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Curriculum Integration and The Disciplines of Knowledge

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Curriculum Integration and The Disciplines of Knowledge

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As an advocate for curriculum integration, Mr. Beane wants to set the record straight: in the thoughtful pursuit of authentic curriculum integration, the disciplines of knowledge are not the enemy, but a useful and necessary ally.

By James A. Beane

AT A CONFERENCE on curriculum integration, a speaker who admitted that he had only recently been introduced to the concept said, "From a quick look at various readings, it seems that the disciplines of knowledge are the enemy of curriculum integration." Unwittingly or not, he had gone straight to the heart of perhaps the most contentious issue in current conversations about curriculum integration. Simply put, the issue is this: If we move away from the subject-centered approach to curriculum organization, will the disciplines of knowledge be abandoned or lost in the shuffle?

As an advocate for curriculum integration, I want to set the record straight. In

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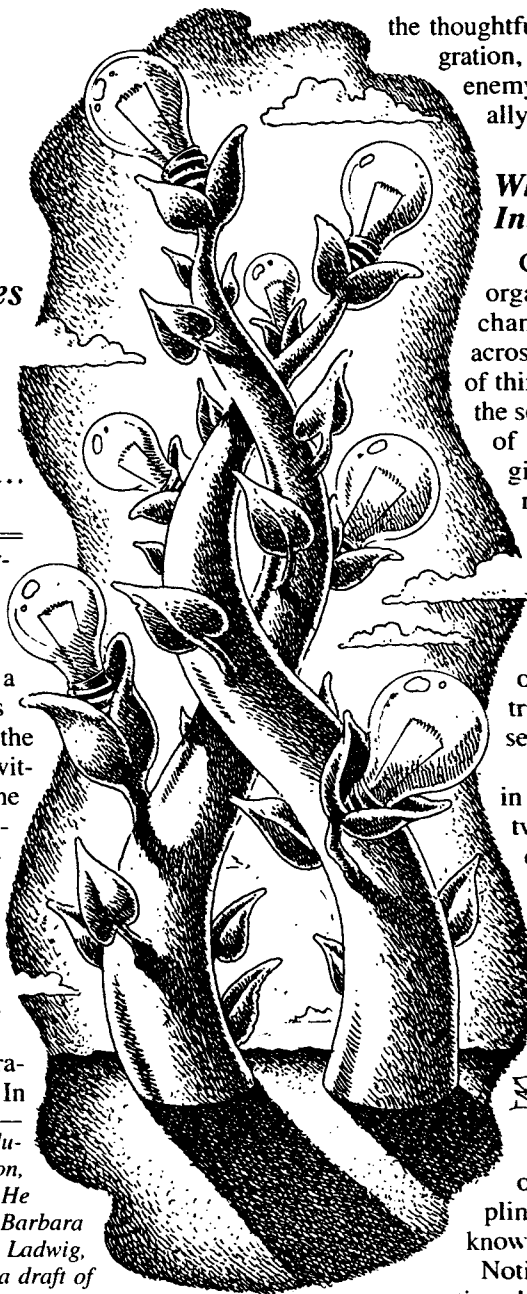
What Is Curriculum Integration?

Curriculum integration is not simply an organizational device requiring cosmetic changes or realignments in lesson plans across various subject areas. Rather, it is a way of thinking about what schools are for, about the sources of curriculum, and about the uses of knowledge. Curriculum integration begins with the idea that the sources of curriculum ought to be problems, issues, and concerns posed by life itself.¹ I have argued elsewhere that such concerns fall into two spheres: 1) self- or personal concerns and 2) issues and problems posed by the larger world.² Taking this one step further, we might say that the central focus of curriculum integration is the search for self- and social meaning.

As teachers facilitate such a search within a framework of curriculum integration, two things happen. First, young people are encouraged to integrate learning experiences into their schemes of meaning so as to broaden and deepen their understanding of themselves and their world. Second, they are engaged in seeking, acquiring, and using knowledge in an organic — not an artificial — way.

That is, knowledge is called forth in the context of problems, interests, issues, and concerns at hand. And since life itself does not know the boundaries or compartments of what we call disciplines of knowledge, such a context uses knowledge in ways that are integrated.³

Notice that, in order to define curriculum integration, there must be reference to knowledge. How



could there not be? If we are to broaden and deepen understandings about ourselves and our world, we must come to know "stuff," and to do that we must be skilled in ways of knowing and understanding. As it turns out, the disciplines of knowledge include much (but not all) of what we know about ourselves and our world and about ways of making and communicating meaning. Thus authentic curriculum integration, involving as it does the search for self- and social meaning, must take the disciplines of knowledge seriously — although, again, more is involved than just the correlation of knowledge from various disciplines.

What Is the Problem?

Theoretically, defining the relations between curriculum integration and the disciplines of knowledge is easy. But that act does not resolve the tension over how those relations work in the practical context of curriculum integration. Part of the reason is that the problem is not with the disciplines of knowledge themselves but with their representation in the separate-subject approach to the curriculum. Put another way, the issue is not whether the disciplines of knowledge are useful, but how they might appropriately be brought into the lives of young people. And more than that, do they include all that might be of use in the search for self- and social meaning?

A discipline of knowledge is a field of inquiry about some aspect of the world — the physical world, the flow of events over time, numeric structures, and so on. A discipline of knowledge offers a lens through which to view the world — a specialized set of techniques or processes by which to interpret or explain various phenomena. Beyond that, a discipline also provides a sense of community for people with a shared special interest as they seek to stretch the limits of what is already known in that field. Those on the front edges of a discipline know that disciplinary boundaries are fluid and often connect with other disciplines to create interdisciplinary fields and projects.⁴

Though school-based subject areas, like disciplines of knowledge, partition knowledge into differentiated categories, they are not the same thing as disciplines. Some subjects, like history or mathematics, come close, but they are really institutionally

based representations of disciplines, since they deal with a limited selection of what is already known within the field. That selection is based on what someone believes ought to be known (or is not worth knowing) about some discipline by people who do not work within it or are unfamiliar with its progress to date. Other subjects, like biology or algebra or home economics, are subsets of disciplines and are limited in even more specialized ways. And still other subjects, like career education or foreign languages, may lay far-reaching claims of connection to some discipline, but their presence in schools really has to do with economic, social, or academic aspirations.

In this sense, a discipline of knowledge and its representative school subject area are not the same things, even though they may be concerned with similar bodies of knowledge. They serve quite different purposes, offer quite different experiences for those who encounter them, and have quite different notions about the fluidity of the boundaries that presumably set one area of inquiry off from others. These differences are substantial enough that the identification of a school subject area as, for example, "history" amounts to an appropriation of the name attached to its corresponding discipline of knowledge. Subject areas are, in the end, a more severe case of "hardening of the categories" than are the disciplines they supposedly represent.

I make this distinction not to demean the work of subject-area teachers or to relegate them to a lower status than disciplinary scholars. Rather, I wish to point out that calling for an end to the separate-subject approach to school curriculum organization is not at all a rejection or abandonment of the disciplines of knowledge. But in saying this, I want to quickly warn that such a claim does not simply open the door to a renewal of "essentialist" conversations about the "structure of disciplines" or their "teachability" that Jerome Bruner and others encouraged in the past⁵ and that are now revisited in lists of national and state content standards.

It is worth noting that Bruner himself apparently recognized this risk when, 10 years after the publication of *The Process of Education*, he reconsidered the work's place in education policy. Having just spoken of poverty, racism, injustice, and dispossession, he said this:

I believe I would be quite satisfied to declare, if not a moratorium, then something of a de-emphasis on matters that have to do with the structure of history, the structure of physics, the nature of mathematical consistency, and deal with curriculum rather in the context of the problems that face us. We might better concern ourselves with how those problems can be solved, not just by practical action, but by putting knowledge, wherever we find it and in whatever form we find it, to work in these massive tasks. We might put vocation and intention back into the process of education, much more firmly than we had it there before.⁶

It is from just this kind of thinking that the case for curriculum integration emerges. Creating a curriculum for and with young people begins with an examination of the problems, issues, and concerns of life as it is being lived in a real world. Organizing themes are drawn from that examination. To work through such themes, to broaden and deepen our understanding of ourselves and our world, and to communicate those meanings, we must necessarily draw on the disciplines of knowledge. Again, therein lies much of what we know about ourselves and our world, ways in which we might explore them further, and possibilities for communicating meanings. Our reach for help in this kind of curriculum is a purposeful and directed activity — we do not simply identify questions and concerns and then sit around and wait for enlightenment to come to us. Instead, we intentionally and contextually "put knowledge to work."

Inside the Subject Approach

More and more educators are coming to realize that there is a fundamental tension in schools that current restructuring proposals are simply not addressing, no matter how radical their rhetoric might otherwise be. That tension has to do with the curriculum that mediates the relationships between teachers and young people. After all, teachers and their students do not come together on a random or voluntary social basis — they do not meet casually and decide to "do school." Instead, they are brought together to do something — namely the curriculum — and if that curriculum is fraught with fundamental problems, then the relationships between teachers and students will almost certain-

ly be strained.

Advocates of curriculum integration, myself included, locate a large measure of that tension in the continuing organization of the planned curriculum around separate subject areas. While more complete critiques of the separate-subject approach have been offered elsewhere,⁷ I want to touch on the major points of contention in order to clarify the claims made earlier in this article.

First, the separate-subject approach, as a selective representation of disciplines of knowledge, has incorrectly portrayed the latter as “ends” rather than “means” of education.⁸ Young people and adults have been led to believe that the purpose of education is to master or “collect” facts, principles, and skills that have been selected for inclusion in one or another subject area instead of learning how those isolated elements might be used to inform larger, real-life purposes.

Second, since the Eight-Year Study of the 1930s, we have been getting signals that the separate-subject approach is an inappropriate route even for those purposes that its advocates claim for themselves.¹⁰ As that study and others after it have indicated, young people tend to do at least as well, and often better, on traditional measures of school achievement when the curriculum moves further in the direction of integration.

Third, the separate subjects and the disciplines of knowledge they are meant to represent are territories carved out by academicians for their own interests and purposes. Imposed on schools, the subject approach thus suggests that the “good life” consists of intellectual activity within narrowly defined areas.¹¹ The notion that this is the only version of a “good life,” or the best one, or even a widely desirable one demeans the lives of others outside the academy who have quite different views and aspirations. It is a remnant of the same “top-down” version of the curriculum that has historically served the people in schools so poorly.

The fact that those academicians who so narrowly define the “good life” happen to be mostly white, upper-middle-class, and male means that the knowledge they prize and select is of a particular kind. Such knowledge, of course, is the cultural capital of that limited group, and thus the cultures of “other” people have been marginalized in the separate-subject ap-

proach. This is why the traditional question of the curriculum field, “What knowledge is of most worth?” has been amended to “Whose knowledge is of most worth?” As Michael Apple has pointed out, the fact that subject-centered curricula dominate most schools “is at least partly the result of the place of the school in

*Curriculum
integration, in
theory and
practice,
transcends
subject-area and
disciplinary
identifications.*

maximizing the production of high-status knowledge.”¹²

Pressing this point a bit further, we can see how such knowledge works in favor of the privileged young people in whose culture it is regularly found while working harshly against those from nonprivileged homes and nondominant cultures. In this way, the separate-subject approach and its selective content plays more than a small role in the “sort and select” system that has been an unbecoming feature of our schools for so long. While curriculum integration by itself cannot resolve this issue, the use of real-life themes demands a wider range of content, while the placement of that content in thematic contexts is likely to make it more accessible for young people.¹³

For most young people, including the privileged, the separate-subject approach offers little more than a disconnected and incoherent assortment of facts and skills. There is no unity, no real sense to it all. It is as if in real life, when faced with problems or puzzling situations, we stopped

to ask which part is science, which part mathematics, which part art, and so on.

We are taken aback when young people ask, “Why are we doing this?” And our responses — “Because it will be on the test” or “Because you will need it next year” — are hardly sufficient to answer that question, let alone to justify placing anything in the curriculum.

The deadening effect the separate-subject approach has on the lives of young people cannot be overestimated. In too many places, students are still taught how to diagram complex sentences as if that were the key to the writing process, still made to memorize the names and routes of European explorers, still taught the same arithmetic year after year, page after page, with no particular connection to their lives. I believe such irrelevance has also had a deadening effect on the lives of many teachers. Had they known that this would be their routine for 30 years or more and that high tension would result, many would probably have chosen a different line of work. And who could blame them?

The separate-subject approach is a legacy of Western-style classical humanism, which views the world in divided compartments. This view was shored up in the last century by the theories of faculty psychology and mental discipline that described the mind as a compartmentalized “muscle” whose parts were to be exercised separately by particular disciplines.¹⁴ The reasoning faculty, for example, was supposedly exercised by the “objective logic” of mathematics, and the assumption was that the heightened reasoning abilities could then be applied to any new situations, including social ones.

Though faculty psychology and mental discipline were discredited by the turn of the century, both live on in some interpretations of split-brain and multiple intelligence theories. And suspect as it has now become, classical humanism still looms large in curriculum organization as part of “official knowledge.”¹⁵ How can this be so?

The separate-subject approach to the curriculum is protected by four powerful factors. First, any call for rethinking that approach immediately comes up against a network of educational elites whose symbiotic relationships are founded upon it. I refer here to many academicians and teacher educators in universities, state- and district-level subject supervisors, test and

text publishers, subject-area associations, and others whose titles and office doors often signify particular subject areas. The struggles to form, institutionalize, and defend the subject areas have not been easy ones, and neither the areas nor the job titles are going to be given up easily, no matter how persuasive the educational arguments to do so.¹⁶

Second, parents and other adults are reluctant to embrace versions of the curriculum that depart from what they remember from their own schooling. They want assurance that their children will "get what they need." Thus talk about ideas like curriculum integration may feel threatening to them. And their fears are compounded when they hear arguments for national tests and curriculum or are confronted with media critiques of schools, both of which lend support to the separate-subject cause.

Third, inside the schools themselves, teachers and supervisors often build their professional identities along subject-matter lines.¹⁷ They are not just teachers, but "math teachers" or "music teachers" or "language arts teachers." Identities are also tied to status associated with subject areas — "math is more important than physical education" and so on — and that status, in turn, often determines which teachers get preferred schedule slots or their own classrooms. Anyone who has ever worked in a school knows that this is very dangerous territory to invade.

Finally, it is no secret that we are living in a very conservative era in which historically dominant political and economic groups are noisily reclaiming ground and goods they believe have been taken away from them by progressives.¹⁸ Most of the social road signs advise, "Merge right." In the midst of this conservative restoration comes a call for "curriculum integration" — an approach, as I have defined it, that was historically rooted in the work of the social reconstruction wing of the progressive education movement. Unlike many educators who think that curriculum integration is simply about rearranging lesson plans, conservative critics have figured out that it involves something much larger, and they don't like it.

In constructing a critique of the separate-subject approach, we must remember Dewey's admonition that any nondominant idea about education — in this case curriculum integration — must not be de-

fended solely on the ground of rejection of another idea — here the separate-subject approach.¹⁹ Curriculum integration does not just mean doing the same things differently but doing *something different*. It has its own theories of purpose, knowledge, and learning and is able to stand on those without the necessity of standing on the corpse of the separate-subject approach. However, the subject-centered approach is so rooted in the deep structures and folklore of schooling that its critique is necessary to even raise the possibility of other approaches.²⁰ It is almost as if it had been conceived supernaturally instead of constructed by real people with particular values and beliefs.²¹

Knowledge in an Integrated Curriculum

Having exposed the shortcomings of the separate-subject approach, we may now turn back to the happier relations between curriculum integration and the disciplines of knowledge. How does knowledge look in the context of curriculum integration? What happens to the disciplines of knowledge? How are they used?

In practice, curriculum integration begins with the identification of organizing themes or centers for learning experiences. As previously noted, the themes are drawn from real-life concerns, such as conflict; living in the future; cultures and identities; jobs, money, and careers; or the environment. In some cases the themes are

identified by teachers; in the most sophisticated instances, they emerge from collaborative planning with young people.²² Planning then proceeds directly to creating activities to address the theme and related issues. There is no intermediate step in which attempts are made to identify which subject areas might contribute to the theme.

This is a very important distinction, since curriculum integration, in theory and practice, transcends subject-area and disciplinary identifications; the goal is integrative activities that use knowledge without regard for subject or discipline lines. Pretenders to this approach, such as "multidisciplinary" or "interdisciplinary" arrangements, may not follow a strict subject-centered format, but they nevertheless retain subject-area and disciplinary distinctions around some more or less unifying theme.²³ (This structure is typically demonstrated by the fact that a student's schedule still involves a daily rotation through various subjects, even though the teachers may be attempting to use a common theme.) In curriculum integration, the schedule revolves around projects and activities rather than subjects. The disciplines of knowledge come into play as resources from which to draw within the context of the theme and related issues and activities.

For example, in a unit on "living in the future," young people might survey their peers regarding their visions of the future, tabulate the results, compare them to other forecasts, and prepare research reports. Or they might look at technological, recreational, entertainment, or social trends and develop forecasts or scenarios of probable futures for one or more areas. Or they might study past forecasts made for our own times to see if the predictions actually came true. Or they might develop recommendations for the future of their local communities in areas such as population, health, recreation, transportation, and conservation. Or they might study the effects of aging on facial features to imagine how they might look when they are older.

In a unit on "the environment" they might create simulations of different biomes with real and constructed artifacts and offer guided "tours" of their work. Or they might experiment with the effects of pollutants on plant growth. Or they might set up and manage a recycling program in



"James, we've talked about this before; the modeling clay is for everyone to play with."

the classroom or school. Or they might identify the raw products in various clothing items and investigate where they come from, find out who makes them, and analyze the environmental and economic impacts of the entire process. Or they might identify environmental problems in their local community and seek ways to resolve them.

I have used the word "or" between activities, since an integrative unit may involve one or any number of them. The point is this: any careful reading of the activities should reveal that, if they are done thoughtfully, they will draw heavily on a variety of disciplines of knowledge for facts, skills, concepts, and understandings.

For example, in constructing surveys, tabulating data, and preparing reports, one would need to draw heavily from the social sciences, language arts, and mathematics. Suppose that some young people did not know how to compute percentages or make graphs. Obviously the teacher(s) would help them learn how to do these things or, if necessary, find someone else who knew how to do them. In experimenting with the effects of pollutants on plant life, some young people might not know how to carry out controlled tests. In that case, someone would teach them how to do that. Does this mean that schools would intentionally employ teachers who know "stuff" from disciplines of knowledge? Certainly! But in curriculum integration, teachers work first as generalists on integrative themes and secondarily as content specialists.

Note that, in curriculum integration, knowledge from the disciplines is repositioned into the context of the theme, questions, and activities at hand. Even when teaching and learning move into what looks like discipline-based instruction, the theme continues to provide the context and the motivation. It is here that knowledge comes to life, has meaning, and is more likely to be "learned." Particular knowledge is not abstracted or fragmented, as is the case when its identity and purpose are tied only to its place within a discipline or school subject area.

Repositioning knowledge in this way raises two issues that cannot be ignored. First, subject-area sequences that have previously defined the flow of knowledge tend to be rearranged in curriculum integration, since knowledge is called forth when it is pertinent rather than when it is con-

venient. While this is upsetting to some subject-loyal teachers, we should note the irony that sequences often vary from school to school and from state to state. In other words, sequences are more arbitrary than those who construct and defend them would have us believe.²⁴ The fact that even some subject-area associations have moved away from traditional notions of sequencing should tell us something. In the end, though, advocates of curriculum integration are more interested in the rhythms and patterns of inquiring young minds than in the scopes and sequences of subject-area specialists. The work done within the context of curriculum integration is a curriculum; there is not another "curriculum" waiting in the wings to be taught.

Second, it is entirely possible, even probable, that not all the information and skills now disseminated by separate-subject teaching will come to the surface in the context of curriculum integration. But let's face it: there is a good deal of trivia now being disseminated in schools that would be necessary or meaningful only if and when one actually became a specialist in one or another discipline of knowledge, and even then some of it would probably be superfluous. In some places the separate-subject curriculum looks more like preparation for doing the *New York Times* crossword puzzle than for specializing in a discipline. Besides, the very idea of knowing all that "stuff" is a pipe dream in an era when yesterday's "truths" seem to dissolve in the high tide of today's new knowledge.

Curriculum integration, on the other hand, calls forth those ideas that are most important and powerful in the disciplines of knowledge — the ones that are most significant because they emerge in life itself. And because they are placed in the context of personally and socially significant concerns, they are more likely to have real meaning in the lives of young people, the kind of meaning they do not now have.

As boundaries disappear, curriculum integration is also likely to engage knowledge that ordinarily falls between the cracks of disciplines and subject areas. This is particularly the case as knowledge is applied to problematic situations. For example, in exploring the influences of media, young people might investigate the use of the word "average" in the context of the presumed consumer interests of the

"average person." What does "average" mean here? How is "average" arrived at when used in this way? How can mathematics be used to manipulate meanings?

Indeed, this kind of knowledge is being attended to by some scholars who work in disciplines of knowledge (and their work is an important resource for those who advocate curriculum integration). But can the same be said for those who live within the boundaries of school subject areas? And if discipline-based scholars have felt the need to move beyond the boundaries of their home disciplines, why is it that so many people are adamant about leaving those same boundaries intact in schools?

Critics of curriculum integration love to convey their deep concern that it will destroy the integrity of the disciplines of knowledge. I am puzzled by this. What possible integrity could there be for any kind of knowledge apart from how it connects with other forms to help us investigate and understand the problems, concerns, and issues that confront us in the real world? Furthermore, what kind of integrity do the disciplines of knowledge now have in young peoples' minds? Am I missing something? Is "integrity" really a code for "subject boundaries" and "dominant-culture knowledge"?

As a last attempt, some critics suggest that perhaps curriculum integration would be a good idea, but only after a thorough grounding in the separate subjects. If we were talking about house building, the foundation metaphor might work well. However, in the case of learning, it is the "whole" context that gives particular knowledge meaning and accessibility.²⁵ Besides, if we have to wait for the kind of foundation that such critics mean, we will probably never see any integration.

Beyond the Debate

Despite the matter-of-fact tone I have used here, it would be a mistake to believe that the understanding and practice of curriculum integration is free of confusion. The very existence of the false dichotomy that I have addressed here between curriculum integration and the disciplines of knowledge is evidence that, as advocates of curriculum integration have criticized the use of a separate-subject approach, they have left the impression that the disciplines of knowledge are to be rejected.

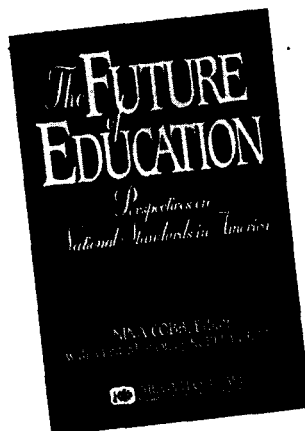
Worse yet, the very meaning of curriculum integration has become so confused that the term is used in association with almost any approach that moves beyond that of strictly separate subjects. For example, "curriculum integration" is often used to describe multidisciplinary arrangements in which themes are found inside the existing subjects (e.g., "colonial living" or "ancient Greece" or "metrics") and the guiding question is, What can each subject contribute to the theme? Subject-loyal teachers typically rebel over the contrived use of their areas in such cases and resent being distracted from their usual focus on content coverage. But that kind of alienation merely signifies that this is an adaptation still closely tied to the separate-subject approach and philosophy. As we have seen, curriculum integration involves a quite different philosophy that goes far beyond these concerns.

The term "integration" has also been used to describe attempts to reassemble fragmented pieces of a discipline of knowledge — such as creating social studies out of history and geography — and to label approaches that emphasize thinking, writing, and valuing across subject areas. One might well argue that the word "integration" is technically acceptable in these instances, but they clearly do not represent what has been meant historically by "curriculum integration."

However, even if the language problem were cleared up, there is still much to learn about curriculum integration as an approach. For example, are some kinds of knowledge more likely than others to emerge in the context of life-centered themes? Are some themes more likely than others to serve well as contexts for integrating wide ranges of knowledge? How big a chunk of life should an integrative theme encompass? How can we be certain that integrated knowledge will not simply accumulate without meaning (as separate-subject knowledge usually does) but will help young people continuously expand meaning?²⁶

These kinds of questions are rooted in attempts to understand more fully curriculum integration as well as the place of knowledge within it. Notice that they are not of the sort that asks how curriculum integration might find a peaceful coexistence with current conceptions of a subject-centered curriculum. Again, curricu-

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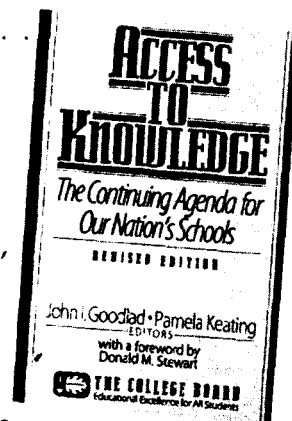
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lum integration is not about doing the same things differently but about doing something truly different. For this reason, questions like "How will young people do on our subject-based tests?" or "How does this fit into our current schedule?" are not pertinent (though they are real politically). The structures to which such questions refer grew out of the separate-subject approach to the curriculum. Shifting to a different approach thus calls the structures themselves into question.

Many educators today like to speak of paradigm shifts when describing changes they have made or are trying to make. Such shifts may involve changing the school schedule, more sharply defining outcomes of schooling, or coming up with new methods of assessment. As I understand it, a paradigm shift entails a change in viewpoint so fundamental that much of what is currently taken for granted is called into question or rendered irrelevant or wrong. If we use this definition, it is hard to consider the kinds of changes just mentioned as "paradigm shifts." These, like most of the changes usually associated with "restructuring," ask about "how" we do things and leave alone more fundamental questions about "what" we do and "why."

Curriculum integration centers the curriculum on life itself rather than on the mastery of fragmented information within the boundaries of subject areas. It is rooted in a view of learning as the continuous integration of new knowledge and experience so as to deepen and broaden our understanding of ourselves and our world. Its focus is on life as it is lived now rather than on preparation for some later life or later level of schooling. It serves the young people for whom the curriculum is intended rather than the specialized interests of adults. It concerns the active construction of meanings rather than the passive assimilation of others' meanings.

Described in this way, curriculum integration is more of a real paradigm shift than are the changes usually touted as such. Yet it does not reject outright or abandon all that has been deemed important by other views of schooling. This accommodation is especially apparent with regard to the disciplines of knowledge, which are necessarily drawn on in responsible curriculum integration. This point is not a matter of compromise but of common sense. Advocates of curriculum integration may

criticize the separate-subject approach and the purpose of schooling it implies, they may accuse subject-area loyalists of narcissism, and they may decry the deadening effects of the separate-subject curriculum. But they do not intend to walk away from knowledge — and, for that reason, the disciplines of knowledge are clearly not the enemies of curriculum integration.

1. L. Thomas Hopkins et al., *Integration: Its Meaning and Application* (New York: Appleton-Century, 1937); Lucille L. Lurry and Elsie J. Alberty, *Developing the High School Core Program* (New York: Macmillan, 1957); Paul L. Dressel, "The Meaning and Significance of Integration," in Nelson B. Henry, ed., *The Integration of Educational Experiences: 57th NSSE Yearbook, Part III* (Chicago: National Society for the Study of Education, University of Chicago Press, 1958); Gertrude Noar, *The Teacher and Integration* (Washington, D.C.: National Education Association, 1966); James A. Beane, *Affect in the Curriculum: Toward Democracy, Dignity, and Diversity* (New York: Routledge, 1993); and Gordon F. Vars, "Integrated Curriculum in Historical Perspective," *Educational Leadership*, October 1991, pp. 14-15.
2. Beane, op. cit.; and idem, *A Middle School Curriculum: From Rhetoric to Reality*, rev. ed. (Columbus, Ohio: National Middle School Association, 1993).
3. Here and throughout the article, I am using the term "knowledge" generically to include knowing about, knowing how, knowing why, and so on. Thus "knowledge" would include information, skills, concepts, processes, and so on.
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