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### Interdisciplinary Curriculum

*Edited by Heidi Hayes Jacobs*

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## Chapter 1. The Growing Need for Interdisciplinary Curriculum Content

*by Heidi Hayes Jacobs*

Mike, a 2nd grader, defines mathematics as "something you do in the morning." Unfortunately, his statement reflects an internalization of mathematics as an experience to be absorbed from 9:45–10:30 a.m., and certainly before recess. We rarely explain to students why the school day is designed as it is. It should be no surprise then that students look at the arbitrary divisions for reading, math, social studies, science, art, music, and physical education and begin to define the subject areas as separate bodies of knowledge with little relationship to one another.

As Mike moves into junior and senior high, the subject matter delineations will become even more entrenched as the academic areas are forced into 50-minute time blocks taught by individual specialists. It is no wonder that many secondary school students complain that school is irrelevant to the larger world. In the real world, we do not wake up in the morning and do social studies for 50 minutes. The adolescent begins to realize that in real life we encounter problems and situations, gather data from all of our resources, and generate solutions. The fragmented school day does not reflect this reality.

The British philosopher Lionel Elvin (1977) uses an analogy to describe the problem of the false time constraints of the school day.

When you are out walking, nature does not confront you for three quarters of an hour only with flowers and in the next only with animals (p. 29).

If we take Elvin's analogy from another angle, it is clear that when out walking, you can also sit and pick up the flowers and concentrate solely on them for three-quarters of an hour and learn a great deal. The problem is that in school we generally do not consider both perspectives as necessary components of a child's education.

Having examined various models and approaches to interdisciplinary design for the past 15 years, I have made some observations. Although teachers have good intentions when they plan interdisciplinary courses, these courses frequently lack staying power. Two problems in content selection often plague courses:

1. *The Potpourri Problem.* Many units become a sampling of knowledge from each discipline. If the subject is Ancient Egypt, there will be a bit of history about Ancient Egypt, a bit of literature, a bit of the arts, and so forth. Hirsch (1987) and Bloom (1987) have criticized this approach for its lack of focus. Unlike the disciplines that have an inherent scope and sequence used by curriculum planners, there is no general structure in interdisciplinary work. Curriculum developers themselves must design a content scope and sequence for any interdisciplinary unit or course.
2. *The Polarity Problem.* Traditionally, interdisciplinarity and the discipline fields have been seen as an either/or polarity, which has promoted a range of conflicts. Not only does the curriculum design suffer from a lack of clarity, but real tensions can emerge among teachers. Some feel highly

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territorial about their subjects and are threatened as new views of their subject are promoted. There is a need for both interdisciplinary and discipline-field perspectives in design.

To avoid these two problems, effective interdisciplinary programs must meet two criteria.

- They must have carefully conceived design features: a scope and sequence, a cognitive taxonomy to encourage thinking skills, behavioral indicators of attitudinal change, and a solid evaluation scheme.
- They must use both discipline-field-based and interdisciplinary experiences for students in the curriculum. Chapter 2, on design options, spells out the range of these possibilities.

To simply list a set of considerations for selecting interdisciplinary content would be to avoid wrestling with the complexities and possibilities for interdisciplinary work. When Mr. Davis, social studies teacher, and Mrs. Valasquez, English teacher, are sitting in the faculty lounge and decide to do a unit together, there is a chance that their work will fall prey to both the potpourri and the polarity problems. It is essential that they take time to reflect on some fundamental questions. These questions are spelled out in the rest of this chapter in order (1) to establish the need for interdisciplinary possibilities, (2) to define terms used in the field, and (3) to present a set of assumptions to guide effective practice.

### Why Look at Curriculum Integration?

Over the past few years, the interest in and need for curriculum integration has intensified throughout the country for several reasons.<sup>1</sup>

#### The Growth of Knowledge

Knowledge is growing at exponential proportions in all areas of study. If you look at one field, such as science, you see the remarkable degree of specialization that has resulted from research and practice. Each area of the curriculum has the blessing and burden of growth. The curriculum planner must wrestle not only with what should be taught but what can be eliminated from the curriculum. In English, there are new writers, new books, and new interpretations to consider every year. In the social sciences, there are difficult questions of selecting focal cultures, for we obviously cannot study every country in the world.

Then there are the annual state education mandates that get passed down to schools based on current problems. For example, many states now require a curriculum covering AIDS. Drug prevention curriculums have been on the books for a number of years in many states. Sex education and family life curriculums now are an integral part of the public school domain in some areas of the country. These are critical topics, but they do add pressure to the school schedule. The length of the school day in the United States has stayed basically about the same since the 1890s. We need to rethink the ways we select the various areas of study. Knowledge will not stop growing, and the schools are bursting at the seams.

#### Fragmented Schedules

I have heard teachers complain hundreds of times, "The day is so fragmented!" Elementary teachers say, "I never see my kids for a prolonged period of time," and secondary school teachers add, "I must plan my lessons to fit 40-minute time blocks rather than the needs of my students."

Schools respond to state requirements by dividing time into blocks to parcel out specific responsibilities and to maintain accountability. Frequently, state requirements are stated in terms of minutes per week. Students feel this fragmentation keenly. One of my favorite means of beginning an assessment of a secondary school is to follow one student through the day. It is easy to forget how, 8 times a day, students leap out of their seats every 40 minutes and rush for 5 minutes to another setting, another subject, another teacher, another set of students.

#### Relevance of Curriculum

If we are trying to devise a means of driving students out of school, we obviously are succeeding. Recent estimates suggest that, nationally, 25 percent of students drop out every year and in urban areas as many as 40 percent. Something is very wrong. A common concern of students is the irrelevance of their course work in their lives out of school. They find it difficult to understand why they need math when most of their instruction is based on a textbook used in isolation from its applications. The fragmentation of the day only compounds the dilemma as students never have the chance to explore a subject in depth.

The relevancy issue also strikes a deeper chord. Only in school do we have 43 minutes of math and 43 minutes of English and 43 minutes of science. Outside of school, we deal with problems and concerns in a flow of time that is not divided into knowledge fields. We get up in the morning and confront the whole of our lives. It is here that relevancy comes into play. It is not that schools should avoid dealing with specific disciplines; rather, they also need to create learning experiences that periodically demonstrate the relationship of the disciplines, thus heightening their relevancy. There is a need to actively show students how different subject areas influence their lives, and it is critical that students see the strength of each discipline perspective in a connected way.

Out of this concern for relevance arises another key area that has been the subject of debate for the past few years: the ignorance of the American public and the lack of cultural literacy (Hirst 1987, Bloom 1987). Some argue that there should be a body of knowledge that is passed on from one generation to the next that deals with our classics and with the basics of our culture: its history and its arts and sciences. The danger in this line of reasoning is to fall prey to the polarity problem. Discounting interdisciplinary efforts as attempts at relevancy at the expense of the classics is simplistic and only heightens the polarity.

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The attempts at interdisciplinary work that seem to be most successful are those that address the polarity question in a different way. The question here isn't whether we should teach the classics (though that is a question worthy of genuine discussion); rather, we are considering a larger point: No matter what the content, we can design active linkages between fields of knowledge. We can teach the works of Shakespeare with an eye to the history of the times, the arts, the values, the role of science, and the zeitgeist rather than simply sticking with specific passages. The student who does not possess a literary bent may encounter *King Lear* in another subject area. Integrated curriculum attempts should not be seen as an interesting diversion but as a more effective means of presenting the curriculum, whether you wish to teach Plato or feminist literature. The curriculum becomes more relevant when there are connections between subjects rather than strict isolation.

Consider the definition of "history" given by Ravitch and Finn (1985). They rightly ask us to provide a solid and thorough understanding of history and at the same time to embrace an interdisciplinary perspective beyond

... the memorization of dates and facts or the identification of wars and political leaders, though these have their place. ... Properly conceived, history includes the history of ideas, cultural developments, and social, political, and economic movements. It includes the evolution of diverse cultures and the changing relationships among peoples, races, religions, and beliefs (p. 206).

They recommend a consistent chronological structure to history instruction, which is obviously the sensible route. But, more importantly, their definition of history is encompassing rather than limiting and I believe would enlarge the relevancy of history for the high school student. Ravitch (1985) warns us to beware unwise practices under the banner of relevancy. She is quite right. The definition that she has shaped with Chester Finn serves as a worthy prototype for a dynamic view of history that is, in fact, interdisciplinary.

### Society's Response to Fragmentation

We are coming to recognize that we cannot train people in specializations and expect them to cope with the multifaceted nature of their work. It is not surprising that many of our nation's medical schools now have philosophers-in-residence. A doctor cannot be trained only in physiology and the biology of the body; a doctor treats the whole human being. The ethical questions that confront doctors have a great deal to do with the effectiveness of their treatments on patients. Business schools are providing ethics courses, education schools are providing business administration courses, and so forth. Basically, we have become a specialized world, but the pendulum is swinging toward some balance, so that we may draw from the range of fields to better serve our specific fields. The renewed trend in the schools toward interdisciplinarity will help students better integrate strategies from their studies into the larger world.

### Definitions that Clarify Practice

Many interpretations of the curriculum terminology are used in discussing the integration of knowledge. Sometimes I have heard teachers refer to their "interdisciplinary unit" when, in fact, their meaning of interdisciplinary unit is 180 degrees different from their colleagues' down the hall. It is essential that there be some fundamental agreement for the meanings of the words that will be used to describe the plan that emerges from the design efforts or there can be real confusion. The following are some terms whose definitions attempt to illustrate the shades of difference between conceptions of knowledge. (In Chapter 2 I attempt to provide some practical applications for a number of these terms.)

**Discipline Field:** A specific body of teachable knowledge with its own background of education, training, procedures, methods, and content areas (Piaget 1972).

The starting point for all discussions about the nature of knowledge in our schools should be a thorough understanding of the disciplines. As Lawton (1975) suggests, each discipline asks different questions. There are distinct frames of reference and kinds of statements, and each of these suggests unique procedures and end results that are in fact the discipline fields. The British thinker Hirst (1964) has studied how best to present knowledge systems to young people. In his view, each discipline is a form of knowledge with separate and distinct characteristics. Within each form are unique concepts and propositions that have tests to validate their truth.

The motivation for discipline divisions is in part based on the notion that the disciplines encourage efficient learning. The structure of the disciplines is necessary for knowledge acquisition. It is fundamental in order to learn how things are related (Bruner 1975). The advantage of the disciplines is that they permit schools to investigate with systematic attention to the progressive mastery of closely related concepts and patterns of reasoning (Hirst and Peters 1974). The decision by educators to specialize goes back to Aristotle, who believed that knowledge should be divided into three arenas: the productive disciplines, the theoretical disciplines, and the practical disciplines.

Certainly the emphasis on discipline-field curriculum in the American public school rests largely on a rationale that cites its instructional effectiveness, inherent conceptual cohesion, and socially sanctioned community base. Yet we rarely discuss with children the reason for dividing the day into discipline areas of focus. As Mike, the 2nd grader in the beginning of this chapter, said, math becomes something we do in the morning. I have spoken with young children who explain, "My teacher likes reading time, you can tell," or "Science is when we use the learning centers." The way the day is divided has more to do with a change in teacher attitude or the use of a part of the room than with any understanding of what a scientist

does or the purpose of reading literature. We simply skip telling children why we have planned their school lives in blocks of time. Before any meaningful inter-disciplinary experience can occur, students need to begin to understand the nature of knowledge on a level that is clearly appropriate to their age and experience.

**Interdisciplinary:** A knowledge view and curriculum approach that consciously applies methodology and language from more than one discipline to examine a central theme, issue, problem, topic, or experience.

In contrast to a discipline-field based view of knowledge, interdisciplinarity does not stress delineations but linkages. Meeth (1978) notes that the emphasis is on deliberately identifying the relationship between disciplines. It is a holistic approach with a tradition in Western thought that comes from Plato's ideal of unity as the highest good in all things. Interdisciplinarity nurtures a different perspective with focus on themes and problems of life experience.

When examining the relationship between fields of knowledge, there is a range of prefixes that connote various nuances. Consider the following:

**Crossdisciplinary:** Viewing one discipline from the perspective of another; for example, the physics of music and the history of math (Meeth 1978).

**Multidisciplinary:** The juxtaposition of several disciplines focused on one problem with no direct attempt to integrate (Piaget 1972, Meeth 1978).

**Pluridisciplinary:** The juxtaposition of disciplines assumed to be more or less related; e.g., math and physics, French and Latin (Piaget 1972).

**Transdisciplinary:** Beyond the scope of the disciplines; that is, to start with a problem and bring to bear knowledge from the disciplines (Meeth 1978).

With the exception of the definition for interdisciplinary, experience in the field has made me reticent to use these definitions. They represent important differences in the way the curriculum designer will shape the ultimate unit or course of study, but they are cumbersome, if not esoteric, in conversation. I find that teachers and administrators prefer the more nuts-and-bolts set of terms that is presented in the next chapter. Nevertheless, it seems essential that decisions regarding the curriculum be made with a deliberate consensus as to the kind of discipline-field emphasis that will occur; otherwise, there is the tendency toward the potpourri and a confused melee of activities when a team starts producing the lesson plans. The goal here is to have informed practitioners.

### Support for an Interdisciplinary Curriculum

What are some guiding beliefs and assumptions that will support an interdisciplinary curriculum attempt? The philosophy of the curriculum developer will always permeate the final design. I compare our work to architects who design a project based on a site, materials, and the population to be served. Sometimes in the course of carrying out the project there are unexpected events—a delay in materials, an immovable rock in the foundation—so the architect adapts the plan. But, initially, the architect brings a personal vision to the task. The more aware we are of our philosophical beliefs, the more likely we are to make responsible design choices that reflect a cohesive and lasting quality in the educational experience we are attempting to build. Consider the following beliefs and assumptions as you create your statement of philosophy for interdisciplinary work.

- Students should have a range of curriculum experiences that reflects both a discipline-field and an interdisciplinary orientation. I have hammered away on this point because of my concern that devotees of either position will claim "mine is the only way." Just as pioneering artists like Joyce and Picasso could not break the rules until they had fully mastered them, students cannot fully benefit from interdisciplinary studies until they acquire a solid grounding in the various disciplines that interdisciplinarity attempts to bridge (Jacobs and Borland 1986).
- To avoid the potpourri problem, teachers should be active curriculum designers and determine the nature and degree of integration and the scope and sequence of study. The teacher's decisions will most directly affect students in the day-to-day running of the classroom. The teacher should be empowered to work as a designer, to shape and to edit the curriculum according to the students' needs.
- Curriculum making is a creative solution to a problem, hence, interdisciplinary curriculum should only be used when the problem reflects the need to overcome fragmentation, relevance, and the growth of knowledge.
- Curriculum making should not be viewed as a covert activity. The interdisciplinary unit or course should be presented to all members of the school community. Few parents will have experienced integrated curriculum, and they will feel less suspicious if they are well informed.
- Students should study epistemological issues. Regardless of the age of students, epistemological questions such as "What is knowledge?", "What do we know?", and "How can we present knowledge in the schools?" can and should be at the heart of our efforts (Jacobs and Borland 1986). The preschool child deserves to know why the room is organized the way it is, why there are "choice times," and why there are set times for "group meetings." Relevance begins with the rationale for

educational choices affecting the school life of the student.

- Interdisciplinary curriculum experiences provide an opportunity for a more relevant, less fragmented, and stimulating experience for students. When properly designed and when criteria for excellence are met (Chapter 4, Ackerman), then students break with the traditional view of knowledge and begin to actively foster a range of perspectives that will serve them in the larger world.
- Students can and, when possible, should be involved in the development of interdisciplinary units. The four-step process described in Chapter 5 allows for student input in a meaningful way. It is not always desirable for students to participate, but student interest in the units is often enhanced by their involvement in the planning process (Jacobs and Borland 1986).

By understanding the growing need for curriculum integration programs, clarifying the terminology that will be used in choices made by the curriculum maker, and articulating a set of guiding assumptions, solid and lasting designs will emerge. The hope is that you and your team will become reflective practitioners as you begin your project.

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## Endnote

<sup>1</sup> A poll conducted by ASCD in 1988 suggested that it is the number one issue among the members of the ASCD National Polling Panel (a sample of organization members, invited guests, Chief State School Officers, and deans of schools of education).

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