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FROM THE TRENCHES

Illogic in School Reform

by Edward G. Rozycki

Observe how the greatest minds yield in some degree to the superstitions of their age.

—Henry David Thoreau, *Journal*, January 31, 1853

The Synecdoche Fallacy

You've heard it thousands of times on radio or on TV. You've seen it in the newspapers:

Research has shown that those wondrous few persons who accomplish near miracles on a daily basis eat Special X, or drink InflatorAid, or wear PAP clothing. You, too, can accomplish near miracles, if only you eat Special X, or drink MiracleAid, or wear PAP clothing.

This fallacy is a remarkably effective motivator for having been recognized and named for centuries. The stock-in-trade of every advertiser, it sells lots of clothes, after-shave, cigarettes, and beer.¹ It also sells education and educational reform.

The fallacy has several names: most common are the “some-to-all fallacy,” or the “synecdoche fallacy.”² It consists of looking at a part and arguing to the whole. In its simplest form the fallacy is demonstrated by this invalid argument: *All cats meow. All cats are mammals. Therefore, all mammals meow.*

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In the form we find more commonly in everyday discourse, the fallacy consists of thinking that something is a primary cause when it may be at best a supporting cause amidst many, possibly equally important, supporting causes.

For example, we might find a strong correlation between cars that win NASCAR championships and their use of high-octane fuel. Therefore, proceeding into fallacy, we conclude that our car's performance will improve remarkably if we use high-octane fuel. Or suppose research establishes that every Olympic gold medal winner sleeps at least eight hours a day. Does it follow that anyone can achieve Olympian heights merely by sleeping longer?

Reconsider the racecar example. Competing racecars are generally a close match for their opponents mechanically: they are in top condition and run by top drivers. Under those circumstances, high-octane gasoline may well make the crucial difference—the other factors are less critical because they are pervasive.

Olympic contestants are in top physical form and skilled in their performance. That may matter as much as, if not more than, the amount of sleep they happened to receive when the survey about their sleeping habits was taken.

Some Common Educational Examples

Major educational policy initiatives have rested on similar logic. For example, when the Russians launched Sputnik in October 1957, observers noted that Russian schools emphasized mathematics and science. Congress thereupon passed the National Defense Education Act (NDEA) in 1958. For many of us who were willing to study mathematics and science, the act paid a good part of our college education. The logic was clear: since elite Russian students studied higher math and sciences and the Soviet Union beat the United States to outer space, more American students in math and science would help us catch up to the Soviets. However, Explorer I, the first U.S. satellite, was launched a mere four months after Sputnik, under the direction of Dr. Wernher von Braun. We may surmise that he had received no NDEA scholarships himself.

Japanese corporations were perceived in the 1980s as strong or even superior competitors to U.S. businesses, and soon Americans rushed to mimic Japanese educational practices. (One even encountered speculation that the Japanese language had made Japanese students brainier than American students because it is written as a mixture of ideographs and syllabary. Luckily, that was not picked up as a curricular reform.) Once the threat from the "Pacific Rim" countries abated (more than a decade ago), only a few grotesque practices derived from

such fears remained scattered among American schools: e.g., hours of homework for elementary school kids, or recess cutbacks that benighted school personnel justify as an answer to “global competition.”³

A surprisingly widespread argument is that the “best” schools have “high-quality teachers,” so placing more high-quality teachers in a school will improve it.⁴ Let us not quibble about what a “best” school is, nor even what a “high-quality” teacher is. That is a logical fallacy, similar to promoting high-octane gasoline for any and all automobiles. Let it be conceded that the best schools have high-quality teachers. If the best schools are few, then the fallacy stands. It may take far more than just high-quality teachers, if it takes any at all, to make a school a “best” school.

A Medical Proposal

After introducing three small classes⁵ of professional educators to Stephen Toulmin’s model of informal argument,⁶ I presented the following exercise:

Directions: Examine the facts presented below as evidence. What rebuttals might be formulated to reject the proposal?

(Presumed) facts presented as evidence:

- a. There is a disparity along both ethnic and other social-group boundaries in the effectiveness of certain medical treatments.
- b. Some patients have complained that their doctors do not treat them kindly.
- c. Some patients report that their doctors consider their lack of response to treatment to be their own fault.

(The issue of warrants did not arise, because it was assumed that the situations depicted in the facts would clearly be understood to require amelioration.)

Proposal: Deny a license to prospective doctors whose internship does not demonstrate that

- 1) they believe all patients can be cured, and
- 2) they treat their patients fairly.

The reactions in each group were similar: they ranged from disbelief to near hoots of derision. The objections to the proposal rose fast and furious:⁷

- a. It is probably false given the present state of medical knowledge that all patients can be cured. Such a belief requirement, especially in a professional program, is an intellectual affront as well as likely an inexcusable restriction on intellectual freedom.
- b. A doctor may hope a medicine works on a particular patient, but what possible effect could his expectation have on the medicine's actual effectiveness? Science is not a matter of practitioner faith.
- c. Few, if any, of today's *religiously founded*, much less secular, universities would require a student to believe any specific proposition about curability before receiving a degree or certificate.
- d. There may be some kind of contractual violation here, especially if students are not told of the belief requirement before entering the program.
- e. Such requirements just beg for fakery. They smack of intimidation. How does one distinguish real faith from clever pretense or lip service to the required belief?

One insightful student noted that there was no reason to believe that the facts were either relevant to the proposal or related to one another. Were the people complaining about the doctors the same people who were not experiencing relief from the treatments they were given?

Picking up on this, other students complained that it took a stretch of the imagination even to see a relation between the offered facts and the bizarre proposal. Consequently, examining such a proposal was not realistic, they thought: a merely theoretical exercise with little practical import. I importuned them to consider another example.

An Education Proposal

What happened next is interesting considering that the context was one in which the students had much more experience than in the medical example initially given. The problem was this:

Setup: Evidence

- a. In several local school districts, a disparity exists along both ethnic and special ed/regular ed lines in the scores shown on standardized tests.
- b. Some parents have complained that their kids are not being treated fairly in school.
- c. Some students report that their teachers say they are not smart enough to get better grades.

Proposal: Deny prospective teachers a license to practice unless they demonstrate in their behavior during student teaching that

- 1) they believe that all children can learn; and
- 2) they treat their students fairly.

The group of college administrators immediately saw the parallels between the two arguments and rushed in with the appropriately parallel rebuttals:

- a. It is probably false given the present state of educational knowledge that all children can learn, particularly since that claim is vague. Certainly severely mentally deficient children cannot, so far as we know, learn to solve differential equations. Such a belief requirement, especially for a professional program, is an intellectual affront as well as likely an inexcusable restriction on intellectual freedom.
- b. A teacher may hope a method works for a particular student, but what possible effect could his believing it will work have on the method's actual effectiveness? Science is not a matter of practitioner faith.
- c. Few, if any, of today's *religiously founded* universities, much less secular ones, would require a student to believe any specific proposition about learnability in order to get a degree or certificate.
- d. There may be some kind of contractual violation here, especially if students are not told of the belief requirement in advance of entering the program.
- e. Such requirements are just begging for fakery. They smack of intimidation. How does one distinguish real faith from clever pretense or lip service to the required belief?⁸

The K-12 administrators sat dumbstruck. Then, reluctantly—it seemed—they joined in to continue the discussion. They recognized the source.⁹ Others commented, “That stuff just permeates public education. My board just breathes it.”

The Great Educational Divide

Why would K-12 administrators feel constrained, indeed inept, when discussing an educational proposal so obviously parallel to the medical one they had just recently demolished? One would think that long experience in their own professional field would have given them

more insight than the college administrators in the class, who clearly beat them to the punch. (Because space prevents an extended examination of this issue, I will suggest an answer to which I may return later.)

Education is an applied field with different “domains of discourse,” as it were. Two of the most important I will call Research-Evaluative [RE] versus Affiliative-Promotional [AP]. You may think of these roughly as “Technical” versus “Promotional”; or “scientific” versus “political.” (In industry this mirrors the well-observed distinction in activity—even personality type—between information-technology departments and sales departments.)

Day to day, most educators spend most of their time in affiliative-promotional talk, on students, on parents, on other teachers, on board members. The contextual assumptions (discourse as well as behavioral frames¹⁰) for AP behavior are very different from those for RE behavior.

Planning and evaluation necessities thrust educators into not-well-explored territory: RE activities. RE requires closer attention to logic and reasoning than does AP, where one can get by with slogans and garrulity. Articulation and explicitness are often demanded in RE. In AP, “soft, warm fuzzies” are acceptable, even preferred.

The failure to take into account different realms of discourse exacerbates the difficult relationship between reason and logic in education.¹¹ Perhaps the strongest influence undermining effective educational policy and planning is failing to recognize the tradeoffs necessary to balance the RE-AP tensions for the sake of humane, coherent practice.

Notes

1. It also reinforces racial, ethnic, indeed, all kinds of prejudice: e.g., Jack is lazy and dishonest. He is also an X. Thus, X's are lazy, dishonest people.
2. There are subtle variations among these, but the basic structural fault is that of *asserting the consequent*. Logically, it confuses “if” with “only if” or “if and only if,” a very common confusion. See, for example, “The Famous Four Card Task” at <<http://www.socialpsychology.org/teach/wason.htm>>.
3. See E. G. Rozycki, “‘Tracking’ in Public Education: Preparation for the World of Work?” at <<http://home.comcast.net/~erozycki/Tracking.html>>.
4. *NCATE News*, November 13, 2007: “We believe (and research has demonstrated) that the most important determinant of high-quality education is a well-prepared teacher.” If this is truly a matter of scientifically established fact, why invoke it as a statement of faith? Far from flattering teachers, this is the dogma that saddles them with the primary responsibility for school failure. See Gary K. Clabaugh, “Power Failure: Must U.S. School Reform Miss the Mark?” *Educational Horizons* 85 (4) (Summer 2007): 205–209.
5. The groups were: a policy seminar of five doctoral students, mostly public school administrators; an ethics seminar of eight doctoral students; public school administrators; and a class of eight education master's students.
6. A proposal (conclusion) is supported by relevant evidential grounds (minor

premises) bridged by a warrant (major premise, or principle). There are additional parts that make this argument form more adaptable to actual discourse than the traditional syllogism. Particularly important to consider is the susceptibility of the argument to rebuttal. See, for one of many examples, *Toulmin's Argument Model* at <http://changingminds.org/disciplines/argument/making_argument/toulmin.htm>.

7. This is not an accurate transcript but a synthesis of what was a rather free-wheeling discussion.

8. See Edward G. Rozycki, "Education for a Free People: Do Public School-Religious-School Differences Matter?" *Educational Horizons* 85 (4) (Summer 2007): 197.

9. *NCATE News*, November 13, 2007: "The two professional dispositions that NCATE expects institutions to assess are fairness and the belief that all students can learn." This, despite the disclaimer in *NCATE News*, June 16, 2006 (available at <<http://www.ncate.org/public/102407.asp?ch=148>>): "NCATE standards do not expect or require institutions to attend to any particular political or social ideologies."

10. For a quick introduction, see "Mini-Guide to Goffman's Frame Analysis" at <http://www.psy.ku.dk/mnissen/Undervisning/soejle/miniguide_to_goffman.htm>.

11. See Edward G. Rozycki, "Is It Reasonable to Be Logical?" available at <<http://www.newfoundations.com/EGR/Reasonable1.html>>.

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Thinking Critically about “Critical Thinking”

by Gary K. Clabaugh

There are more than sixteen thousand school districts in the United States, and nearly all of them boast that they teach “critical thinking.” In fact, if you Google “critical thinking,” “school district,” and “mission statement” combined, you get an astonishing 182,000 matches. Click on them one after the other and you will see page after page of heart-warming affirmations like this one from the Lordstown (Ohio) School District: *“We believe in the development of critical thinking skills.”*

Logic Chopping

Very commendable, but what would happen if critical thinking actually were taught in Lordstown? Suppose, for instance, that the youngsters learned to scrutinize their community’s and nation’s customs, principles, and beliefs seriously and boldly. Or imagine them critically examining the source and interpretive authorities that typically channel our lives and that define for us the good, the true, and the beautiful. No doubt such students would be thinking critically, but would the educators who encouraged them have to flee a rampaging mob of angry, torch-wielding villagers?

By critical thinking we do *not* mean the logic chopping that passes for critical thinking in many school districts—the “these are the premises” and “this is a conclusion” sort of thing. That method is largely harmless because it rarely, if ever, results in any serious challenge to anything deeply believed. It is as much akin to genuine critical thinking as catch is to actually playing baseball. That is precisely why this method of “critical thinking” is so popular in school curricula: it’s safe. In fact, it’s largely impotent.

Meaningful Critical Thinking

Critical thinking necessarily involves a much broader, systematic method of appraisal. It includes, but is not limited to:

- Identifying deep assumptions that underlie the issue in question
- Questioning the source and interpretive authorities invoked
- Recognizing when inquiry blockers are being used to bring a premature end to questioning
- Keeping emotions out of evaluations of fact and logic
- Examining the language involved for miscommunications, tricks, and manipulations
- Understanding the dynamics of consensus building and how that influences public controversies
- Reformulating rival claims to make them testable
- Evaluating the costs and benefits involved
- Being cognizant of the payoffs entailed in starting and maintaining a dispute

When thinking fails to involve these and related considerations, it is not truly critical.¹

Reconsidering the American Revolution

It is unnecessary to involve all, or even most, of the above steps to get students thinking critically. Here, for example, is how we might introduce critical thought into a class about the American Revolution. The lesson employs only one of the above procedures, probing the nearly universal deep assumption of most Americans that the American Revolution was a necessity.

Let's promote critical thought by having the students investigate this matter. *Maybe the revolution wasn't necessary. Perhaps George Washington, Thomas Jefferson, et al., were impetuous hotheads. Maybe the whole thing would have worked out fine had they just held their tempers.*

Does this sound far-fetched? Here are some salient facts. All of Britain's significant former settler colonies have long since peacefully gained complete independence. Neighboring Canada provides an instructive example. An 1837 rebellion against crown rule failed. Nevertheless, Britain granted Canadians ever-greater self-governance.

By 1867 Canada had become a dominion—an autonomous community within the British Empire. In 1982 the last symbolic formal link with Britain was severed. Full sovereignty was achieved without a shot being fired. All it took was good will and patience. Similarly, even though Australia was a former penal colony, it quietly achieved dominion status in 1931, and complete independence in 1986.

The British government's policy of granting gradual independence to colonial settlements was doubtless influenced by the bitter lesson learned in losing the American colonies to rebellion. But had the

American Revolution never occurred, is it really plausible to think that this vast nation would still be a colonial possession of Great Britain? The United States has nearly five times the population and more than six times the gross national product of the United Kingdom. How could the British possibly have maintained dominance over such a powerful colony?

Slavery

It seems certain that had the American Revolution never occurred, the United States would still be self-governing today. In addition, it is quite possible that slavery in America would have ended without our horrifyingly bloody Civil War and the century-long era of Jim Crow and divisiveness that followed. That's because, in 1834, the British Parliament passed the Slavery Abolition Act, which brought slavery to an end in all parts of the British Empire. Would Parliament have done so had the southern American colonies still been a part of Britain? Well, if they had, a really different America might have resulted.

Probing the Nerve

Why teach logic chopping when merely identifying and examining deep assumptions can spur so much more critical thinking? Because probing assumptions often strike a nerve. The American Revolution lesson just described would get students thinking, all right, but it would also enrage every "patriot" in the county. Better the kids go glassy eyed straining to spot logical errors than have a yowling band of yahoos at the schoolhouse door.

Then there are parents to consider. Quite a few of them favor their children thinking critically only when they reach conclusions the parents favor. Otherwise, they come storming to school board meetings looking for blood.

Thinking Critically about Religious Authority

Many topics that educators currently steer clear of would have to come into play if school-based critical thinking were ever to transcend mere lip service. For instance, many Americans think religion, particularly *their* religion, is of paramount importance. So if teaching students to think were our primary goal, it would be particularly pertinent to ask them to identify, re-examine, and reconsider the deep assumptions upon which the various major religions rest.

One of those deep assumptions concerns the alleged divine inspiration of whatever holy book informs a particular religion. Students could be encouraged to compare the content of competing religious source

authorities, say the Bible and the Koran, to see in what ways they agree and differ both with each other and with scientific research.

The Book of Mormon, for instance, asserts that the principal ancestors of Native Americans belonged to a seafaring tribe descended from the Israelite patriarch Lehi. It describes them as sailing to the New World around 600 B.C. On the other hand, scientists studying the mitochondrial DNA of Native Americans can establish no link between American Indians and ancient Israelites. In fact the analysis points to Siberia as the Native Americans' land of origin and to their migration beginning about 16,000 years ago.²

Educators could have youngsters read the Book of Mormon's account of Native American origins, read the scientific research refuting this claim, and then decide what they make of this contradiction. That activity would promote critical thinking—but such a lesson would be politically unacceptable, as would a lesson highlighting scientific inaccuracies in the Bible.

Ra and Jupiter

In pursuit of critical thinking, educators also could ask students to ponder the fate of previous religious beliefs, such as the Egyptians' worship of Ra, the sun god, or the Romans' reverence for Jupiter, the supreme god of the Roman pantheon. Then they could invite the students' reasoned speculation concerning whether contemporary beliefs might eventually suffer a similar fate. They could even have the students consider well-known arguments for and against the existence of God. That would make them think.

However, it would be highly imprudent to pursue such inquiries, precisely because they promote critical thinking all too well. That gets us to a fundamental truth. America's diversity, coupled with the exquisite sensitivity of local school boards to citizen perturbations, makes teaching meaningful critical thinking highly problematic. In fact, all things considered, it's probably best left to teachers with independent incomes, burly bodyguards, and employment in particularly tolerant private schools.

Conclusion

Here is what all this comes down to. Inevitably, teaching genuine critical thinking runs face first into the much less prominent, but centrally important, process of socialization—the largely uncritical passing to the young of the accepted values, rules, and ways of operating a society. This is the harsh truth of the matter.

Remember, public schooling is deeply involved in socialization. How could it not be? Remember too that socialization is largely an uncritical, nonreflective process. Rarely is the recipient offered detailed rationales.

Nor does the process invite questioning. More often than not, those doing the socializing characteristically declare something like “That’s the way of things” or “It’s just not done,” and that is the end of it.

Paradoxically, then, when educators are successful in teaching critical thinking about anything that really matters, they undermine socialization. After all, people who think deeply and critically do not make the most pliant citizens, the most obedient soldiers, the most enthusiastic consumers, or the best workplace drudges.

Critical thinkers ask far too many questions, frequently challenge established authority, and display an alarming tendency to invent their own rules. So it is understandable that school authorities give only lip service to critical thinking but are bold as only the mindless can be in their hourly, daily, weekly, totally earnest efforts at socialization. After all, isn’t it their job to turn out people who fit the present system well?

This reality is not surprising, nor is it that hard for realists to stomach. Well-socialized kids are, after all, easiest to manage in the factory-like schools of modern America. This type of youngster will put up with vast quantities of nonsense, avoid trying to participate in governance even when elected to student “government,” self-censor articles for the school newspaper, and never show up late for class.

No, it’s not educator insistence on socialization that’s hard to stomach. It’s the pious hypocrisy entailed in pretending that critical thinking is also highly prized. With rare exceptions, that is just not so.

Notes

1. These considerations are more broadly explained in Clabaugh and Rozycki’s *Analyzing Controversy*; available electronically from <<http://www.newfoundations.com>>.

2. USA Today.com, “DNA Research and Mormon Scholars Changing Basic Beliefs,” <http://www.usatoday.com/tech/news/2004-07-26-dna-lds_x.htm>.

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The Other Side of Inclusion

by Wade A. Carpenter

According to the big shot running the meeting the other day, anyone who questions inclusion is a candidate for commitment. Our special education textbook is almost as supercilious: “Inclusion is a belief system shared by every member of a school as a learning community . . . about the responsibility of educating all students so they reach their potential.” It is precisely this kind of simplistic triumphalism that makes it next to impossible to improve practices that are sadly insufficient. So yes, I question it.

Unlike the aforementioned true believer, the textbook goes on to admit that the real world is not quite so tidy and to cite a few sources that show problems:

In today’s schools, what is considered inclusive practice varies widely depending on the clarity of state and local policies related to inclusion, the resources available to foster such practices, teacher and administrative understanding and commitment, and parent and community support.¹

Ya’ think?

If inclusion means on one hand the latest good-willed attempt to solve the problem of what to do for our extreme cases—our privileged, our victims, our victimizers, and our unfortunate—by careful placement and enhanced resources, then I’m for it. But let’s acknowledge the reports indicating that this problem is still pretty intractable, and try to do something sensible about it.²

If, on the other hand, inclusion means that every kid should be confined for the greater part of the day with students requiring extraordinary attention (much less every psycho, free rider, and drug dealer), then no, I’m not for it, *and the law does not require it*.³ Our textbook finally acknowledges that inclusion

does not mean that every student is educated with peers at all times, but it does mean that the responsibility of discovering effective means for all students to learn together is taken very

seriously, and deviations from this approach are made with reluctance and only after careful deliberation.⁴

With that caveat I have no quarrel. We know that the old special education models did not work adequately, and I'm glad they have been discarded. I believe full inclusion is the right thing to do. Nonetheless, in nearly every conversation I have with practicing teachers, they express frustration and sadness, usually without prompting of any sort, over students questionably included or included in large classes with inadequate support. In nearly every observation I conduct, I see other kids bored stiff; they could have been challenged and could excel or even come to love learning, except that the teacher is pressured to focus on the "bubble kids" most likely to show substantial improvement on test scores. I also see far too many kids who think they can get by with insubstantial and careless work, and they are probably right. If inclusion for students with disabilities is combined with weak administrative support on behavior problems and modest intellectual goals for everyone, the process is unlikely to work. Making this right-thing-to-do even more problematic is that we are trying to include an extraordinary range of abilities, advantages, disadvantages, and handicaps while also trying to keep the criminals and those who hate school (for no matter how good a reason) in school.

I've seen this situation before, in my generation's struggles with another right-thing-to-do that has, until now, been sacrosanct: desegregation. If by desegregation one meant the morally necessary attempt to resolve three hundred years of racial injustice, to promote domestic tranquility, and to guarantee a decent chance at the American dream to decent people of all races, then I'm for it. In fact, I spent the greater part of my career working awfully hard to make it work, occasionally putting myself at considerable physical risk. By the twentieth century our society had been so morally corrupted and impoverished by generations of racism and discriminatory schooling that we rightly put freedom of association in abeyance, or at least reduced it considerably. But how far can we take that reduction in the twenty-first century and still call ourselves "the land of the free"?

Leveling downward is not compatible with education, either, by any definition of the word to which I care to subscribe. If by desegregation we mean the socially toxic result of miseducating kids of whatever race to the level of the street-corner hustler or the semiliterate Ku Kluxer, then no, I'm not for it at all. I did my high school teaching in Charlotte, North Carolina, the "home" of busing, in the 1970s and '80s, and I witnessed firsthand the results of doing the right thing badly; now I read that just about everything we accomplished for desegregation back then has been undone.⁵ For many years I was a good soldier and kept my mouth shut. I'm too old for that stuff now.

Part of the problem, I think, was that we were desegregating without any regard whatsoever for whether or not that particular child belonged in that particular class. I well remember the sweet little old lady from downstairs coming into my classroom at the beginning of every semester with her clipboard, and moving kids—lots of them—to and from advanced and low-level classes *simply to comply with the court order*: You, you, and you are now slow learners. Sorry. You, you, and you are now advanced. Congratulations.

I believe the other problem with desegregation, and now inclusion, lies in an uncritical infatuation with socialization, resulting in a seduction pulled off with an awful cynicism.⁶ To quote British philosopher Michael Oakeshott:

Modern governments are not interested in education: they are concerned only to impose “socialization” of one kind or another upon the surviving fragments of a once considerable educational engagement. . . . [This is] the alternative to education, invented for the poor as something instead of virtually nothing.⁷

While the rationale for both desegregation and inclusion is multifaceted, nuanced, and intellectually and morally compelling, most of the evidence for their effectiveness has been built around socialization, and socialization done poorly, at that. Discrimination may or may not be an evil, depending on how it’s done, but indiscriminate inclusion may bring with it an evil far worse, and I fear it will hurt the kids with disabilities, probably even worse than their nondisabled classmates.

“Socialization” is important, but it is not unproblematic. A facile “They’re all equal in God’s sight” from developmentally delayed social gospelers just won’t do, nor will an equally facile “They all have to learn to get along with all kinds of people” from historically bypassed egalitarians. Most children are perfectly capable of learning about a sewer without having to roll around in one, so it stands to reason that they can also learn about felons without having to sit beside them eight hours per day, one hundred eighty days per year, for twelve (or more) years. Our society has not yet provided enough support or alternatives for exceptional kids, nor has it learned how to discriminate *well*.⁸ To make inclusion work beyond the merely “adequate,” we need to provide more attractive alternatives for those kids who don’t want to be in schools and who detract from the education of those who do. We need to give teachers more support and give the kids more teachers—I would suggest no more than fifteen kids per class in inclusive settings. Blithely asserting that “individualization,” “inclusive practices,” or a bigger “bag of tricks” will solve the problem of extreme cases applies methodological Band-Aids to political diseases, places undue burdens (including a deeply

unfair load of guilt) on conscientious and overloaded teachers, and ultimately hurts far too many kids.⁹ As with segregation, this is not a methods problem; it is a policy problem. “Best practices” should never be a bureaucratic placebo for bad policy. A naive notion of equality and socialization is no more helpful than is a bigoted attitude toward diversity and social mobility. Contrary to some egalitarians, a good society rightly honors those who through intelligent good will, artistic talent, athletic prowess, or plain honest hard work make our lives better. Conversely, a good society shelters *all* children from being held down by conservative elitists, held back by liberal egalitarians, or held up by criminals. Benjamin Barber elegantly describes a kinder view of equality:

When democratic citizenship insists on leveling, it demands that slaves be emancipated, not that masters be enslaved; that suffrage be granted to the dispossessed, not taken from the powerful; that I win the exercise of my rights, not that you lose the exercise of yours.¹⁰

Contrary to some devotees of socialization, schools are not likely to fix every kid, and not every kid belongs in a school. Unless we figure that out, we will find ourselves increasingly burdened by schools in which nobody belongs, and as usual, the exceptional will be victimized even more savagely, because they are more vulnerable. The thrust of this column is simple: *inclusion is not likely to work if we insist on including the victimizers with the victims.*

Equality and socialization should accompany—not replace—judgment and education. To substitute the former for the latter, or vice versa, is an unsafe practice, pure and simple. No child should be denied the benefits of our education, but many do not deserve the burdens of our schooling—as it is currently practiced.

Notes

1. Marilyn Friend, *Special Education: Contemporary Perspectives for School Professionals*. 2nd ed. (Boston: Pearson/Allyn Bacon, 2008), pp. 20, 21.

2. Start with Friend, then go to the USDOE's site and take up with <http://www.ed.gov/about/reports/annual/osep/2002/execsumm.html>, and then surf from there. Be forewarned, however: although the research is pretty solid that inclusion seldom hurts and often helps students with disabilities, and may have affective and social benefits for all, the research “suggesting” that it doesn't hurt “the other kids” academically is dated, limited, and unconvincing. Those who even think about it generally finesse the issue. And even its most enthusiastic proponents do not approve of inclusion without adequate support systems—including alternative systems for those who resist schooling and make it difficult for others. And that is my beef. See also Debbie Staub, *Inclusion and the Other Kids* (Newton, Mass.: National Institute for Urban School Improvement, 1999), ERIC ED 439206.

3. “All children have the right to learn together”; “[t]here are no legitimate reasons

to separate children for their education. Children belong together—with advantages and benefits for everyone. They do not need to be protected from each other” (Organization for Inclusion, Acceptance, and Respect, “Questions and Answers about Inclusion” <<http://www.oiar.org/index.html>>). Such statements are sentimentalist rubbish. Ask any cop, social worker, or even bullying victim whether protection from *some* children is needed. And that kind of bogus “rights talk” just trivializes worthy and weighty matters: one could just as easily invent a “right” to learn separately, a “right” to attend the college or university of one’s choice, or even a “right” to live in a smoke-free city. I found it interesting to hear not long ago that Estonia has declared Internet access a “fundamental human right.” It may indeed be very desirable, but compared to life, liberty, and the pursuit of happiness . . . c’mon, folks, get a grip.

4. Friend, *Special Education*, 21.

5. My own experience gives me enough lamentable war stories from “back then,” and Ann Doss Helms’s articles in my hometown *Charlotte Observer* about post-desegregation outcomes are depressing reading. For broader perspectives and some precise figures, see the NAEP reports on the racial gaps at <<http://nces.ed.gov/nationsreportcard/ltr/results2004/sub-reading-race.asp>>; the Uniform Crime Statistics published yearly by the FBI at <<http://www.fbi.gov/ucr/ucr.htm>>; the drug-abuse figures and the teenage-pregnancy figures released by the U.S. Department of Health and Human Services at <<http://www.drugabusestatistics.samhsa.gov>>; and the findings of the Guttmacher Institute at <http://www.guttmacher.org/pubs/state_pregnancy_trends.pdf>. Maybe I have to confess that although my generation of teachers did a good job with a lot of individual kids, societally we may have been a disaster.

6. Most of us are probably aware that St. Peter left half the statement unsaid: Love may indeed cover a multitude of sins, but infatuation can lead to a lot more. I Peter 4:8.

7. Timothy Fuller, ed. *Michael Oakesbott on Education* (New Haven: Yale, 1989), p. 86.

8. “Enough support or alternatives”: my best suggestion at this point is in Wade A. Carpenter (2007): “For Those We Won’t Reach: An Alternative” in *Educational Horizons* 85 (3): 146–155.

9. “Methodological Band-Aids . . . political diseases”: an intentional mixed metaphor. I’m not disputing the need for better teaching methods for intellectually challenged and behaviorally challenging children; I am asserting that they may be necessary, but they are unlikely to be sufficient.

10. Benjamin R. Barber, *An Aristocracy of Everyone: The Politics of Education and the Future of America* (New York: Oxford University Press, 1992), p. 6. Allow me to add the suggestion that an aristocracy of everyone is the only democracy worth living in.

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Educational Horizons inadvertently placed an erroneous footnote on the opening page of “The Other Side of August 5,” the previous issue’s Behind Every Silver Lining column (Vol. 86, No. 2, Winter 2008, p. 69). The editors regret the error.

When Special Education as We Know It Ends— What, If Anything, Will Replace It?

by Michael A. Noonan

All things change. What now seems essential will at some time be set aside. It will have served its purpose. It will no longer fit. Circumstances will have changed. Needs will differ. So will the responses to them. What made so much sense may seem silly or intrusive, slowing processes it was meant to advance.

The current model of anything was proposed to answer the moment's requirement. It met a need, perhaps not ideally—but sufficiently well to become the procedure by which most interests could be addressed and seemingly prominent concerns could be resolved.

With time, we assume the model has more stature, more permanence than it is entitled to. We now think we have always done this. We have always responded in this way. It is the way I learned to do my job. It is central to the contribution I make. If it seems so, it may be because my job or contribution was defined by that model. It was how the process was implemented and managed. We have become elements in the process, and we may worry whether changes in the process will require changes in us—changes we may not readily make.

We have been the experts. We know about diagnosing, teaching, assessing progress, adjusting programs, and expectations. We know what constitutes conditions as presently defined. We are aware of programs meant to remedy them. But if it were decided the conditions are different than they seemed, that some may not actually exist, or that the means used to address them were not as beneficial as they'd seemed, that the cost of remediation to the student was too high, we might be unnecessary too. What had been assumed may have been replaced by new knowledge, contradicting what we thought was so. That is a scary prospect, but a real one too.

Psychology in the schools is largely about tests, measuring potential and achievement, or processes we think discernible through what we

ask children to do. Teaching special education students, at least those thought to have a disability in learning, assumes they process information less efficiently, and it requires reinforcing or identifying different pathways to learning. The supportive structure ensures the availability of services for those identified, while guarding access to services, lest those not disabled try to use them.

It is an expensive operation, which may further propel the question of what we might do instead and what we should stop doing too. I have heard people say we should scrap the whole thing, relying on repetition and the use of volunteers who review basic skills over and over until children incorporate them. Whether they understand them is a lesser issue, though it is assumed they would with time find meaning too—but first they have to know. It is not a bad idea, though too broad by a long shot. It minimizes the significance of identification, which is really not as clear-cut as we sometimes assume. It would be economical, and available to all children, whatever the source of the difficulty experienced.

We might also wonder why we don't provide all children with what are now specialized skills—in other words, use the information assessment now generated for only a few, and use the different teaching methods too. Why do we limit them to people we think disabled? Why don't we assume all people learn in different manners, even though they may be more similar than different?

* * *

Why not apply what we have learned from special education to the entire population? That would do away with labels, which have been a determinant rather than an asset. It would also do away with the inclination to secure special education services by identifying students who could readily be educated in the general population. There really are approaches other than repetition, and providers other than volunteers. There are the special education teachers, aides, and ancillary staff—people skilled in meeting the needs of only some. Their expertise could be available now to all.

A change would mean meeting individual needs. Rather than creating plans for special education students, we could have plans for every child, plans that could be adjusted as needed—rather than spend time setting out goals more stale than they seem. We could provide education rather than develop a grand, though repetitious, chart few read.

Teachers would still teach groups and classes, but they would also address individuals. They would ask not how each student fit the overall plan, but rather how the school, and the school district, could best provide for the individual. Adequacy would not remain the standard. We would be grouping those with common interests or skills, rather than those of a particular age. The curriculum would be valuable only if suc-

cessful for those addressed by it; that way there would be not one, but many. Children would not be enduring school. They would have opportunities to like it, to value what it provided, being successful, as successful as possible.

If special education has been expensive, doing away with it will not be cheap, but the outcome will be more favorable. “Special” will lose the unfavorable association it has acquired. It will not be an offensive description, one no child would pursue. We will be less focused on one program for everyone, and a different one for those who had been thought disabled. There will instead be programs defined, developed, modified, expanded, or set aside based on their ability to benefit students. As much support as needed will be available, for as long as it is beneficial.

Teachers and administrators will be invited to become creative, rather than bound to a single approach. There will be confusion, which might be seen as an asset, an indication of our need to explore, wonder, cooperate, to find satisfaction in our work, in the development of something new. It could prove to be as exciting as it might be confusing, and excitement would in time prevail.

Not everyone will like it. Maybe a lot of people won't. They will no longer be as essential, as prominent and powerful. Others will be at a loss. Things once so predictable will seem chaotic. It might be loud. Maintaining a schedule will perhaps be hard. Grading will be difficult, as we wonder what is being measured. Those whose role and status relied on measurement, the giving, scoring, and recoding of tests, may still do testing, but they will be looking not for what is wrong, but for what might be best. They will be asking how to identify and utilize skills. Instead of fitting children into categories or then freeing them from the same categories as they prove a hindrance, they will be observing processes, trying to explain them, measuring progress with an eye to what else might be done.

The change is coming. It must. Things change. It's time for special education to change as well, to be really special—though inclusive, rather than exclusionary. It is time it disappeared as we have so far known it, but it will not be the loss against which we might be guarding. We'll be OK. The children will be even better.

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Cyber Charter Schools: Evolution, Issues, and Opportunities in Funding and Localized Oversight

by Kathleen Ellis

Cyber charter schools are a recent manifestation of the school-reform movement initiated by the publication of *A Nation At Risk* (National Commission on Excellence in Education 1983). In the 1980s, Effective School Research focused on improving student performance by changing school structures (Smith and Meier 1995). By the 1990s liberalization, or freedom from government control, coupled with the introduction of privatization policies, gained political popularity (Belfield and Levin 2002). Charter schools developed as a legislative compromise on the partisan school-voucher issue (Witte and Manna 2003). Charter school advocates claimed that charter schools could quickly and efficiently increase overall student achievement.

The accumulated evidence of the past twenty-five years suggests that U.S. public schools are performing above previously established norms (Garcia and Garcia 1996; Smith and Meier 1995). Despite measurable school improvement, school reform remains a contentious issue, often re-framed as a “right to school choice” (Belfield and Levin 2002; Boyd 2007). The federal No Child Left Behind act requires alternative schooling options for students enrolled in failing schools (Huerta, d’Entremont, and Gonzalez 2006). Once options extend beyond existing public school institutions, the politics of school choice begin to resemble privatization schemes (Mead 2003), yet promoters of choice contend that competitive markets impose financial discipline and improve organizational performance (Belfield 2000).

Public school systems, by contrast, are not designed to foster market competition. Demand for them depends upon population, mandatory attendance laws, and statutory requirements. Supply is influenced by democratic governance, bureaucracies at various levels, and local circumstance. Accordingly, price is dictated by contracts along with federal, state,

and local tax revenues; socioeconomic status, housing location, and the resulting local property taxes largely determine local public school funding (Belfield and Levin 2002). A public school district is therefore a monopolistic supplier of education to a local market unless private schools or other options, such as charter schools, are available.

Market models suggest that popular institutions turn a profit while unpopular institutions close (Garcia and Garcia 1996). In an open market consumers—students, parents, taxpayers, or future employers—exert pressure by purchasing services from a variety of sources. Consequently, providing patrons with charter school options, by reallocating funds to the consumers' school of choice (Hadderman 2002; Mead 2003), supports a quasi-free market system. Nonetheless, no evidence has emerged correlating school choice in general with improved student achievement (Abernathy 2005; Garcia and Garcia 1996).

Legislatures, operating without adequate input from educators (Garcia and Garcia 1996) and conspicuously without parental support (Snell 2002), have led the way in school-choice reform. Unable to garner majority support for voucher programs, lawmakers tried to create a framework for developing quasi-public charter schools (Mead 2003; Pennsylvania School Board Association [PSBA] 2001). Unlike voucher programs, but similar to magnet schools, charter schools are a subset of the public schools supported by public moneys (Witte and Manna 2003). Bringing competition and choice into the public school market (Lubienski 2003), charter schools tend to increase parental satisfaction by providing an exit option within the publicly funded system (Abernathy 2005). Legislators intended charters to be competitive devices encouraging reform (Garcia and Garcia 1996; Mead 2003) as well as experimental environments promoting research and development (Lubienski 2003). As a result, innovations that positively impact student performance could be deployed in the public school system at large (PSBA 2001).

Thirty-nine states authorize charter schools, which operate relatively free from government and local district oversight (Lubienski 2003). Charter schools are independent public school entities approved and operated by sponsoring local school districts (King 2006; PDE 2002) or other educational agencies. Each school is accountable to a chartering institution (Abernathy 2005). Liberated from excessive regulation (Garcia and Garcia 1996), charter schools can respond quickly and flexibly to specific customer demands (Sugarman 2002). Charter schools tailor programs with innovative curriculum, instructional strategies, and administrative structures (Garrison and Holifield 2005; Mead 2003; Lubienski 2003).

Cyber schools, also known as virtual schools, are noteworthy charter school developments that provide viable options for education (Allen and Marcucio 2005; Miron and Nelson 2000; Rice 2006). In Pennsylvania, cyber

charter schools evolved from a loophole in Pennsylvania's Charter School Law, Act 22 of 1997. The law's lack of clarity and the magnitude of funds drained from individual school districts led to litigation (Hardy 2001; PSBA 2001) that clarified cyber charter schools as legitimate educational institutions under Act 88 of 2002 (Huerta and Gonzalez 2004). Currently, cyber charter schools are approved at the state level by the Pennsylvania Department of Education (PDE 2002). Pennsylvania, a pioneer in cyber charter school development, is one of nineteen states that sanction cyber charter schools (Huerta and Gonzalez 2004). Cyber schools deliver 20 to 80 percent of their academic instruction over the Internet or via computer (Borja 2005; KPMG Consulting 2001; Long 2004). Students can work at their own pace, unconstrained by geographic boundaries and free to develop school schedules that best fit their individual situations. Parents are generally expected to monitor attendance and student work (Long 2004), and periodic student-teacher contact, via phone or e-mail or in person, is arranged (Watson and Ryan 2006).

Charter schools in general and cyber charter schools in particular are not "revenue neutral" to local school districts (PSBA 2001). Nationwide, hundreds of millions of dollars allocated for education are being routed into charter schools (Trotter 2001). Charter school enrollment totaled 55,630 among Pennsylvania's total student population of some eighteen million (PDE 2005) in the 2005-06 school year, and more than seven thousand attended cyber charter schools. At an average per-pupil fee of six thousand dollars each, forty-two million dollars of tuition was invoiced from Pennsylvania's local school districts in one school year for cyber charter schools. More than 60 percent of rerouted money is collected from local property tax revenue (Belfield and Levin 2002; Huerta and Gonzalez 2004).

Pennsylvania, like twenty-four other states, does not authorize public school funding for home-schooled students (Mead 2003). More than 60 percent of Pennsylvania's cyber school enrollees were formerly home schooled (Huerta, d'Entremont, and Gonzalez 2006). As parents opt for cyber schools to augment home-school resources, the funding burden shifts from the family to the taxpayers (PSBA 2001) without input from local districts or residents. Students can apply to any of eleven cyber schools authorized to operate in Pennsylvania. Upon acceptance, the cyber school notifies the local district of that child's enrollment (Huerta and Gonzalez 2004). Tuition is invoiced to each student's school district of residence at 80 percent of the total funds spent on per-student instruction in that district (Associated Press 2006; Sternberg 2006). Unlike the process in local school districts accountable to local taxpayers through an elected school board, this application-and-acceptance system empowers residents to reroute public funds to state-chartered cyber

schools on behalf of their children as they see fit. Thus, an unintended result of this unrestricted school choice has been diluted local political control (Abernathy 2005).

Cyber schools' rapidly increasing popularity (Murray 2006) demands the creation of new standards for educational funding and institutional governance (Long 2004). The recommendations presented in this paper focus on two areas: 1) funding formulas, and 2) empowering local school authorities to operate as management agents who maintain and control cyber school options to benefit their local clientele.

Funding Issues and Options

The current system encourages profiteering (Huerta and Gonzalez 2004) and mismanagement (Snell 2002) at public expense. Charter schools are nonprofit organizations that contract for curriculum, management, or operational functions with for-profit corporations (Huerta and Gonzalez 2004; KPMG Consulting 2001). Such relationships are not always transparent to charter school overseers or consumers (KPMG Consulting 2001).

The large sums of money that follow students make virtual-school enrollment an important issue in school finance (Hadderman 2002). Costs are at the core of the debate (Sternberg 2006). Per-pupil funding varies from district to district based upon community wealth (Sugarman 2002) and school budgets. In Pennsylvania school districts the average annual per-pupil expenditure is \$8,333 (PDE 2002). Annual per-pupil investments in individual school districts range from a low of \$5,000 to a high of \$12,000 (Sternberg 2006). Public school advocates argue that per-pupil payments are independent of cyber charter schools' operational costs (PSBA 2001), so that tuition fees should not vary by district of residence. Cyber schools have limited physical facilities to maintain and employ fewer teachers, staff, and administrators than do traditional "brick-and-mortar" schools (Associated Press 2006). Cyber school supporters counter that each school must maintain offices, Internet connections, instructional supplies, and nursing staff (Sternberg 2006), as well as additional overhead costs associated with technology and technical support (Associated Press 2006). In addition, cyber schools do not qualify for grant moneys that are available to regular public schools (Sternberg 2006). Some states do have grant funds available exclusively for charter school start-ups (Miron and Nelson 2000).

Actual cyber school costs range from \$650 to \$5,200 per student, with the high end including amortized development and administrative fees (Borja 2005). Start-up costs average \$1.6 million per school (Sternberg 2006). Charter schools, and cyber charter schools in particular, receive per-pupil funding below the amount allocated within traditional public

school districts (Watson and Ryan 2006). In categorical funding, however, per-pupil funding enables charter schools to amass disproportionately more given the total population served (Sugarman 2002) than the 25 percent that traditional school budgets allot to special education.

Several analysts have suggested remedies for funding anomalies.

- Charters granted by the state could be funded exclusively by the state using a uniform per-pupil calculation of state and federal allocations (Huerta, d'Entremont, and Gonzalez 2006). For cyber charter schools, tuition could be based upon actual per-pupil costs plus a rate calculated to cover administrative expenses, overhead, curriculum development, and the like. Here, a uniform chart of accounts would help outsiders better understand cost and revenue structures (KPMG Consulting 2001).
- Course completion rather than enrollment could become the basis for funding (Watson and Ryan 2006).
- Per-pupil funding for cyber charter schools could be based upon the lesser of a charter school's actual instructional cost or the school district's instructional cost per student (PSBA 2001). However, this formula would guarantee inadequate operational funding to any school forced to settle for the district per-pupil fee.



For districts evaluated by attendance, cyber school enrollment raises further issues: how does time on task at home compare to such time at school? Should a student be forced to remain on a traditional school's grounds in order to justify state and federal per-pupil attendance requirements? Per-pupil cyber school funding could reflect instructional costs based upon a sliding scale (Huerta, d'Entremont, and Gonzalez 2006), regardless of whether instruction takes place at school or at home. California has developed such a scale for funding home-school charters (Huerta and Gonzalez 2004). A recommended variation would base per-pupil funding upon two factors: 1) number of classes attended, up to a maximum of eight per year; and 2) percentage of the preceding four years spent attending traditional public schools. Developing four categories for each factor would produce per-pupil funding fees varying between 6.25 percent (for one to two classes with one year of previous public school attendance) and 100 percent (for seven to eight classes with full-time public school attendance for the prior three years) of instructional moneys budgeted by district. Special education services would be paid based upon actual services provided up to a maximum of the per-student categorical funds available. Completed charter school courses would count toward public school attendance. There are advantages to a pay scale versus a single-pay rate, although direct district oversight, as discussed below, is preferable.

Entities profiting from the current charter school and cyber charter school legislation are system stakeholders, and their interests tend to wield considerable political and economic power. Curriculum providers should be handled as textbook suppliers in the "regular" public school market. In this model, on-line course providers and full-service curriculum providers would compete for moneys within the existing public school system rather than against it.

Relying on cyber charter schools to develop reliable, honest costs per student and invoice an independent third party, while services to an unrelated ultimate user are provided, is a market system that includes consumer choice but fails to incorporate competitive pressures on price, product, and service quality. It is in these areas that existing public school management structures could play important and meaningful roles. Districts and elected school boards, acting on behalf of taxpayers and in the interests of their students, could offer effective and efficient educational programs that include cyber school service options and lead toward locally earned diplomas.

District Empowerment and Innovation Opportunities

Public school districts offer a variety of program options (Garcia and Garcia 1996) including a continuum of services for special education students: home-bound instruction, independent studies, dual enrollments,

and the like. Some schools have on-line courses available as summer school programs and acceleration options. Traditionally, student participation in on-line classes has been at local school board discretion, with school and district administrators overseeing student programs and progress (Watson and Ryan 2006). Local school authorities, supported largely by local funds, have managed and directed local educational programs within established geographic boundaries.

One argument to justify creating charter schools was that charter school innovations could eventually be applied to the existing public school system (Lubienski 2003; PSBA 2001). Most charter schools use traditional teaching and instructional methods; those that are innovative use innovations seemingly not transferrable to public schools (Lubienski 2003). Cyber school services are in demand by parents and students. It is in the public interest to incorporate a cyber school option into the existing school system while accountability, governance, and local funding are retained. School districts could develop their own curricula or shop course by course for the best curriculum providers from a state-approved list of suppliers. Districts, acting as purchasing agents, would exert competitive pressures on curriculum suppliers. Suppliers would find it advantageous to develop and deliver current, cost-effective educational solutions that would maintain a focus on state standards and student achievement at the lowest possible cost.

Local oversight of cyber school services might have averted the lawsuit that forced Pennsylvania's largest on-line charter school to close. A group of parents charged that the school had failed to provide adequate Internet access, textbooks, and special education services (Richard 2002). Act 88 of 2002 included a formal evaluation called the Pennsylvania System of Cyber Charter Review. Schools that successfully complete the review receive a five-year charter renewal (Watson and Ryan 2006). Districts could use those established parameters as a framework for their own internal program evaluations.

Parents who want their children to learn at home via computer would be offered district-approved course options that combine on-line classes with established independent-study programs. Students struggling in "regular" classroom environments could take on-line courses as an option during the regular school day, inside the traditional brick-and-mortar school building. Classes requiring such investments as physical equipment, science labs, and physical education would be offered at district-approved facilities where credits would accumulate toward locally awarded diplomas.

Home-computer access is another problem that needs improved planning and oversight. One cyber school company provides enrollees with a computer system designed to access course-related Web sites only

(Snell 2002). Limited site and time access could be monitored electronically, and a minimal physical computer terminal that restricts the student to school-related Internet sites should be used. Terminals that tap into existing school networks via modems may also be effective. Students or parents who have chosen home access on their own systems should not be compensated for hardware or software available in their homes for alternative use.

Discrepancies in enrollment statistics vary between district and charter school reports by as much as 50 percent (Trotter 2001). Making each school district accountable for its own charter school enrollments would ensure accurate attendance statistics. As districts purchase or license the use of on-line curricula or classes, teachers supervising students would be district rather than corporate employees, and issues regarding cross-state teacher certification (Watson and Ryan 2006) would become irrelevant. For state and federal reimbursement, enrollments could combine in-seat time for traditional classes and course-completion rates for nontraditional classes; all students funded by local taxes would be included in the state and federal count based on the same quarter-day proportion previously recommended.

Conclusion

In education, money matters. The idea that existing public school systems can best be improved by diverting money from them is counterintuitive. School systems need to maximize the utility of the funds available; diverting public school money from servicing the majority of the public school population is not in a system's or its students' best interest.

Cyber charter schools, and charter schools in general, are policy options that impact different interest groups differently. Policy-feedback models assert that existing policies influence future policies; privatized markets beget privatized political choices (Abernathy 2005). Viable charter schools will create demand for more charter schools. As more and more stakeholders establish themselves in the quasi-market of public schools, those parties become more interested in market maintenance than in the reform and health of the public schools. Competitive markets tend to homogenize over time; innovation and variation decrease; and eventually choices fade away (Lubienski 2003).

School-choice advocates tend to ignore documented school-choice results. Wealthy families benefit more from school-choice programs than do economically disadvantaged families (Belfield and Levin 2002). Academic achievement remains strongly correlated with socioeconomic status (Lubienski 2003), even in areas where school-choice options exist. De facto segregation, one result of voluntary enrollments (Belfield and Levin 2002), has increased inequality and inequity in many localities. If

charter school innovation results from removing excessive government regulation, freedom from those same legislative constraints would best serve the existing public school system (Garcia and Garcia 1996).

Cyber schools blur established boundaries between public schools and home schools (Long 2004). The popularity of cyber school learning will continue to impact home schooling, particularly if home-school students exercise the opportunity to move back and forth between publicly funded cyber schools and minimally regulated home schools. Public money is rarely invested without strings attached (Mead 2003); as public-funding requirements have increased, so have the number of state and federal mandates on the public education system. It is possible that non-classroom-based models simply push the definition of traditional public schooling too far (Huerta and Gonzalez 2004).

Cyber school advocates emphasize the importance of teaching twenty-first-century skills to twenty-first-century students (Watson and Ryan 2006). Such skills as e-mail access, Internet research, and on-line communication can be taught within the traditional public system as easily as anywhere else. Democratic values and principles are the cornerstones of public school programs (Smith and Meier 1995); perhaps it is those ideals that are best taught inside a traditional public school system.

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The Future of Progressive Education

by William Hayes

What David J. Ferrero has called “the Hundred Year’s War between ‘progressives’ and ‘traditionalists’” continues unabated in the twenty-first century. Undoubtedly, current initiatives in public education favor those who support traditional approaches, yet many critics believe inflexible state curricular standards enforced by high-stakes tests are restricting teachers’ flexibility in employing methods other than teacher-centered direct instruction. Teachers at all levels worry about “covering” state standards. Likely they are also concerned about losing class time when they undertake projects, debates, or field trips. Lagging U.S. scores on comparative international tests continue to create pressure to concentrate on the type of instruction that traditionalists believe will be most effective in raising test scores.

At the federal level, President Bush has proposed extending mandatory testing beyond grade eight into high school. There are also renewed discussions about establishing national curricular standards and tests, which would replace the current objectives and examinations prepared for the state level. Supporters of the federalized plan point to differences in the specific state standards required in every basic subject and to wide variations in the mandatory tests each state administers. National standards outlining what students should know and be able to do in every subject area, combined with national tests based on those standards, would make it much easier to compare every school district in the country and specify remedial measures for states with poor results. The fact that many countries with national curricula and tests have done well in international tests is another argument for nationalizing the process.

Although attempts during the Clinton years to develop a national social studies curriculum failed, the federal government may undertake new efforts to counter frustration over inadequate international test results. If so, schools and teachers might retain even less flexibility in using progressive education theory and methods. Looking ahead, it is easy for progressives to become discouraged.

Still, it certainly would be premature to declare the final decline of progressive education in the United States. The growing popularity of the Montessori method, especially at the preschool and primary levels, signals that schools emphasizing creativity and “learning by doing” have a market.

School choice in all its manifestations is also allowing parents to consider schools established in the progressive tradition. Unfortunately, many parents selecting Montessori and progressive schools can be described as white, middle- or upper-class liberals. Although their number is still relatively small compared to the entire population, many of these parents tend to be active and vocal members of their school districts. There is also evidence that growing numbers of urban minorities are considering choice as a way to escape schools they perceive as failing their children.

Perhaps even more important in the survival of progressive education is the role of teacher-education programs. Almost every class and textbook for future teachers discusses a variety of teaching techniques. The inclusion of special education students in regular classrooms, along with the decline of academic grouping, has increased student diversity in most classrooms. Approaches such as nongraded classrooms, diversification of instruction, cooperative learning, and the use of projects are commonly discussed in teacher-education programs. Such undergraduate training should have at least some impact on the teaching methods used by graduates.

Middle school theory, which has been popular during the past fifty years, also calls for a more student-centered program designed especially for this age group. Middle school advocates call for more active learning methods as opposed to teacher lectures. Curricular and extracurricular programs, according to theory, should be based primarily on the children’s developmental levels. True, many middle schools still resemble traditional junior high schools; the current emphasis on testing may push others in that direction. Even so, most educators have accepted the idea that middle school students differ from high school students and that their educational programs should be more student centered.

Opportunities for gifted and talented students often emphasize academic freedom. An example would be the Odyssey of the Mind program, which stimulates students’ creative problem-solving skills. The current initiative to develop additional scientists and engineers may also infuse additional and imaginative laboratory exercises into science classes.

* * *

Although no twenty-first-century John Dewey has emerged, a number of vocal individuals continue to criticize the current direction of education. It should be noted that some of these critics are outside education. The most common criticism of the current initiatives comes from those concerned about high-stakes testing. An article that appeared in the liberal magazine *The Nation* in June 2000 noted:

Despite the political popularity of the testing “solution,” many educators and civil rights advocates are suggesting that it has actually exacerbated the problems it sought to alleviate. They claim that these policies discriminate against minority students, undermine teachers, reduce opportunities for students to engage in creative and complex learning assignments, and deny high school diplomas because of students’ failure to pass subjects they were never taught. They argue that using tests to raise academic standards makes as much sense as relying upon thermometers to reduce fevers. Most compellingly, they maintain that these tests are directing sanctions against the victims, rather than the perpetrators of educational inequities.¹

In 2003, the magazine *Educational Leadership* summarized a research project conducted by Audrey L. Amrein and David C. Berliner, who had found negative results in high-stakes testing:

- Rather than increase student motivation, the tests cause students to “become less intrinsically motivated to learn and less likely to engage in critical thinking.” Teachers, on the other hand, choose to “take greater control of the learning experiences of their students,” which denies them the possibility of directing “their own learning.”
- High-stakes testing is one factor exacerbating the dropout rate in the United States. That in turn is leading more students to seek alternative diplomas such as the so-called GED (General Education Diploma). That degree is based entirely on passing tests.



- Testing has caused increased grade retention, and this in turn, it is argued, has caused more students to drop out of school.
- Schools are spending valuable time teaching test-taking techniques and teaching only content likely to appear on tests.²

In the same issue of *Educational Leadership*, Monty Neill urged educators to repudiate tests that narrow the curriculum and to “focus instead on formative assessment practices that encourage skilled teaching and high-level learning.”³

Even before the passage of the No Child Left Behind act, several books also argued that our current reliance on testing is negative. In 1999, Peter Sacks asserted in *Standardized Minds* that “test-driven classrooms exacerbate boredom, fear, and lethargy, promoting all manner of mechanical behaviors on the part of teachers, students, and schools, and bleed schoolchildren of their natural love of learning.”⁴

The next year, in *The Case Against Standardized Testing: Raising the Scores, Ruining the Schools* (2000), Alfie Kohn argued that

- high scores often signify relatively superficial thinking
- many leading tests were never intended to measure teaching or learning
- a school that improves its test results may well have lowered its standards to do so
- far from helping to “close the gap,” standardized testing is most damaging to low-income and minority students
- as much as 90 percent of test-score variation among schools or states has nothing to do with quality instruction
- far more meaningful measures of student learning—or school quality—are available⁵

A post-NCLB book that deals with the negative aspects of testing is entitled *High Stakes: Children, Testing, and the Failure in American Schools*. Its authors, Dale D. Johnson and Bonnie Johnson, recount their work during one year in a rural school district. For them, the experience demonstrated the “tyranny and oppression” that high-stakes testing and accountability created in a small, poor school district. The authors believe that there is “growing opposition to the accountability movement and especially to high-stakes testing” in schools all over America.⁶

No Child Left Behind continues to have many supporters, a significant number of whom associate any form of progressive education negatively. For instance, an article on one conservative Web site summarizes the legacy of progressive education by concluding: “We probably would be better off if Dewey and his ilk had peddled their intellectual wares elsewhere,

perhaps in Dewey's beloved Soviet Union."⁷ Another typical view is expressed in a Hoover Institution publication, which states that "school reformers today are still trying to put into effect the turn-of-the-century progressive ideas of John Dewey and others. These ideas were largely misguided one hundred years ago, and they are largely misguided now."⁸

With this type of angry opposition, and because so many of the current members of Congress voted for the No Child Left Behind law, change will be difficult. The law is not likely to be altered dramatically when it is considered for reauthorization. The most frequent criticism from Democrats for the past several years has been not about the initiatives created by the law but rather about the Bush administration's failure to fund it properly. As a result, it is difficult to envision the nation turning completely from curricular standards, high-stakes testing, and school accountability in this decade. Nonetheless, the current U.S. Secretary of Education, Margaret Spellings, has shown significantly more flexibility in enforcing the law. Unlike her predecessor, Rod Paige, she has been more sensitive to the criticisms of teacher unions, state legislatures, and individual school districts. With various provisions of the law currently under challenge in the courts, it is also possible that judicial decisions will affect enforcement. Still, it is likely that Secretary Spellings will bend only so far. She has been quoted as saying, "As we say in Texas, if all you ever do is all you've ever done, then all you'll ever get is all you ever got—and all we ever got is really not good enough."⁹

Undoubtedly fierce debates over the law will continue to affect education decisions at every level. Especially in Washington, one can expect that with the urging and support of the teacher unions, Democrats might increase public education funding now that they control Congress as a result of the 2006 election. A Democratic Congress is also likely to be less sympathetic to choice options, especially vouchers involving nonpublic schools. Whether the Democrats will attempt a major overhaul of the No Child Left Behind law is uncertain. There is no question that many in the education community have serious reservations about the initiatives created by the law, but the general public is not yet nearly as critical.

It is thus difficult to predict how politics will affect the future of progressive education. Chances are that school choice will continue to give parents opportunities to select progressive-education options for their children. Even if choice is expanded and progressive schools increase in number, only a small minority of students will be exposed to that approach. Another path would bring progressive methods into the mainstream of public schools. For that to happen, there must first be some kind of truce between traditionalists and progressives as well as acceptance of the idea that either approach can be used in any classroom.

The history of the decades-old struggle between those who support a traditional phonics-based reading program and the advocates of whole language provides a blueprint for such an accommodation. Today many elementary-school reading programs include methods associated with both approaches. In these classrooms, teachers use traditional basal readers and assign spelling words from a separate book. They also emphasize a phonetic approach to identifying and pronouncing words that are new to their students. At the same time, the teachers employ such whole-language techniques as using context clues to identify words, using classic childhood literature in the form of big books, utilizing a classroom library to encourage children to read on their own, and perhaps taking spelling words and vocabulary from the books being read in class. Such a combined approach appears to be popular in many schools.

Compromise can also occur in the field of social studies. There is little argument that students need to know key names and dates in history or that they should be acquainted with the major provisions of the Constitution. At the same time, if teachers are accorded adequate flexibility, an American history teacher could give his or her students the opportunity to research the arguments prevalent when the Constitution was being ratified. The class could be divided between the Federalists and Antifederalists, and following individual and group research, students could hold a town-meeting simulation to debate whether the community should favor ratification. Obviously, not every controversy studied in social studies class can involve individual research and formal debates, but students engaged in such active learning experiences might better remember what they learned and find school more interesting.

Of course, allowing teachers to use progressive teaching techniques would necessitate making the assessment instruments used by schools more flexible. There would have to be less reliance on factual objective tests and more opportunities for creative answers to essay questions. An example of a question that allows a student to use his or her experience in the debate described above is: "Using a conflict situation in American history, identify the problem, give the primary arguments dealing with the issue, and explain and justify your own position on the problem." Social studies classes can also include experiences in service learning, which allows students to spend volunteer hours engaged in useful community work. Such activities can be assessed using something other than tests. Students can develop portfolios or journals that record their reactions to their learning experiences. In choosing projects, students can follow their own interests, which is another important goal of progressive-education theory.

Similar progressive techniques could also assume more prominence in other classes. Educators serious about developing truly creative problem

solvers must include science and math lessons and laboratories that give students the opportunity to solve problems creatively. Students will have to do more than memorize their math and science textbooks to pass short-answer tests. At least some science labs should enable students to solve problems creatively.

English teachers can also utilize student interests in written exercises and research topics. At all ages, children should have the opportunity to act out plays and write creatively about the literature they encounter. Schools can also encourage multidisciplinary projects in which the students combine several subjects, including technology, while problem solving. Teachers assigning such projects would act in the progressive tradition as advisers or facilitators of learning rather than just information providers.

* * *

All such approaches are possible if educators can make the appropriate accommodations with ultraspecific curricular requirements, high-stakes testing, and accountability. Even traditional educators should be able to accept Herbert Berlak's progressive goals—to “engage the learner, nurture imagination,” to stimulate “cognitive and artistic expression and foster social-emotional and moral development”—or George S. Counts's observations:

In the minds of most Americans, the Progressive Education movement, in spite of its complexity, does stand for certain rather definite things. Moreover, few would deny that it has a number of large achievements to its credit. It has focused attention squarely upon the child; it has recognized the fundamental importance of the interest of the learner; it has defended the thesis that activity lies at the root of all true education; it has conceived learning in terms of life situations and growth of character; it has championed the rights of the child as a free personality.¹⁰

Whether progressive education continues as primarily an option for a limited number of students or becomes increasingly integrated in the mainstream remains to be seen. Still, we can conclude that although progressive education's influence may currently be at a low ebb, it will continue as a force influencing U.S. schools. The final word in this review of progressive education will go to John Dewey, who ended his *Experience and Education* with his “firm belief” that

the fundamental issue is not of new versus old education nor of progressive against traditional education but a question of what anything whatever must be to be worthy of the name education. I am not, I hope and believe, in favor of any ends or any methods simply because the name progressive may be applied

to them. . . . What we want and need is education pure and simple, and we shall make sure and faster progress when we devote ourselves to finding out just what education is and what conditions have to be satisfied in order that education may be a reality and not a name or a slogan.¹¹

Notes

1. Gary Orfield and Johanna Wald, "Testing, Testing," *The Nation*, 5 June 2000, 38.
2. Audrey L. Amrein and David C. Berliner, "The Effects of High-Stakes Testing on Student Motivation and Learning," *Educational Leadership* 60 (5) (February 2003): 32-33.
3. *Ibid.*, 43.
4. Peter Sacks, *Standardized Minds* (Cambridge: Perseus Publishing, 1999), 256-57.
5. Alfie Kohn, *The Case Against Standardized Testing* (Portsmouth: Heinemann, 2000), back cover.
6. Dale D. Johnson and Bonnie Johnson, *High Stakes: Children, Testing, and the Failure in American Schools* (Lanham: Rowman and Littlefield, 2002), xix.
7. Jerry Jesness, "The Legacy of Progressive Education," available at <<http://www.speakout.com/activism/opinion/2971-1.html>>. Accessed 10 February 2006.
8. Williamson M. Evers, "How Progressive Education Gets It Wrong," Hoover Institution, available at <<http://www.hooverdigest.org/984/evers.html>>. Accessed 15 February 2006.
9. "Spellings More Flexible on NCLB Law," available at <<http://www.cnn.com/2006/EDUCATION/01/19/SPELLINGS.INTERVIEW.AP/INDEX.HTML>>. Accessed 19 January 2006.
10. Harold Berlak, "The *No Child Left Behind Act* and the Assault on Progressive Education and Local Control," available at <<http://www.pipeline.com/~rougeforum/PolicyandNCLB.htm>>, accessed 17 May 2005; George S. Counts, "Dare Progressive Education Be Progressive?" available at <http://courses.wccnet.edu/play/cls2002/counts.htm>>, accessed 15 February 2006.
11. L. Glen Smith and Joan K. Smith, *Lives in Education* (New York: St. Martin's Press, 1994), 294.

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Constructivism: Its Theoretical Underpinnings, Variations, and Implications for Classroom Instruction

by Kaya Yilmaz

Abstract: This article provides an overview of constructivism and its implications for classroom practices. To that end, it first describes the basic features of constructivism along with its major forms or variations. It then elucidates the constructivist view of knowledge, learning, teaching, and the relationship among these constructs. More specifically, it explains the assumptions and principles of constructivist pedagogy, bringing to the fore its core characteristics that differ fundamentally from other instructional paradigms. Last, the article presents how constructivism as a learning theory can guide the process of learning and teaching in real classroom settings.

Learning theories are indispensable for effective and pedagogically meaningful instructional practices. A learning theory provides “clarity, direction and focus throughout the instructional design process.” Hence, an effective instructional framework is supposed to take into account the theoretical bases in which it is grounded (McLeod 2003). Likewise, an educator is expected to understand the educational theory or theories behind a given instructional framework to gain success in reform efforts (Fosnot 1996). Among many different labels, learning theories can be categorized in three main areas: behaviorism, cognitivism, and constructivism. The purpose of this article is to clarify the conceptual underpinnings of constructivism along with its variations and its implications for classroom instruction.

Constructivism

The philosophy of constructivism evolved from dissatisfaction with traditional Western theories of knowledge. As such, it contrasts sharply with objectivist epistemology and positivism (Crotty 1998; Hendry,

Frommer, and Walker 1999; Glasersfeld 1995). In contrast to the objectivist notion of objective truth and meaning inherent in objects, independent of any consciousness, constructivism postulates that knowledge cannot exist outside our minds; truth is not absolute; and knowledge is not discovered but constructed by individuals based on experiences (Crotty 1998, 42; Fosnot 1996; Hendry, Frommer, and Walker 1999). Constructivism replaces the traditional conception of truth—as the correct representation of an external world—with the concept of viability, meaning that descriptions of states or events of the world are relative to the observer (Glasersfeld 1995, 8). The constructivist perspective, therefore, posits that knowledge is not passively received from the world or from authoritative sources but constructed by individuals or groups making sense of their experiential worlds (Maclellan and Soden 2004).

Constructivism advances meaning-making and knowledge construction as its foremost principles (Crotty 1998; Fosnot 1996; Phillips 1995). It views knowledge as temporary, nonobjective, internally constructed, developmental, and socially and culturally mediated (Fosnot 1996). Individuals are assumed to construct their own meanings and understandings, and this process is believed to involve interplay between existing knowledge and beliefs and new knowledge and experiences (Richardson 1997, 2003; Schunk 2004). This view of meaning-making through previously constructed knowledge implies that:

- Learners are intellectually generative individuals (with the capacity to pose questions, solve problems, and construct theories and knowledge) rather than empty vessels waiting to be filled.



- Instruction should be based primarily on developing learners' thinking.
- The locus of intellectual authority resides in neither the teacher nor the resources, but in the discourse facilitated by both teachers and learners (Maclellan and Soden 2004).

Domains of Constructivism

Constructivism is not a single or unified theory; rather, it is characterized by plurality and multiple perspectives. Varied theoretical orientations (Phillips 1995) explicate such different facets of constructivism as cognitive development, social aspects, and the role of context. According to Matthews (2000), the educational literature identifies eighteen different forms of constructivism in terms of methodological, radical, didactic, and dialectical considerations, yet many theorists and scholars place all forms of constructivism in three radically distinct categories: (1) sociological, (2) psychological, and (3) radical constructivism. All three categories share the epistemological assumption that knowledge or meaning is not discovered but constructed by the human mind (Richardson 2003).

Phillips (2000) has defined and explained the attributes of social and psychological constructivism:

Social constructionism or *social constructivism*: A theory that bodies of knowledge or disciplines that have been built up are “human constructs, and that the form that knowledge has taken in these fields has been determined by such things as politics, ideologies, values, the exertion of power and the preservation of status, religious beliefs, and economic self-interest.” This approach centers on the ways in which power, the economy, [and] political and social factors affect the ways in which groups of people form understandings and formal knowledge about their world. These bodies of knowledge are not considered to be objective representations of the external world.

Psychological constructivism: This approach relates to a developmental or learning theory that suggests that individual learners actively construct the meaning around phenomena, and that these constructions are idiosyncratic, depending in part on the learners' background knowledge. The development of meaning may take place within a social group that affords its individual members the opportunity to share and provide warrant for these meanings. If the individuals within the group come to an agreement about the nature and warrant of a description of a phenomenon or its relationship to others, these meanings become formal knowledge. (p. 6)

Radical constructivism, introduced by Ernst von Glasersfeld, assumes that external reality cannot be known and that the knowing subject constructs all knowledge, ranging from everyday observations to scientific knowledge; knowing thus inevitably reflects the perspective of the observer (Molebash 2002; Terhart 2003). According to radical constructivists, it is impossible to judge knowledge as an ontological or metaphysical reality (Terhart 2003). Knowing without metaphysics is possible; meaning exists in the realm of the experiential world and not ontologically, a view called postepistemology (Glasersfeld 1995, 6–7).

Gergen (1995) provides an explanation of radical constructivism by using esoteric terms borrowed from Moshman's (1982) classification of perspectives on constructivism as endogenous, exogenous, and dialectical. The first view emphasizes the individual's knowledge construction based on previous knowledge and experiences; the second, the role of environment or social context in knowledge construction; and the third, the relationship of various types of dynamic interactions between the individual and the environment.

Gergen (1995) distinguishes between two categories of knowledge: *exogenic* (or word centered) and *endogenic* (or mind centered). The exogenic tradition generally embraces a dualism: the existence of an external world (typically a material reality) is set against the existence of a psychological world (cognitive, subjective, symbolic, or phenomenological). Knowledge is achieved when the inner states of the individual reflect or accurately represent the existing states of the external world or when the mind serves as a "mirror of nature." The exogenic theorist views the external world or material world as a given. The endogenic thinker, however, is likely to view the mental world as self-evident. In contrast to the exogenic theorist's concentration on the environment, the endogenic theorist often emphasizes human beings' intrinsic capacities for reason, logic, and conceptual processing. Radical constructivism's endogenic view of knowledge emphasizes the mental processes of individuals and the ways in which they construct knowledge of the world from within. This perspective does not see knowledge as a reflection of the world as it is (p. 18).

Constructivist Pedagogy

Although constructivism is a recently emergent epistemological stance or theory of knowledge and knowing, it has come to inform different bodies of knowledge or disciplines ranging from philosophy to psychology, anthropology, and sociology. Constructivism has implications for pedagogical theory and research as well. Since its inception as an epistemology and philosophy, constructivist theory has prompted educators to build a constructivist pedagogy. Educational scholars have

developed a range of definitions of constructivist learning and its attributes. Rooted in the field of cognitive science, constructivist pedagogy is especially informed by the ideas of John Dewey and William James; the later work of Jean Piaget; and the sociohistorical work of Lev Vygotsky, Jerome Bruner, and Ernst von Glasersfeld, to name a few (Fosnot 1996; Kivinen and Ristele 2003). Its genesis can be traced as far back as the eighteenth-century philosophers Vico and Kant.

Richardson (2003) calls constructivist pedagogy “the creation of classroom environments, activities, and methods that are grounded in a constructivist theory of learning, with goals that focus on individual students developing deep understandings in the subject matter of interest and habits of mind that aid in future learning.” Fosnot (1996) offers this explanation of constructivist learning:

[A] self-regulatory process of struggling with the conflict between existing personal models of the world and discrepant new insights, constructing new representations and models of reality as human meaning-making venture with culturally developed tools and symbols, and further negotiating such meaning through cooperative social activity, discourse, and debate. (p. ix)

As a theory, constructivism proposes that learning is neither a stimulus-response phenomenon nor a passive process of receiving knowledge; instead, as an adaptive activity requiring building conceptual structures and self-regulation through reflection and abstraction, learning is an active process of knowledge construction influenced by how one interacts with and interprets new ideas and events (Lambert et al. 1995; Maclellan and Soden 2004; Glasersfeld 1995). “Individuals bring past experiences and beliefs, as well as their cultural histories and world views, into the process of learning” when they construct knowledge internally by interacting with environment (Kamii, Manning, and Manning 1991). This perspective views developmental stages as constructions of active learner reorganization. Likewise, it sets concept development and “deep” understanding, rather than behaviors or skills, through “authentic” tasks, as the goal of instruction (Fosnot 1996, 10-11).

Piaget’s genetic epistemology or theory of cognitive development provides one of the building blocks of constructivist pedagogy. Drawing on biological concepts such as the concept of equilibrium-disequilibrium, Piaget attempted to explain how learning and the changes in cognitive structures occur (Fosnot 1996; Gillani 2003; Palincsar 1998). From his perspective, intellectual and cognitive development resembles a biological act that requires the organism’s adaptation to environmental demands (Gillani 2003). Behavior and the organism stand as a whole system; thus any changes in one part of the system will cause other changes

as behavior balances the structure of the organism against the characteristics of the environment (Fosnot 1996). Behaviors, Piaget believed, serve as the driving force of developing new cognitive structures.

Piaget believed that an individual encountering a new learning situation draws on prior knowledge to make the new experience understandable (Gillani 2003). A new event, situation, or learning environment can create contradictions with one's previous understandings; their insufficiency leads to perturbation and a state of disequilibrium in the mental schemata, in which generic events and abstract concepts are stored and organized in terms of their common patterns (Fosnot 1996; Gillani 2003; Palincsar 1998). To form a state of equilibrium in the cognitive structure, the individual needs to modify or reorganize his or her schemata via adaptation.

The internal process of restructuring the schemata is accomplished through assimilation and accommodation (Gillani 2003). While assimilation integrates new information with existing knowledge, accommodation modifies or transforms existing cognitive structures in response to a new situation. According to Piaget, learners confronted with an imbalance may resort to three kinds of accommodations (Fosnot 1996): (1) disregarding the contradictions and adhering to their original scheme; (2) vacillating by maintaining the contradictory theories simultaneously and viewing each theory as separate or specific cases; or (3) forming a new, modified notion to explain and resolve the prior contradiction. In each type of response, the learner's internal and self-regulatory behavior leads to the compensations (p. 16).

Glaserfeld (1996) explains Piaget's theory in terms of its epistemological underpinnings. The application of the Piagetian notion of adaptation to cognitive structures implies that knowledge is not a representation of external reality but a map of actions and conceptual operations. Knowledge springs from (a) the person's "actions," which are grounded in and directed at objects in an environment, and (b) his or her "reflection" on objects, which embody the person's experiential world (pp. 3-4).

Apart from Piaget's genetic epistemology, learners can also be classified as absolute, transitional, independent, and contextual in terms of epistemological viewpoints (Baxter Magolda 1992). The absolute learner believes that (a) knowledge is fixed, absolute, and certain; (b) teachers and textbooks have the right answer; (c) the student has a duty to get it right; and (d) teachers should make it easier to find out what is expected. In contrast, a contextual learner (a) believes that knowledge is uncertain, tentative, and subject to change and revision; (b) is comfortable judging how personal knowledge and skills might apply to a situation; and (c) connects concepts to applied settings. Practicing constructivist teaching methods, teachers can transform students from absolute learners to contextual learners.

Vygotsky's theories come into play in shaping constructivist pedagogy. Slavin (2000) states:

Four key principles derived from Vygotsky's ideas have played an important role [in modern constructivist thought]. Two of them are very important for cooperative learning. First is his emphasis on the social nature of learning. Children learn, he proposed, through joint interactions with adults and more capable peers. On cooperative projects children are exposed to their peers' thinking processes; this method not only makes the learning outcome available to all students, but also makes other students' thinking processes available to all. Vygotsky noted that successful problem solvers talk themselves through difficult problems. In cooperative groups, children can hear this inner speech out loud and can learn how successful problem solvers are thinking through their approaches. The second key concept is the idea that children learn best the concepts that are in their zone of proximal development. When children are working together, each child is likely to have a peer performing on a given task at a slightly higher cognitive level, exactly within the child's zone of proximal development. (p. 256)

Constructivist theory is descriptive rather than prescriptive; it does not prescribe rigid rules or procedures for designing a learning environment (Wasson 1996). Because the constructivist view of learning evolved from cognitivism, it shares several similarities with cognitive learning theories. What distinguishes constructivism from cognitivism is the notion that "knowledge does not and cannot have the purpose of producing an independent reality, but instead . . . has an adaptive function" (Glaserfeld 1995, 3).

The basic assumptions and principles of the constructivist view of learning can be summarized as follows:

- Learning is an active process.
- Learning is an adaptive activity.
- Learning is situated in the context in which it occurs.
- Knowledge is not innate, passively absorbed, or invented but constructed by the learner.
- All knowledge is personal and idiosyncratic.
- All knowledge is socially constructed.
- Learning is essentially a process of making sense of the world.
- Experience and prior understanding play a role in learning.
- Social interaction plays a role in learning.

- Effective learning requires meaningful, open-ended, challenging problems for the learner to solve. (Boethel and Dimock 2000; Fox 2001)

Fosnot (1996) suggests that several general principles of the constructivist view of learning can be applied to educational practices (see Figure 1):

- *Learning is not the result of development; learning is development.* It requires invention and self-organization on the learner's part. Teachers should thus allow learners to raise their own questions, generate their own hypotheses and models as possibilities, and test them for viability.
- *Disequilibrium facilitates learning.* "Errors" should be perceived as a result of learners' conceptions and therefore not minimized or avoided. Challenging, open-ended investigations in realistic, meaningful contexts will allow learners to explore and generate many possibilities, whether affirming or contradictory. Contradictions, in particular, need to be illuminated, explored, and discussed.
- *Reflective abstraction is the driving force of learning.* As meaning-makers, humans seek to organize and generalize across experiences in representational form. Reflection through journals, representation in multisymbolic form, or connections made across experiences or strategies may facilitate reflective abstraction.
- *Dialogue within a community engenders further thinking.* The classroom should be a "community of discourse engaged in activity, reflection, and conversation." Learners (rather than teachers) are responsible for defending, proving, justifying, and communicating their ideas to the classroom community. Ideas are accepted as truth only as they make sense to the community and thus rise to the level of "taken-as-shared."
- *Learning proceeds toward developing structures.* As learners struggle to make meanings, they undertake progressive structural shifts in perspectives—in a sense, "big ideas." These learner-constructed, central-organizing ideas can be generalized across experiences, and they often require undoing or reorganizing earlier conceptions. This process continues throughout development. (pp. 29–30)

Implications of the Constructivist Framework for Classroom Teaching

Constructivism is a theory of learning, not a theory of teaching (Fosnot 1996; Richardson 2003). For this reason, although there is an enormous body of literature on constructivism, the elements of effective

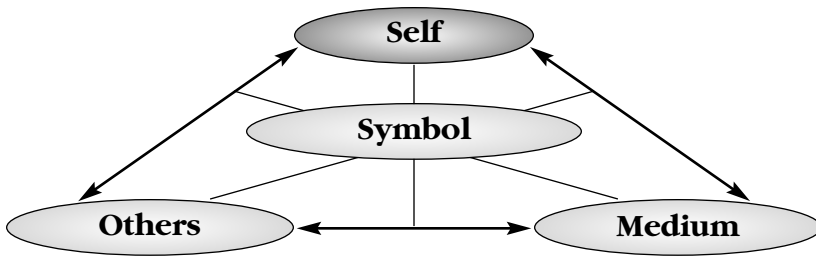


Figure 1. *Constructivist Learning Model* (source: Fosnot 1996)

constructivist teaching are not known (Richardson 2003). Constructivist teaching theory, built on constructivist learning theory, is a set of prescriptions that challenge the transmission or behaviorist paradigms advocated in many education programs. Experiential learning, self-directed learning, discovery learning, inquiry training, problem-based learning, and reflective practice are examples of constructivist learning models (Gillani 2003; McLeod 2003; Slavin 2000).

Constructivism is explained in terms of its relation to teaching. According to Fosnot (1996), teaching based on constructivism discounts the idea that symbols or concepts can be taken apart as discrete entities and taught out of context. Rather, constructivist teaching affords learners meaningful, concrete experiences in which they can look for patterns, construct their own questions, and structure their own models, concepts, and strategies. The classroom becomes a micro-society in which learners jointly engage in activity, discourse, and reflection. Teachers facilitate and guide rather than dictate autocratically. Autonomy, mutual reciprocity of social relations, and empowerment characterize a constructively conducted classroom (Fosnot 1996, pp. ix-x). Students can develop in-depth understandings of the instructional materials, understand the nature of knowledge construction, and construct complex cognitive maps to connect bodies of knowledge and understandings (Richardson 2003).

Because meaning, knowledge, and conceptual structures are constructed differently by each individual, teachers should be cognizant that students may view curricula, textbooks, didactic props, and microworlds differently than they do. Accordingly, teachers should not attempt to transfer conceptual knowledge to students through words (Glaserfeld 1995); instead, they should be concerned with how learners understand the process of knowing and how they justify their beliefs (McLeod 2003). Constructivist teachers challenge students to justify and defend their positions so that they can change their conceptual frameworks (e.g., beliefs, assumptions, and conceptions). In the constructivist classroom, learning emphasizes the process, not the product. How one

arrives at a particular answer is what matters. The teacher also recognizes the pivotal importance of discourse.

Richardson (2003) identifies several principles as the premises of the constructivist pedagogy. These principles suggest that the teacher first recognize and respect students' backgrounds, beliefs, assumptions, and prior knowledge; provide abundant opportunities for group dialogue aimed at fostering shared understanding of the topic under study; establish a learning environment that encourages students to examine, change, and even challenge their existing beliefs and understandings through meaningful, stimulating, interesting, and relevant instructional tasks; help students develop meta-awareness of their own understandings and learning processes; and introduce the formal domain of knowledge or subject matter into the conversation through a sort of loosely structured instruction and the use of technological tools such as Web sites.

Other educators have also attempted to elaborate on the characteristics of constructivist teaching and learning. Brooks and Brooks (1993) describe both the pillars of constructivist pedagogy and the characteristics of constructivist teaching practices in *In Search of Understanding: The Case for Constructivist Classrooms*, which remains one of the most-cited books on the constructivist approach to teaching. The authors enumerate five pillars on which constructivist classrooms are based: (1) posing problems of emerging relevance to learners; (2) structuring learning around primary concepts; (3) seeking and valuing students' points of view; (4) adapting curricula to address students' suppositions; and (5) assessing student learning in the context of teaching. Translating these principles into instructional practices, these authors argue that teachers in a constructively planned and conducted classroom environment should have students engage in raw data or primary sources, aiming to develop students' cognitive and higher-order thinking skills. Taking into account students' concepts, misconceptions, modes of thinking, and responses, these teachers accordingly shift their teaching methods or content when needed. By asking thoughtful and open-ended questions, constructivist teachers also encourage students to elaborate on their initial responses through such interactive methods as discussion, debate, and Socratic dialogue.

Conclusion

Constructivist theories are of great value to teachers in their efforts to help students grasp the substantive and syntactic components of the subjects they are teaching. This article has explained constructivism in terms of its epistemological, philosophical, and theoretical underpinnings, and its implications for instructional practices. Even though the constructivist view of learning and teaching has dominated the educational literature for more than two decades, constructivist pedagogy in its entirety has not yet

penetrated actual classrooms. It should be kept in mind that putting constructivist pedagogical ideas into practice effectively and with integrity first necessitates teachers' willingness to embrace and practice principles of constructivist pedagogy. And doing so in turn requires teachers to examine their deeply held philosophies of teaching—more precisely, their conceptions of teaching—to become conscious of whether they tend to value traditional teacher-centered or constructivist learner-centered conceptions of teaching. Rather than examine technical aspects of teaching, they first can reflect on and formulate their answers to such important conceptual questions as how learning occurs; how the teacher can facilitate the learning process or what roles the teacher should play in student learning; what kinds of learning environments help realize the goals of schooling in general and of school subjects in particular; and how students' learning should be evaluated.

If the goals of teaching school subjects are to be successfully accomplished, teachers of different subject areas should transform students' engagement in subject matters from rote recall and comprehension to more meaningful analysis, synthesis, application, and evaluation via constructivist teaching models and methods.

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Interdisciplinary Instruction

by Laura L. Duerr

Middle school students are naturally curious about their expanding possibilities. This stage of their lives is a time of transition, of figuring out who they are and where they belong in the world. Many students also think that the world they look at through the classroom window is distant and unconnected to the world of chalkboards and pop quizzes they inhabit between the hours of eight and three.

Models of middle school education have often included teacher and community expectations developmentally inappropriate for young adolescents; in fact, middle school students were often treated more like smaller versions of high school students (Foster 2002). A newer model of the middle school seeks to explore many areas of recreational as well as academic and vocational interest (George et al. 1992). But what exploration opportunities, limited only to what the school can think of, fund, and staff, should be offered? Should the developmental needs of young adolescents determine the content of the curriculum? Should we be thinking about what students themselves want to learn? According to Howard Gardner:

Students want to master rules of their cultures and of its specific vocations and avocations. They want to use language precisely, not allusively: they want to draw pictures that are photographically realistic, not fanciful or abstract: and they expect a strict adherence to rules in dress, behavior, games, moral situations and other cultural activities, brooking little deviation. (Gardner 1989)

Balancing Traditional and Modern Pedagogy through Interdisciplinary Instruction

Effective schools balance depth with breadth and provide experiences that help young people become more sophisticated. That can be accomplished through a mix of traditional and modern ideas: teaching methods and methods that accommodate students' eagerness for individual

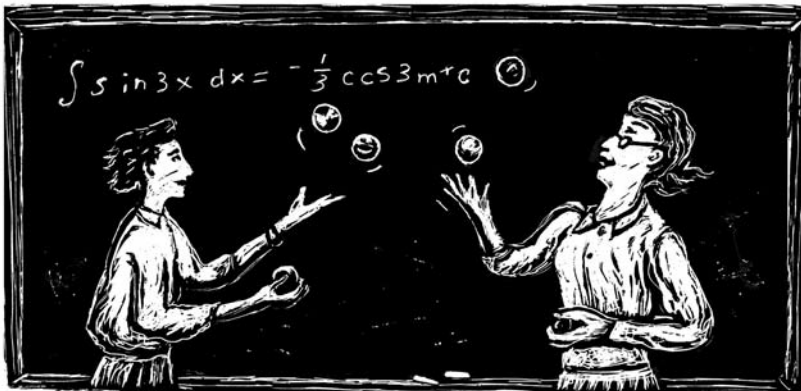
choices, for firsthand experiences, and for varied learning contexts (George et al. 1992).

Why interdisciplinary units? For one, most children are familiar with narrative texts: storybooks, chapter book series, magazines, and pop-up books. It is the transition to content texts that most often leads to the genuine difficulties children experience with reading. Teachers should not only help students learn how to read and comprehend texts but also understand what makes a text “easy” or more challenging. Through a variety of resources, teachers can ease the transition from narrative texts to content reading. In addition to using such resources, teachers must at all times model and use a vast repertoire to bolster students’ independent reading skills and comprehension tactics. Web sites, trade books, and nonfiction texts all activate students’ prior knowledge of a given subject.

The common dictionary definition of curriculum “as a set of courses or subjects offered by an institution” simply doesn’t go far enough (Tchudi and Mitchell 1999). Teaching students effectively requires coherence across subject areas rather than isolation (Tchudi and Mitchell 1999). Interdisciplinary Instruction (IDI) serves to integrate areas rather than isolate them. Not only do many educational authorities prescribe IDI for middle school use, but in addition “probably no single word has been more frequently cited in relationship to the middle school than has the word ‘interdisciplinary’” (Lounsbury 1992).

Why Textbooks Are Not Enough

Effective instruction in both science and English language arts (ELA) emphasizes the learner’s active construction of meaning (O’Brien 2005). This “minds-on, sense-making” approach to learning is violated by many science texts and basal readers, which emphasize isolated, de-contextualized skills, words, and facts (O’Brien 2005).



Nonetheless, textbooks have become the de facto curriculum in many U.S. schools (Thomas B. Fordham Institute 2004). A 2002 survey found that some 80 percent of elementary and high school teachers use textbooks in their classrooms, and nearly half of class time involves textbooks (Thomas B. Fordham Institute 2004). Another survey, sponsored by the National Education Association and the Association of American Publishers, revealed that those numbers probably understate teachers' and students' true dependence on textbooks: shadow studies tracking teachers' school days suggest that 80 to 90 percent of classroom and homework assignments are textbook driven or textbook centered (Thomas B. Fordham Institute 2004).

Although it is possible for textbooks to be creative and accurate, few textbooks treat subject matter with the breadth and depth necessary to develop ideas and concepts fully. They are often poorly organized, dull, inaccurate, biased, written at high levels of difficulty, and unappealing to students (Vacca and Vacca 2005). However, using quality textbooks with creative, "hands-on" science activities and a variety of relevant and high-quality trade books creates a more holistic means of teaching science and ELA in a motivational and meaningful context centered on student activity (O'Brien 2005). A nonfiction or fiction trade book can act as a magnifying lens that enlarges and enhances the reader's personal interactions with a subject (Vacca and Vacca 2005). Used in tandem, texts and trade books help learners think critically about content; they can transform blanded, dull material into rich, personalized perspectives on a given content-area topic.

Furthermore, the real value of literacy lies in its uses (Vacca and Vacca 2005). As meaningful contributors to society, readers and writers use and adapt strategies to meet the demands of a given task at hand. Learning with trade books involves exposure to many different genres, all potential sources of information for the active learner (Vacca and Vacca 2005). A fiction or nonfiction trade book can act as a "magnifying glass" that enlarges and enhances the reader's personal interactions with a subject (Vacca and Vacca 2005).

What Curriculum Should Mean

The word "curriculum" is by its own definition a noun: a thing. But that is a flat definition. Isn't the goal of educators everywhere to engage students in what they're learning? Why can't curriculum be transformed into a verb, something dynamic and ever changing, in which ideas, books, and concepts come alive? In the end, curriculum should be not a dusty, brittle list of goals and objectives but a flexible set of relationships and activities that evolve from a group of adults (teachers) and a larger number of young people (students) interacting with a set of resources (Tchudi and Mitchell 1999). When functioning correctly, these parts produce a community of language in which students steadily and coherently increase the range and

complexity of their language skills by reading, writing, and discussing their concerns (Tchudi and Mitchell 1999). In many ways, the content-area classroom is the perfect place for students to connect with books because it allows students to network and build webs of meaning about a topic through a variety of resources (Vacca and Vacca 2005). Through such experiences, students construct their own meanings by evaluating information, connecting ideas across sources, comparing and contrasting information, and reflecting on conclusions (Vacca and Vacca 2005).

Additionally, it has been repeatedly evidenced that students are more likely to remember personally meaningful material. And it's apparent that using modern literature in tandem with textbooks overcomes many of the limitations—comprehension, vocabulary, and application to real-world scenarios—that students face when reading. The best trade books provide depth, accurate information, varied reading levels, and motivation for learning (Vacca and Vacca 2005).

Integration and Connection of Subject Material

Integrating texts with trade books provides a refreshing perspective on a particular topic within a given subject area. A cross-curricular integrative stand makes material meaningful because it becomes connected. A science teacher's job is influencing students to think like scientists, and the best way for them to do that is learning to read, experiment, and write like scientists (Baker 1991, as referenced in Vacca and Vacca 2005). Showing students how to think like scientists encourages independent learning by teaching them strategies to manage texts. Students are able to bring their personal interests and talents into the classroom, and the material makes sense when students can interact with the content and create their own meanings. Students see the point of what they are learning, making it more likely that students will take an interest in the subject and experience success.

Benefits of Integration

The benefits of an integrated approach are considerable. Reading increases students' vocabulary and exposure to the language of a discipline. What does that mean? Students learn to think like scientists, historians, mathematicians, and writers. They learn to take an independent rather than a passive approach. Though texts tend to compile information, trade books present much the same material in more appealing ways. By going beyond the facts, literature sharpens understanding of topics within specific disciplines. Literature allows readers to live vicariously and expands students' perceptions and understandings of their world. Trade books can be catalysts for thoughtful analysis and critical thinking, skills in which most students need constant practice. Finally,

good reading experiences motivate students to seek further reading and learning experiences: the grail of education, continuous learning.

There are wonderful uses of literature for content classes. For example, a read-aloud can involve five minutes or twenty, daily or weekly, and it can be used to investigate, expand, or illustrate concepts. Additional integration can entail complementary readings, in which the whole class reads a specific book during a thematic unit or small circles use several books related to the unit. Sustained silent reading restricted to a subject area can introduce children to different genres: for example, restricting reading to science fiction can encourage scientific awareness. Post-reading, students respond with journals and writings designed to activate newly gained knowledge and encourage exploration.

I regard middle schoolers as the most inquisitive age group, constantly searching toward independence and self-discovery. Teacher-education programs require every candidate for middle-level schools to select two subject concentrations, and as an undergraduate I chose language arts and science. Nearly every adviser, teacher, and peer I've encountered has questioned, "Why those two? Why not combine science and math, or language arts and music?" It certainly is more traditional to associate the logical with the logical, the artistic with the artistic.

A good teacher needs a deep understanding of the material to be taught, but the great teacher, one who inspires a love of learning and a thirst for knowledge in students, must love the subject and reflect that passion to students. Middle-level language arts is important because so many modern teenagers use writing as a form of therapy and reading to escape the peer-pressured, angst-ridden world with which so many pre-adolescents and adolescents identify. If there were a way to marry science and language arts, would my colleagues' opinion change? Are the two subjects really that separate? With interdisciplinary instruction, students can become more involved in their learning and teachers can work toward eliminating discipline lines. Students can become independent, confident individuals who "learn how to learn" and develop lifelong learning skills (Manning and Bucher 2005).

The development of young adolescents prepares them for IDI. Their cognitive development allows them to see relationships among content areas and understand principles that cross curricular lines. Their psychosocial development gives them the ability to understand people and to look at situations from various viewpoints. Successful curriculum integration and IDI allow young adolescents to see wholeness rather than fragmentation. They can also confront questions and engage in experiences that are personally meaningful to them. (Manning and Bucher 2005)

In such ways can middle-level students benefit from interdisciplinary instruction. Reading literary and informational texts is an important component of all statewide proficiency assessments in reading and language arts (Vacca and Vacca 2005). In addition, most proficiency assessments outside reading are actually assessments of literacy (Vacca and Vacca 2005). Students must read and write effectively in order to meet those increasing demands, and the standards for science and language arts tend to incorporate personal ideas with learned knowledge to make information meaningful.

Weaknesses and Limitations of Interdisciplinary Instruction

What are the problems and pleasures of creating and implementing an interdisciplinary curriculum? Bintz et al. note, "One of the pleasures . . . [is that] looking forward is just as important as looking backward when it comes to teaching and learning" (2006). But it is difficult to see the forest for the trees. Interdisciplinary units (IDUs) are time-consuming to create and require teachers to know their students on a developmental as well as a needs-based level.

The future of interdisciplinary instruction is a thrilling concept: what's not to like about weaving a curriculum that works like real-life problem solving? Although integrating science, math, language arts, and social studies (and maybe even the arts and foreign language studies) may seem daunting, the overall result of a well-designed and purposeful interdisciplinary unit is rewarding. As one teacher notes:

This unit was an exciting opportunity for all of us. We had discussed interdisciplinary instruction before but were not sure how to overcome the scheduling difficulties. It was interesting to see something implemented that we have studied, but not experienced firsthand. (Bintz et al. 2006)

Many middle-level teachers have found that planning interdisciplinary units challenges their thinking skills as well as those of their students. That can be a hurdle before it is a pleasure (Cheney 2001). Obviously, interdisciplinary units cannot be delivered off the cuff. They require careful planning and review of grade-level standards, learner characteristics, and teacher objectives. Bintz et al. noted that the biggest problems include "scheduling students and dealing with time and space constraints" (2006). Planning an interdisciplinary unit also requires coordinating and collaborating with other grade-level faculty and subject-area specialists in the school. Just as a football coach does not enter a game without a plan, a teacher cannot enter a classroom unprepared.

As the most crucial point of development in an effective interdisciplinary plan, the planning stage is consequently the most difficult. Rushed planning may tempt teachers to focus on material already mastered by the students: “Too often an IDU just teaches better what shouldn’t be taught in the first place” (Lounsbury 1992).

Many teachers complain that it is difficult enough to “cover” their own subjects without struggling through long planning sessions with other teachers of various disciplines (Davidson and Worsham 1992). Only by stretching the imagination and harnessing one’s creativity can one trim the curriculum and tailor it to suit numerous interdisciplinary themes.

Creating a Successful Interdisciplinary Unit

It is important to note other teachers’ objectives and teaching methods, because overlap is common. It is also important for everyone collaborating on an interdisciplinary unit to understand what is expected and what is occurring in the other classrooms; that way, no individual class gets further ahead of or behind the other.

The ultimate goal of integrated instruction extends far beyond fusing two or more subjects: effective IDI also requires using cooperative learning and teaching. Needed opportunities for integrating instruction and improving learning for kids are created immediately by connecting students as learning groups and teachers as teaching teams.

Davidson and Worsham (1992) list eight steps of the thinking-skills approach that “can be applied at any educational level and in any and all content areas.”

1. Analyzing the curriculum objectives to determine categories and levels of thinking required for mastery.
2. Assessing the learners’ cognitive needs regarding curriculum objectives.
3. Developing a list of thinking skills to be taught or selecting skills from existing lists.
4. Developing a long-range plan for sequencing thinking-skills instruction.
5. Defining each skill.
6. Listing the steps involved in applying each skill.
7. Applying the skills to the curriculum.
8. Testing for skill mastery.

Conclusion

According to Harold Foster, “Writing is discovery” (2002); according to Francis Bacon, “Science is the labor and handicraft of the mind” (<http://www.thup.edubdsimanek/scigquote.htm>).

Teachers must believe that excellent pedagogy helps students discover how their own minds work and test the limits of their creative and academic skills. Integrating science and English language arts not only is developmentally appropriate for middle-level students, but the standards meant to address skills also evidence ways to intertwine the two subject areas.

Interdisciplinary instruction can be meaningful, engaging, and educational for students who seek to internalize their learning experiences. Interdisciplinary instruction accentuates the best of both, or even multiple, worlds. It encourages critical thinking skills, the creativity of both teachers and students, and a fresh outlook on teaching methods. It is a worthwhile approach toward making learning more effective for all students, especially that group seemingly most likely to be lost in the sea of academia: adolescents.

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