understanding, and doing for their own value. The College Board-Getty Project will make the case for both based on the following:

1 *New knowledge is created from the interaction between the known and the questions posed by the "not-yet-known."* Cross-disciplinary studies, by their nature, enable question-asking that breaks open the problem-posing process necessary for new knowledge, in ways unavailable to similar activity that is discipline based.

2 *Knowledge is comprised of both wholes and parts.* Everything we know is related to everything else in some way; further, knowledge of the whole requires knowledge of the interactions of the parts. An intrinsic potential of cross-disciplinary studies, therefore, is this ability to abet and give structure to such processes of combination and recombination in many learning environments.

3 *The relationships of particular realms of knowledge to one another (the disciplines) are, at least potentially, mutually informing and reinforcing.* Their impact is synergistic. Cross-disciplinary study, by its nature, seeks pathways for this process.

Up to this point, we have outlined an intrinsic case for learning in the arts and cross-disciplinary study. Arguments have been offered for the interdependence of arts standards and cross-disciplinary study and for how arts-centered cross-disciplinary curricula might address the needs of business for a high-performance workforce. But these arguments, in themselves, do not make the case for why the arts appear to be well suited to play a unifying role in cross-disciplinary curricula. The remainder of this chapter will offer reasons for why the arts are particularly well equipped to enable students to pursue the interactive and holistic nature of knowledge. These reasons focus on the inherent characteristics of the arts as ways of knowing, their role as a stimulus to broad and deep thinking, their potential to serve as sources for cross-disciplinary themes, and their connections to multiple forms of intelligence.

The Arts as Ways of Knowing

The arts provide distinctive and unique ways of knowing and understanding that are not offered by other subjects in the general education curriculum. The art forms of dance, music, theatre, and the visual arts represent some of the most

significant cultural achievements of humankind. Each has special contributions to make for the broadening and deepening of students' understanding of the world.

To think of the arts as distinctive paths and ways of knowing is a dramatic departure from traditional views which treat the arts as matters of emotion rather than matters of mind, and hence as merely ornamental in education. But what does it mean to say that the arts are ways of knowing, and how does this view of the arts relate to cross-disciplinary teaching and learning?

Answers to these questions start with the idea of perception, in particular, how we perceive qualities in the world. As our senses become more acute and refined, they serve as the building blocks for how we think, feel, and imagine.[13] Because the information we acquire through our senses is individual and private, we need a means for sharing it. The arts are a means for making this information public.

The arts are ways of knowing because they provide us with knowledge of human thoughts, feelings, and beliefs. Each art form draws on material from the senses in unique ways and utilizes specialized materials and techniques to communicate these thoughts, feelings, and beliefs. For example, dance is distinctively kinesthetic, draws on the vast capacities of the human body for movement, and organizes these capacities in space and time to communicate. Music is structured sound, using rhythm, melody, harmony, and timbre to communicate thoughts, feelings, and beliefs in an endless variety of musical forms. Theatre communicates them through imitation and representation in characters, narratives, situations, and illusions.[14] The visual arts draw on humans' capacities to see, both literally and metaphorically, and impart information and meaning through looking.[15]

In these ways, the different art forms are unique ways of knowing. But the arts can also be thought of as different paths to "knowing" in general, e.g., for posing problems, finding solutions, and creating meanings.

> The arts, when well taught, provide children with opportunities to use their imagination, to create multiple solutions to problems, and to rely on their own judgment to

> determine when a problem is solved or a project is completed. In the arts, there is no rule to 'prove' the correctness of an answer and no formula to determine when a task is complete. In the arts, children must

rely on that most exquisite of human intellectual abilities — judgment.[16]

Learning in the arts disciplines of production/performance, criticism, history, and aesthetics extends the capacity of art forms as ways of knowing in many ways. Production in all the arts and performance in dance, music, and theatre enlist and develop a range of cognitive skills — the creation, interpretation, and organization of expressive forms; planning ahead and re-evaluation of goals; perception of relationships between parts and wholes; and attention to subtleties and nuances. Criticism, especially the interpretation of meanings of works of art, entails a kind of perception not commonly employed. Criticism invites us to explore and probe artworks deeply and can teach us how to look and hear in sustained ways. As a result, cognitive skills of perception, analysis, and interpretation are developed.

Historical inquiry around works of art helps students understand that art does not emerge from or function in a vacuum. Through historical study of works of art, students gain an understanding of relationships between art and culture over time.

> All art is part of a culture. All cultures give direction to art, sometimes by rejecting what artists have made and at other times by rewarding them for it. To understand culture, one needs to understand its manifestations in art, and to understand art, one needs to understand how culture is expressed through its content and form.[17]

Aesthetics, for its part, uses philosophical methods to ask and answer fundamental questions about the nature, status, and value of art works. Philosophical thinking entails an array of cognitive skills of use to students, particularly, the capacity to justify, in clear and defensible language, judgments about qualities and values.

This section on the arts as ways of knowing has made three points:

- the arts are ways of knowing that are distinct from other subjects in the curriculum and provide us with knowledge of human thoughts, feelings, and beliefs that are not duplicated by other means of learning;
- the arts are different paths to knowing in general, for posing problems, finding solutions, and creating meanings; and
- learning in the art disciplines enlists and develops a wide range of cognitive skills.

These points, by stressing art's relationship to the breadth of human experience and to sophisticated forms of cognition, lay the groundwork for subsequent arguments for why arts-based cross-disciplinary teaching and learning can provide curricular coherence.

Toward Curricular Coherence

Two further arguments can be made for why the arts are particularly well suited to generate cross-disciplinary study: the arts are able to stimulate and supply the broad and deep thinking required for sophisticated cross-disciplinary study; and the arts, by virtue of their capacity to create products that embody the diversity, intensity, and complexity in human experience, are

prime sources for meaningful themes that cut across disciplines. As such, the arts can supply the curricular roots for coherent cross-disciplinary approaches.

The Arts as a Stimulus to Broader and Deeper Thinking.

Elliot Eisner offers guidance about the contribution the arts can make to both learning and the coherence of a cross-disciplinary curriculum. He advances two compelling reasons why the arts can be powerful in improving learning and recasting the curriculum: (1) the arts point powerfully to basic ways we *misunderstand* the ways we know; and (2) the arts offer alternative, complementary ways of putting reality together.[18]

The arts themselves offer potential for unifying the school curriculum because they provide students with a unique approach and perspective to learning; they stimulate thinking and expand human understanding. But frequently some fundamentally flawed misconceptions about knowledge constrain or diminish this potential. These beliefs include:

- Human conceptual thinking requires the use of language.
- Sensory experience is low on the hierarchy of intellectual functioning.
- Intelligence requires the use of logic.
- Detachment and distance are necessary for true understanding.
- Scientific method is the only legitimate way to generalize about the world.[19]

The arts counter these misconceptions by making the following contributions:

- ***An education in the arts helps prepare students for the fact that not all problems have a single, correct answer.*** The arts demonstrate that solutions can take a multitude of forms. Unlike one-answer endeavors such as spelling and arithmetic, the arts celebrate imagination, creativity, multiple perspectives, and the importance of personal interpretation.
- ***In the arts as in life, the form of a thing is part of its content.*** The arts teach that form and content go together. A sculptor's form expresses the image in the mind of the sculptor, likewise the actor's delivery of the playwright's lines, the musician's reproduction of the composer's sonata, and the ballerina's steps of the choreographer's ballet.
- ***Fixing objectives and following clear-cut methods are not always the most rational ways of dealing with the world.*** The arts recognize this by deliberately *not* always assuming that the most effective way to travel between an objective and its realization is a straight line. Solving complex problems requires attention to wholes, not simply to parts. The arts teach purposeful flexibility and experimentation.
- ***The arts teach that there is a distinction between expression and discovery.*** Some kinds of meaning may require the expressive forms that the arts make possible, as when a work of art seeks to interpret an abstract concept. Through the arts, students discover how to express their individual capacity for imagination.[20]

By revealing misconceptions about knowledge and by making tangible contributions to broad and deep thinking, the arts offer a sound foundation for the achievement of curricular coherence.

The Arts as Sources for Cross-Disciplinary Themes.

The second argument for why learning in the arts can lead to curricular coherence lies in their capacity to generate themes that are appropriate and significant for cross-disciplinary study. Learning through themes moves students beyond the confines of a strict content orientation by forging connections between the narrower issues that disciplines focus on and the broader questions posed by the students' social roles, value structure, culture, religion, human identity and psychology, relationships with others, and the physical and biological worlds.

Programs that utilize the arts to integrate across disciplines have a rich and creative variety of theme-based instruction. Among many examples that could be offered, a few are:

- In one California program, studio arts are used as a way for students to express their understanding of course content in humanities classes and to develop a multicultural perspective. In one unit based on Picasso's "Weeping Women," for example, students learn about Picasso's use of African art and also how contemporary African American artists use African sources.
- In a Florida museum-based program, students use the subject matter of specific works of art (e.g., Joseph Stella's *Brooklyn Bridge*) to reach out to the disciplines of history, geography, literature, engineering, mathematics, design, and even cost-analysis (e.g., students design bridges of their own and consult with local construction companies on costs).
- A program in a small Nebraska town turns the thematic metaphor of "bridges" in another direction—using it not only as an integral part of its internal instructional content, but also as an integrating theme for the entire program, which encompasses the cross-disciplinary study of architecture and design, geography (famous bridges as symbols of cities), intrinsic order in ecosystems, cultural linkages, and other topics.

Perkins and Blythe describe their process for identifying themes as follows: "we look for three features...: centrality to the discipline, accessibility to the students, and connectability to diverse topics inside and outside those disciplines."[21] Yet many examples could be cited of themes that lack substance. The following list of questions appear to have relevance for the generation of effective themes in arts-centered cross-disciplinary study:

- What is educationally significant about the theme and will it promote future learning?
- Is it meaningful and appropriate to the students?
- Does it enable students to make generalizations?
- Does it have substance and application in the real world?
- Does it tie in with other units?

- Does it apply to a wide range of subject areas?
- Does it disclose fundamental patterns?
- Does it reveal contrasts and similarities?
- Are relevant materials available? [22]

This section has illustrated how the arts can generate themes for use in cross-disciplinary study. But as suggested in earlier sections of this report, themes provide only one kind of organizing center. Objects, issues, or ideas can serve this function as well. Other organizing centers for cross-disciplinary work have been suggested, for example, by Gardner and Boix-Manilla:

- goals related to understanding, i.e., not just *knowing* content but being able to arrive at personal interpretations of essential issues *about* content;
- the demonstration of understanding through performance, e.g., the ability to handle thought-demanding tasks associated with content or the ability to translate disciplinary content into product(s); and
- ongoing assessment of student products to find instances of mature performances of high-quality work and progress from one benchmark to another. [23]

As shown above, the arts can supply the foundation for coherence across the curriculum. First, because the arts offer distinctive ways of learning and understanding, they can form the basis of a coherent curriculum. Secondly, because works of art connect in so many ways to thoughts, feelings, and beliefs, they can generate organizing centers for coherent curricula. These points are augmented in the next section by an additional argument.

Connections Between the Arts and the Intelligences

The theory of multiple intelligences, as given currency by Howard Gardner and others, lends further support for the idea that the arts foster the kinds of thinking required for sophisticated cross-disciplinary study. This theory includes seven categories of "intelligences" into which human abilities can be grouped: (1) linguistic intelligence, (2) logical-mathematical intelligence, (3) spatial intelligence, (4) bodily-kinesthetic intelligence, (5) musical intelligence, (6) interpersonal intelligence, and (7) intrapersonal intelligence. [24]

Several points about the theory of multiple intelligences are important to this discussion:

- Each person has capacities in all seven intelligences.
- Most people can develop all seven intelligences to a relatively high level of performance.
- Intelligences tend to work together in complex ways.

The arts appear to offer special opportunities to stimulate ways for intelligences to work together, i.e., the kinds of cognitive capacities required for cross-disciplinary work. For example, in his discussion of musical intelligence, Gardner posits distinct relationships not only between musical and linguistic and mathematical-logical intelligences, but in other relationships as well:

> Young children certainly relate music and body movement naturally, finding it virtually impossible to sing without engaging in

some accompanying physical activity; most accounts of the evolution of music tie it closely to primordial dance; many of the most effective methods of teaching music attempt to integrate voice, hand, and body. ... Ties between music and spatial intelli-

gence are less immediately evident but, quite possibly, no less genuine. The localization of musical capacities in the right hemisphere has suggested that certain musical abilities may be closely tied to spatial capacities ... [In respect to intrapersonal intelligence] music can serve as a way of capturing feelings, knowledge about feelings, or knowledge about the forms of feeling, communicating from the performer or the creator to the attentive listener.[25]

This latter point lends further evidence to the claim that the arts, in this case music, are unique ways of knowing.

David Perkins offers a different perspective on the relationship between the arts and cognitive processes.[26] Looking at art, he argues, requires thinking, and the practice of looking at art develops a "thinking disposition." Perkins believes that looking at art has an *extrinsic* value — a payoff in the real world — in the form of contributions to four thinking dispositions that also feed directly into cross-disciplinary study. Perkins admonishes those who would develop an intelligent eye to give thinking (looking) the time it needs to yield its benefits; make thinking (looking) broad and adventurous; make thinking (looking) clear and deep; and make thinking (looking) organized. Using these thinking (looking) dispositions enables students to develop their cognitive capabilities in any area of study.

This chapter has offered rationales for why instruction and learning in the arts can be good candidates to serve at the core of cross-disciplinary studies. The *ways of knowing, cognition, curriculum,* and *multiple intelligences* arguments have been examined. It should be remembered that these rationales are not conclusive statements about the value of the arts in the design of cross-disciplinary curricula. They combine the most persuasive thinking about the arts, cognition, and curriculum to suggest why it is reasonable to think that the study of the arts should be at the core of cross-disciplinary teaching and learning. These arguments provide a basis for undertaking a long-term research and development initiative.

The next chapter examines the current contexts for education reform and what the future prospects of *The Role of the Arts in Unifying the High School Curriculum Project* might be in such a climate.

NOTES: Chapter 2

[1] *Toward Civilization: A Report on Arts Education* (Washington, DC: National Endowment for the Arts, 1988), p. 13.

[2] Ibid., pp. 19, 22.

[3] A complete analysis can be found in Anthea Raymond. "College Board/Getty School Project, Survey Synthesis Report," College Board working document. December 15, 1994, p. 6.

[4] Nancy Roucher and Jessie Lovano-Kerr, "Can the Arts Maintain Integrity in Interdisciplinary Learning?" *Arts Education Policy Review* 96, no. 4 (March/April 1995), p. 21, emphasis added.

[5] See, e.g., Liora Bresler, "Imitative, Complementary, and Expansive: Three Roles of Visual Arts Curricula," *Studies in Art Education* 35, no. 2, 1994, pp. 90–103; Liora Bresler, "The Subservient, Co-Equal, Affective, and Social Integration Styles and Their Implications for the Arts," from "Symposium: The Integration of the Arts into the Curriculum: Part 1. The United States," *Arts Education Policy Review* 96, no. 5 (May/June 1995), pp. 31–37.

[6] In September of 1989, the nation's governors set goals for the nation's schools, now eight in number, which the states committed themselves to carrying out and which two successive administrations have endorsed. Among the more significant features of the "Goals 2000" effort, as it has come to be called, has been a renewed focus on the curriculum. Goal 3 specified several areas of "challenging subject matter" in which students would be expected to show competency on leaving grades 4, 8, and 12: English, mathematics, science, history, geography, civics and government, economics, foreign language, and most notably for this report — the arts.

[7] See, e.g., the report of the National Commission on the Skills of the American Workforce, *America's Choice: High Skills or Low Wages* (1990), and the two reports of the (Labor) Secretary's Commission on Achieving Necessary Skills (SCANS), *What Work Requires of Schools*, and *Learning A Living* (1991, 1992); Carol Sterling, "The Evolving Symbiotic Relationship of Arts Education and U.S. Business," "Symposium: Control of K-12 Arts Education: Part 3. Sectors of Influence," *Arts Education Policy Review*, 97, no. 2, November/ December 1995, pp. 27–30.

[8] SCANS Commission, *What Work Requires of Schools*, and *Learning a Living* (Washington, DC: U. S. Department of Labor, 1991, 1992). There is a tendency to dismiss much of this discussion as so much special pleading from "inside the Beltway." Some of it is. At the same time, however, the national boards, commissions, and task forces that have generated these and similar studies and reports are heavily weighted with CEOs from American corporations, labor leaders, scientists, researchers, and leading educators from around the nation. They are anything but a clique—or of one mind.

[9] Drucker, *Post-Capitalist Society*.

[10] Peter Senge, *The Fifth Discipline* (NY: Doubleday, 1990), p. 3.

[11] See Perkins, *The Intelligent Eye*, pp. 70–81. See also E. B. Feldman, *Varieties of Visual Experience: Art and Image as Idea*, (NY: Harry N. Abrams, n.d.) and H. S. Broudy, *The Role of Imagery in Learning* (Los Angeles, CA: Getty Center for Education in the Arts, 1987).

[12] *Toward Civilization*, pp. 13–19.

[13] See Elliot Eisner, *Cognition and Curriculum Reconsidered*, 2nd Edition (NY: Teachers College Press, 1994), p. 31.

[14] For further discussion of music and theatre as ways of knowing, see Southeast Center for Education in the Arts, *Discipline-Based Arts Education: A Conceptual Framework for Learning and Teaching in the Arts* (Chattanooga, TN: The University of Tennessee at Chattanooga, 1995).

[15] Perkins, *The Intelligent Eye*.

[16] Elliot Eisner, "Structure and Magic in Discipline-Based Art Education" in *The Role of Discipline-Based Art Education in America's Schools* (Los Angeles, CA: The Getty Center for Education in the Arts, 1988), p. 7.

[17] Ibid., p. 20.

[18] Elliot W. Eisner, "The Misunderstood Role of the Arts in Human Development," *Kappan* (April 1992), pp. 591–595. The remainder of this section is liberally adapted from this source.

[19] Ibid., 592–593.

[20] The bulleted series is an elaboration of ideas from Eisner, *Ibid.*, pp. 594–595.

[21] David Perkins and Tina Blythe, "Putting Understanding Up Front," *Educational Leadership* (February 1994), pp. 4–7.

[22] Susan Kovalik and David Perkins, as quoted in Scott Willis, "Interdisciplinary Learning," *ASCD Curriculum Update* (November 1992), p. 4.

[23] Howard Gardner and Veronica Boix-Mansilla, "Teaching for Understanding in the Disciplines—and Beyond," *Teachers College Record*, 96, no. 2 (Winter 1994), pp. 203–204; 212–214, emphasis added.

[24] See Howard Gardner, *Frames of Mind*, for definition and description of these intelligences (NY: Basic Books, 1983), pp. 122–129.

[25] Ibid., p. 123.

[26] Perkins, *The Intelligent Eye.*

CHAPTER 3

Current Contexts and Future Prospects

The pilot project, The Role of the Arts in Unifying the High School Curriculum, *will examine innovative approaches to curriculum integration using the arts.*

Educational Policy Context

Turning to the broad educational policy context, there are reasons to believe that arts-centered cross-disciplinary approaches have an opportunity to be seriously considered in the marketplace of educational reform ideas. As noted at the outset of this report, there is already a widespread movement toward education reform at state and local levels. The long-term impetus is on the side of change. Within this context, three features of the contemporary reform environment are of immediate importance for the College Board-Getty Project. Each, in its own way, increases the likelihood that the idea of arts-centered cross-disciplinary curriculum will receive serious attention among educational policymakers.

- ***The centrality of the curriculum in education reform.*** A number of factors ensure the centrality of curricular restructuring to the reform effort. For education reform to have lasting effects, it must encompass a curricular element — what is taught and how instruction is delivered. Second, the increasing pressure exerted on the curriculum by technology necessitates not just changes in instructional environments and methods but revisiting the nature of instruction itself. Third, there is an increasing awareness on the part of parents and decision makers at the local level that education for the twenty-first century cannot be successful so long as it remains essentially predicated on the curriculum of the nineteenth century. Fourth, there is growing convergence among education leaders that the curriculum, together with the professional development of teachers and bottom-up decision making, are the three core elements in making education reform (as measured by student performance) work.
- ***The interest of business.*** As noted earlier in this report, the SCANS Commission has identified six basic thinking skills business leaders believe are key to students' success in the workplace of the twenty-first century. They are the ability to: (1) think creatively, (2) make decisions, (3) solve problems, (4) see with the mind's eye, (5) learn, and (6) reason.[1] These clearly are competencies that should not be confined to traditional subject area arrangements.
- ***The credibility of the arts in education reform.*** The prominent place of arts educators in national education reform efforts offers a further indication that arts education increasingly has the credibility that it deserves. As an example, arts education was added as a core subject in the National Education Goals and to Goals 2000. And recently a coalition of 140 arts and education organizations, called the "Goals 2000 Arts Education Partnership," has succeeded in generating a grant program for education planning in states and localities, providing the impetus for a national Internet bulletin board, and generating advocacy materials for a nationwide campaign to promote the place of arts education in planning state and local education reform.

The objectives of the College Board-

Getty Project are consistent with these three features of current thinking about school reform. The project focuses on curriculum reform, seeks to foster the kinds of competencies that are important to accomplishment in work, and makes the case for the capacity of the arts to achieve curricular coherence. *The Role of the Arts in Unifying the High School Curriculum* is more than a project seeking to find a place in the educational policy arena. It takes a research and development approach to reform — a probe to determine what future direction reform should take. Thus, by addressing fundamental issues of education in a research and development process over time, the project has the opportunity to make a contribution to education reform.

Research and Development Context

On-the-Ground Experiments.

This experiment in cross-disciplinary curricular restructuring is unusual because the three components — the arts as unifier of the curriculum, cross-disciplinary focus, a secondary school setting — have seldom been brought together in a coordinated manner. Moreover, *The Role of the Arts in Unifying the High School Curriculum Project* consists of a range of experiments in cross-disciplinary curricula integrated through the arts. In different settings and conditions, five high schools will test, over time, the viability and sustainability of using the arts to integrate the curriculum.

Thus far, the project has brought a number of significant —and difficult— questions into focus. Among the most prominent are the following:

- ***In regard to overall objectives:*** How can schools successfully place the arts at the core of instruction in order to integrate the curriculum? Can we identify the distinctive elements of arts education that make the arts effective unifying agents?
- ***In regard to curriculum planning:*** How can schools sequence and manage the complex process of planning cross-disciplinary curricula? How can schools move from content-bound disciplines to more truly cross-disciplinary work?
- ***In regard to coherence and systemic change:*** How can schools make use of cross-disciplinary education through the arts to effect systemic curricular change from pilot projects to institutionalized practice?
- ***In regard to professional development:*** How can the current project help teachers focus on the "less is more" principle with regard to long-standing beliefs—and sometimes

prejudices—about education and assessment? How can school systems help teachers trust and use cross-disciplinary approaches that may have

been little or no part of their own education? How can cross-disciplinary study be used to empower teachers as learners?

- *In regard to student needs:*
  How can cross-disciplinary studies be used to address the needs of multicultural students and at-risk students? How can cross-disciplinary studies motivate students to learn?

- *In regard to assessment:*
  What are the most effective assessment strategies for cross-disciplinary work? How can schools best assess the skills of problem posing, problem solving, and meaning making in students? Can longitudinal studies be developed to determine how students use cross-disciplinary learning and skills over time? How can schools work with colleges and universities to accept nontraditional assessments of student performance?
- *In regard to the use of technology:*
  How can we encourage the development of technology software for use in cross-disciplinary study? Can schools develop an easily linked network of libraries of cross-disciplinary materials?

In its overall design, *The Role of the Arts in Unifying the High School Curriculum Project* includes all of these questions in its field of vision.

Future Prospects

To this point, this chapter has talked about research and development within the context of broad educational policy. Of course, a necessary relationship exists among policy, practice, and research; but we cannot assume that the linkages will be made strong and clear unless the connections are given explicit attention. This will require viewing reform activity from a number of different vantages. Specifically, we will want to look closely at the following factors: *collaborative planning; professional development; student assessment; instructional teaming; commitment and leadership; defining the role for the arts; using community resources;* and *developing a multicultural focus.*

Ensuring that all of these aspects of reform are addressed increases the prospects that the College Board-Getty Project will make a contribution to education reform.

Collaborative Planning.

One important support for reform is collaborative planning among teachers and administrators, at both the school and district levels. Both research and common sense bear this out. When one California project began in 1986, for example, its originators insisted that new teaching teams secure up-front agreement from building-

level leaders. For the first several years, new project-connected principals were required to attend basic three-day training retreats in the company of their schools' teaching teams. A decade later, all participating principals are still required to grant teaching teams an hour per day for planning, student evaluation, and coordinating instruction. Teacher teams and administrators have learned to work hand in hand.[2]

This kind of collaboration has already led to modest success elsewhere. One large-scale program in the southeastern United States fosters collaboration in cross-disciplinary and arts education programs among 14 elementary and middle schools in six states. In this effort, begun in 1994, six clusters of school districts began participating in an eight-month planning process for adapting the program's model to local conditions. This has required the initial and sustained support of local, district, and state administrators. Equally important, classroom teachers have learned from the beginning of the program to plan cross-disciplinary units in teams, either including or consulting with arts teachers. Topics, unit duration, objectives, supporting activities, and other basic curricular elements have been addressed. Participating schools are *expected* to provide planning time for all teachers involved, and a two-day, collaborative planning process for classroom and arts teachers is built into the program. The schedule of cross-disciplinary activity is published throughout the school system and nonparticipating teachers are encouraged to tie their own lesson-planning to the program. Each of these elements has been vital to the success of the program.[3]

Professional Development.

Significant professional development opportunities are also essential to the success of any change process. In fact, a large body of research literature sees it as the single most critical factor.[4] Regrettably, however, the time teachers need for professional development is severely limited, often to as little as one day a semester in many, if not most, school districts.

There are exceptions, however; and these provide models that are well worth close attention. In a Los Angeles cross-disciplinary humanities program, for example, teacher centers have been established at two high schools. A formal week-long training session equips teachers in the basics of cross-disciplinary curriculum construction and teaching. Teams also meet extensively during the school year and over the summer, developing both instructional themes and the resource materials to support teaching. Teachers are accorded a great deal of freedom in selecting both. As part of the training, newly formed teams go to demonstration schools, observe team planning being modeled (including the battles!), and sit in on sessions of student evaluation. Teams are coached through their own development of a complete unit of instruction, including planning the resource materials. The program has been successful because of the time devoted to professional development.

In addition to the lack of time, another constraint secondary school teachers face in developing and implementing cross-disciplinary programs relates to

the content of professional development. Rarely does the content address instructional issues or how to integrate across the disciplines. Curriculum renewal and professional development are often vertically integrated *within* disciplines, not horizontally across them.

To address these issues, teachers in the Los Angeles program mentioned above routinely cross-reference one another's lessons to help students make connections across subject matter. Links are made explicitly. Primary sources—novels, newspaper articles, paintings, and musical compositions, and even teachers' own writings—are favored over textbooks. Teachers find they must often rewrite primary source materials, but without "dumb[ing] them down."[5] Art is approached in the same way as other disciplines. Although it is not the only focus of thematic integration, it is consistently used to drive curriculum development.

Student Assessment.

Attention to how student work is assessed is another essential component of the College Board-Getty Project. The development of assessment tools and standards for cross-disciplinary education are still in their infancy. There is a need to define problems and determine how available assessment instruments and strategies in different disciplines fit cross-disciplinary study. It is likely that long-honored assessment tools in the arts, e.g., portfolios, auditions, and adjudicated performance, can be adapted to this purpose. In addition, new assessment tools will need to be developed that determine the extent to which students have developed the capacity to analyze, synthesize, make informed judgments, and solve problems.

Instructional Teaming.

Another critical condition is arranging for the participation of the right combination of teachers on an instructional team. The design of curriculum will be driven by the various subjects being integrated; therefore, teachers need to be thoroughly grounded in their own disciplines.

Cross-disciplinary curriculum design appears to work best when it is a team effort. Because the demands of cross-disciplinary teaching and learning are complex and innovative, those involved are likely to be strong, skilled, and confident teachers. As a result, there may be discussion, even argument, about how to proceed. Teachers, school administrators, and other participants need to be as skilled in working in groups as they are in developing instructional strategies.

At the same time, the ultimate success of any cross-disciplinary venture is heavily dependent on the willingness of the instructional team to go beyond the mere exchange of lesson plans and to remain open to questions posed by their colleagues from other disciplines, such as questions related to assumptions about the nature of knowledge itself. Questions of this type can be extremely valuable litmus tests of what is actually happening in cross-disciplinary work. "What is truth and how do we know it?" is a ready example that may provide intense discussion between faculty in the arts and sciences.

Commitment and Leadership.

Commitment and leadership are needed to sustain movement toward educational change. Research reveals that cross-disciplinary programs may face a series of obstacles, including: (1) the absence of follow-up; (2) the isolation, over time, of an initially successful effort by administrators and school officials who were never fully convinced of its value in the first place; or (3) the lack of sustained support to affect a school's pedagogical culture.[6]

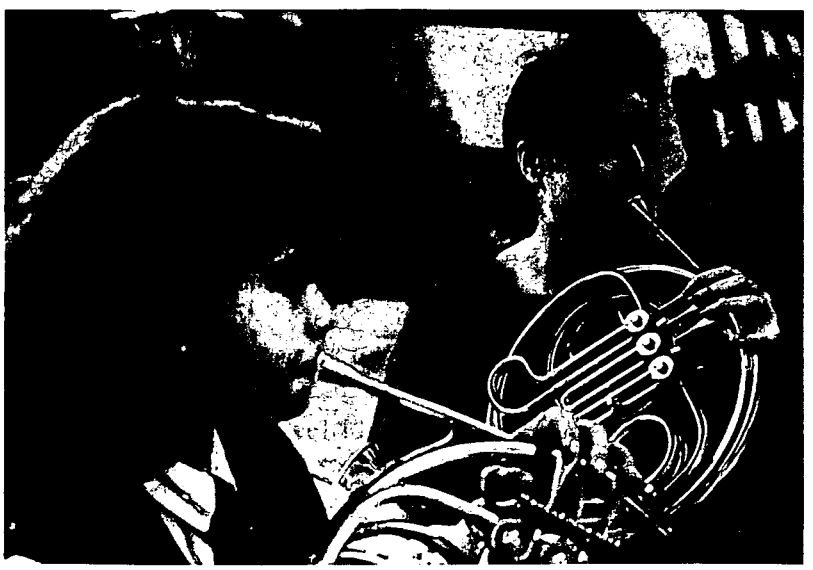
Among the most serious obstacles to be faced are entrenched assumptions about instruction. For example:

- *Students already have integrated thinking and learning skills.* This assumption simply does not accord with observations, nor with research about such thinking processes as decision making and problem solving. These skills have to be nurtured.
- *The disciplines already embody integrated skills.* Both the curriculum and the academic performance of high school students do not bear out this assertion. Learners who do not catch on spontaneously can gain substantially when the principles of cross-disciplinary study are spelled out.
- *Skills are learned in elementary school; content is learned in secondary school.* What is known about child development and how students learn contradicts this. The most successful learning comes about when skills and content are acquired simultaneously. Indeed, one of the central aims of all education must be to reinforce the dynamic tension between skills and content as cross-disciplinary study does.
- *Competition for time and resources does not allow for cross-disciplinary teaching and learning.* It is commonly accepted that skill building is best achieved using content, just as learning content is reinforced by skill development. The illusion that less curricular territory is covered when using a cross-disciplinary approach is just that—an illusion.[7]

Practitioners report that it is important to deal with these assumptions before those interested in pursuing cross-disciplinary education begin to explore its genuine possibilities.

Defining a Clear Role for the Arts.

Some of the possible pitfalls in attempting to integrate the arts with other disciplines are important to acknowledge. Cross-disciplinary education involving the arts means more than simply using an art form as an illustrative, decorative, or add-on



feature. For example, having students write essays about the internal debate that tore at the heart of the United States during the Vietnam War, or even staging a debate with students playing the parts of President Nixon (a politician) and Bob Dylan (an artist), does not constitute an integrated cross-disciplinary approach to the study of recent history. The missing elements that could move such activity in the direction of authentic cross-disciplinary work might include studying the Vietnam War as if it were a tragic drama on the Greek model, considering setting, protagonist and antagonist, historical context, plot development, exploration of a central conflict, climax, and denouement.

If the arts are to serve as agents for integration, they must play a significant role in curriculum design, and their power to serve as a means for communicating and translating ideas must be exploited as fully as possible.

Using Community Resources.

Another important component of the College Board-Getty's project is the incorporation of community resources. The arts offer great potential for accessing an abundance of community resources. Theatres, galleries, opera houses, museums, symphony halls, community choruses, and dance studios, as well as the institutional resources of local arts alliances, arts agencies, and organizations of performing artists, among others, can all play a role in cross-disciplinary curricula. These groups and agencies can provide instructional sites, make mentors and docents available, and help to structure educational experiences.[3]

Many arts organizations can also be of assistance in reaching diverse populations, engendering volunteer involvement, and developing focused projects.

Developing a Multicultural Dimension.

A final, important condition for the project is the inclusion of multicultural perspectives. The arts are a powerful medium in this context because they provide access to different cultures, give concrete expression to cultural values, and embrace the complexity of diverse groups. Whether in the form of compact discs and videos from the local library, information gleaned from the Internet, or local representatives of particular ethnic, cultural, linguistic, and even culinary traditions, every community has something to offer its students. Every culture represented in classrooms has songs, dances, drama, visual art, media art, and folk and design art that can be subjects, not only for the direct study of those cultures, but also for producing a cross-disciplinary learning environment.

To sum up, there are several reasons to conclude that the current reform environment is favorable to the development of arts-centered cross-disciplinary curriculum models. This chapter cites suggestive trends in curriculum reform, the kinds of competencies needed in the workplace, and the contribution of the arts in education, all of which are consistent with the aims of the College Board-Getty Project. Earlier chapters also lend support to this belief: Chapter One centered on the increasingly widespread interest in cross-

disciplinary models of instruction and Chapter Two offered rationales for why the arts can serve as a means to unify the high school curriculum.

Favorable conditions and sincere intentions are one thing; demonstrable, credible results are another. If the College Board-Getty Project, as a research and development initiative, is to have potential to contribute to education reform, the conditions for success described in this chapter must be addressed throughout the project.

To be sure, a key measure of the success of this project will be its influence in discussion of future educational policy. Ultimately, however, the measures of success go beyond policy influence. They extend, it can be hoped, to a revitalization of learning among secondary students and to a rediscovery of the power of the arts to extend how they think about and understand the world.

Creating this difference in the classroom will necessitate both experimentation and invention. Courage and commitment, too, may be required, but perhaps the more necessary virtue is patience. In that regard, there is a story about Pablo Casals that is pertinent to the tasks that lie ahead and a fitting conclusion to this exercise. The story goes that when Pablo Casals reached the age of 90, a young reporter came to interview him and asked him this question:

"Maestro, do you still practice?

"Of course,"Casals replied. "Six hours a day. Why do you ask?"

"Forgive me, Maestro,"the reporter responded, "but you are the greatest cellist in the world. You are 90 years old. Why do you still practice six hours a day?"

"Because I think I am making progress."

NOTES: Chapter 3

[1] Secretary's Commission on Achieving Necessary Skills, *What Work Requires of Schools* (Washington, D. C.: U. S. Dept. of Labor, 1991), p. xviii.

[2] Pamela R. Aschbacher and Joan L. Herman, "Humanitas: A Synthesis of Four Years of Evaluation Findings," UCLA Center for the Study of Evaluation (June 1992), pp. 17f.

[3] "A+ Schools Report," Winston-Salem, NC: Thomas S. Kenan Institute of the Arts (September 1994), p. 1.

[4] See Ann Lieberman and Lynne Miller, eds., *Staff Development for Education in the 90s,* 2nd Edition (NY Teachers College Press, 1991); Judith Warren Little and Milbrey Wallin McLaughlin, eds., *Teachers' Work: Individuals, Colleagues, and Contexts* (NY: Teachers College Press, 1993).

[5] Aschbacher and Herman, pp. 17f.

[6] See Ackerman and Perkins, Gardner and Boix-Mansilla, Jacobs, and others.

[7] Ackerman and Perkins, pp. 85–87.

[8] See, *Using Local Resources: The Power of Partnerships* (Reston, VA: National Coalition for Education in the Arts, 1995).

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Appendix A

Demonstration Sites for College Board/Getty Center for Education in the Arts Project

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Prince George's County Schools
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