

EFFECTIVE School Practices

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FOCUS: OBE AND WORLD CLASS STANDARDS

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Philosophy of *Effective School Practices*

1. Teachers are responsible for student learning.
2. The curriculum is a critical variable for instructional effectiveness.
3. Effective teaching practices are identified by instructional research that compares the results of a new practice with the results of a viable alternative.
4. Experiments should not be conducted using an entire generation of Americans. The initial experimentation with a new practice should be small in scale and carefully controlled so that negative outcomes are minimized.
5. A powerful technology for teaching exists that is not being utilized in most American schools.

Effective School Practices is published quarterly by the Association for Direct Instruction. The mission of the Association for Direct Instruction, as stated in the by-laws, is to promote the improvement of educational methods.

The name *Direct Instruction* originated with the highly effective instructional model first developed by Zig Engelmann in Project Follow Through during President Johnson's Great Society legislation. Although the evaluation of Project Follow Through showed the Direct Instruction model to be far more effective than the other models on every identified outcome, education in America remained generally unchanged.

A few educators, impressed by the extraordinary results of the original Direct Instruction model and the programs that were developed as DI evolved, formed the Association for Direct Instruction in 1981.

Today, this organization is a vanguard in promoting school practices that have been validated as effective through the use of the scientific method in educational research.

The Association for Direct Instruction was incorporated in 1981 in the state of Oregon for educational purposes. ADI is a nonprofit, tax-exempt

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From the Field: Letters

To the editor:

Your spring 1994 Focus: Achieving Higher Standards in Mathematics issue was enormously helpful to this parent of a sixth grader trying to understand public education and the state of the profession today. A firm advocate of public education as a foundation of American democracy and culture, I am increasingly concerned as I discover educators' frequently unprofessional perspectives.

Adoption and implementation of curricula and methodology employing theory and techniques the results of which are not demonstrated by empirical data introduces risk. Much education theory currently advocated appears to be based on data which is prospective, anecdotal or extrapolated from analogous studies. I was aghast at Ms. Feinberg-McBrian's lengthy defense of the assumptions of NCTM goals based only on her personal learning and teaching experience. It may be that she can produce reams of results-oriented experimental data to demonstrate NCTM effectiveness over a wide spectrum of students; if yes, I wish she would report them. Failing that, poo pooing research because it does not reflect her recollection of the evolution of her own extraordinary mathematical talent and an anecdotal experience with one student is unprofessional because it amounts to flying by the seat of her pants.

I found myself wondering whether she would accept riding in an airplane designed according to state of the art comfort, safety, noise and pollution considerations but not thoroughly tested for air worthiness—when she could not exercise choice of transportation.

But all may not be lost. Ms. Feinberg-McBrian does, after all, recognize the usefulness of that which works for individual students. My son, Phillip, might not crash in her class after all.

Very truly yours,

Allan H. Bloom
Billings, Montana

**A dissenting report prepared by members of the
ad hoc review committees concerning the draft:
"Academic Performance Standards for Missouri
Schools: An Interpretive Guide" (May 1994)**

**Is an excellent critique of
Missouri's Outstanding Schools Act**

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FOCUS: OUTCOME-BASED EDUCATION AND WORLD CLASS STANDARDS

Overview
Bonnie Grossen, Editor

Do We Need Legislation to Improve American Education?

We need legislation for at least two reasons. First, schools are not nearly as effective as they could be. A fundamental message of *Effective School Practices* is also consistent with the findings of international comparisons: A powerful technology for teaching exists that is not being utilized in most American schools. One of the primary reasons that effective practices are ignored is that there is little incentive in American education to be effective. Legislation is needed to create the nationwide incentives that would motivate schools to improve the quality of their instruction and to seek out more effective school practices.

Second, schools have lost their focus. It is no longer clear what the purpose of schooling is. Some say schools should provide a haven where children have fun and enjoy themselves. Others say schools should transfer the knowledge of previous generations to the next. Still others say that schools should teach students how to get along with others. Some say that schools should produce a population of highly skilled problem solvers and technicians. As the 1929 editorial by Roger Babson (page 7) indicates, there was a time in America when the purpose of schooling seemed quite obvious and simple: Just teach success. In Japan today, there also seems to be fairly strong consensus about the purpose of schooling, according to Kenji Muro (page 12). However, in America there are so many voices delivering conflicting messages to schools. Educators, in particular, disagree about the purpose of schooling.

Part of the problem may be that we have relied too much on educators to set the educational sails when it is really not their business. It is society's business to define the purpose of education. Educators should fulfill that purpose in service to society. We seem to forget that those who pay the bills should be the ones to who call the shots. If we don't let society define the purpose of schools soon, we may end up with no public education.

As an entire society, we need to rethink what it is we want of schools. We all need to participate in the

debate and reach some consensus. The political arena is the proper place for such consensus-building.

What is Wrong With Current Legislation? Values Versus Academics

Unfortunately, it seems that much of the educational reform legislation, in the way that state departments of education implement it, has not involved much consensus-building among all constituents of the entire society. The standards, or "outcomes" seem to come ready-made and citizen committees are used more as a rubber stamp. Very strong grassroots groups have organized in most states passing education reform laws. A recent edition of *Educational Leadership*, March 1994, identified the heart of the protest against educational reform as an issue of academics versus values. Though that analysis is accurate, it is not complete. There are many other pitfalls that were not identified in that edition of *Educational Leadership*. Also, some of the anti-outcome-based-education literature has created many misconceptions regarding current educational reform laws. The most accurate and informative document I have seen describing the problems with educational reform laws speaks specifically to the Missouri "Outstanding Schools Act" of 1993 (which undoes the Missouri "Excellence in Education Act" of 1986). This document is entitled "A dissenting report prepared by members of the ad hoc review committees concerning the draft: 'Academic Performance Standards for Missouri Schools: An Interpretive Guide'" (DESE, dated May 1994).

Tightly wedded to a nonacademic focus are the nondirective teaching practices that are embedded in most state legislation. Typically, the rhetoric of the legislation focuses on achieving "world class standards" and "teaching the skills needed for a globaleconomy in the 21st century." The real intent, though, is to institutionalize nondirective teaching approaches. This intent is not the result of some subversive left-wing plot, rather it comes from the naive belief that the only alternative to the way we

have been teaching in America, which does need to change, is nondirective teaching. However, nondirective teaching is not the only alternative. Neither traditional directive methods nor the trendy nondirective approaches are consistent with the practices that research studies have shown to be best practice. Best teaching practice is much more complex than simply choosing to be nondirective rather than directive. Figure 1 illustrates some critical differences between traditional telling methods, the currently popular nondirective approaches, and the teaching practices that have proven to be best practice.

Best practice has never been able to find its way into mainstream American education and is actually prohibited now in many of the states currently implementing educational reform laws. Our educational reform legislation needs to provide a system for first identifying best practices, then motivating schools to use them. Instead, most legislation is assuming that nondirective approaches are best practice, and this is a very risky, dangerous assumption. The article on page 8 describes Dr. William Coulson's passionate efforts to communicate to schools and parents the psychological damage that children are likely to experience if nondirective teaching approaches become commonplace in the classroom. Dr. Coulson is a psychologist who worked most of his career with Maslow and Rogers developing

nondirective counseling techniques. He knows them well. Dr. Coulson now travels around the country trying to undo the damage to which he feels he has mistakenly contributed. He emphasizes that nondirective approaches are inappropriate in classrooms.

Ironically, legislating the implementation of nondirective teaching practices is anything but outcome-based, yet these laws purport to be "outcomes" oriented. Outcome-based education used to mean that everything in schooling was geared to achieving some defined outcomes. Schools, teachers, and educational decisions were evaluated based on how well they achieved the outcomes that society viewed as important. Today, outcome-based education means just the opposite. Today it means that everything in schooling is geared to implementing a specific set of nondirective teaching practices, which are never evaluated to determine if they are resulting in anything of value at all. Today all OBE seems to mean is that educational systems simply state their intent to achieve "world class" outcomes without being held accountable for achieving or even approaching the realization of that intent.

Canada is a bit ahead of the United States in legislating non-outcome-based, "outcome-based" education. A number of educational reform acts, highly similar to those being legislated in the states, were enacted in Canada first. The growing public

Figure 1. A Comparison of Traditional Practices, the "Trendy" Nondirective Approaches that are Currently Popular in Legislation, and Proven Instructional Practices.

Traditional TELLING Practices	"TRENDY" Legislated Practices	PROVEN Instructional Practices
Emphasize knowing	Emphasize problem solving without knowledge	Emphasize applying knowledge to solve problems
View knowledge as Absolute, Factual; Communicated as Unrelated facts.	View knowledge as Relative, Holistic; Communicated through Authentic contexts.	View knowledge as Expanding, Hierarchical. Communicated as "Big Ideas" used in Authentic contexts.
Students grouped by age.	Students grouped to mix ages and skills.	Students grouped by skill need.
Explicit Teacher-directed	Discovery Student-directed	Explicit Teacher-directed
Lecture Non-interactive Teacher-active (Students-passive)	Experiential-(Hands-on) Interactive with peers Students-active (Teacher-non-intrusive)	Experiential-(Minds-on) Interactive with the teacher Teacher-active Students-active
"Traditional" Teaching	Failed Innovation recycled from the past	State-of-the-art True Reform

outcry against the mandated teaching practices forced British Columbia to finally revise their education law. The revised law removes all mandates concerning teaching practice and shifts the focus of bureaucratic activity from promoting a specific set of teaching practices to assessing learning outcomes, a very appropriate change. Because most of our United States have not learned from British Columbia's mistakes, the debate that took place there and finally resulted in change, is instructive.

The Canadian debate was articulated in the *Vancouver Sun* by Carl Kline, a Vancouver Child Psychologist, and Tony Brummet, the Minister of Education. Dr. Kline pointed out that a problem with British Columbia's reform legislation was the nature of the teaching practices it mandated: whole language reading and nondirective "child-centered" instruction. He sounded much like Kenji Muro, emphasizing the importance of learning how to work hard and deal honestly with life, a lesson that is learned with the help of honest evaluation. The title captured his point, that assessment was a glaring omission from the reform. Mr. Brummet seemed to miss this point in his rebuttal. He pointed out that Dr. Kline seemed unaware that these goals were contained in the rhetoric of the law, as if intent alone were sufficient to achieve them.

Furthermore, Mr. Brummet implied that one must wait until the students graduate and go to college to determine if the mandated nondirective teaching had a positive effect or not. The expectation that evaluation requires this kind of time-frame is commonplace among proponents of nondirective teaching approaches. We often hear that one can expect performance to initially decline before it improves. This conclusion is consistent with the clear evidence that nondirective teaching usually has negative effects in the short-term. However, another interpretation consistent with this evidence is that nondirective teaching just does not have positive effects. Long-term positive effects from nondirective teaching have never been documented. In fact, there is evidence that the long-term effects are even more negative than the short-term negative effects.

One long-term intervention did occur in England where nondirective teaching approaches were officially mandated for over 20 years until they were emphatically thrown out in 1991 because of a continual decline in the achievement of English students and a continual increase in the crime rate. (See the Spring 1993 issue of *Effective School Practices* for more specific information about England.) One cannot necessarily blame the increase in the crime rate on the use of nondirective approaches. However, one can use this evidence quite clearly against

the common claim that nondirective approaches result in better citizens with better values and greater productivity, though these approaches admittedly do not result in better academic achievement. Legislation that promotes nondirective teaching and sets the inculcation of certain "values" as the purpose of schooling is based on this claim.

The debate between Kline and Brummet typifies the debate that is now occurring across the continent. The real issue of the debate is whether bureaucracies should legislate teaching practices or student outcomes or both. Most legislation claims that it is defining outcomes, when in reality it is defining teaching practice.

Why Bureaucracies Should Not Prescribe Teaching Practices

The question of what schools should accomplish is a question that should be answered by a consensus of the entire society that educators are paid to serve. It is a political decision. On the other hand, how we should best accomplish those goals is not a political decision, not a committee decision and not a matter for consensus. It is an empirical question that is best answered by student performance data indicating how well students accomplish the targeted outcomes via different instructional practices. Bureaucracies should never prescribe or proscribe instructional practice.

Even if bureaucracies were capable of identifying the most effective practices, those effective practices would be rendered ineffective by the mere fact that they are mandated. And certainly improvement in educational practice would stop there. We don't have all the answers in education. Best educational practice must be allowed to continually evolve and should not be crystallized in legislation.

Teaching practices should be chosen at the local level for several very good reasons. First, there is no consensus regarding the nature of best educational practice. To mandate any set of practices at the state level is simply promoting the financial wealth of only one select group of educators. Allowing local school sites complete freedom in the selection of teaching practices decentralizes the control of a lot of money. Second, teachers who are not allowed to choose their teaching practices cannot fairly be held accountable for the results of their teaching. It is not fair for states to mandate a narrow set of teaching practices and then penalize local schools for not meeting standards on a statewide test, as Kentucky does. Third, legislating specific practices will only result in the most recent educational fad becoming institutionalized. Rather than institutionalizing the latest fad, we need a system to monitor fads and

hold them in check before they become widespread expensive failures.

Standards and Assessment

A free market economy in the selection of teaching practices along with clear state-wide assessments of outcomes that are valued by our entire society seem crucial components for an improved education system. Reform legislation should focus on setting standards that describe widely valued student learning outcomes and the procedures for their assessment. This assessment should include standardized outcome / performance assessment. On page 17, Bob Dixon clarifies the important distinction between outcome/performance assessment and continuous program-specific assessment. Ironically, most of the "outcome-based" states prescribe program-specific or "continuous" assessment using portfolios, rather than standardized outcomes / performance assessment that is needed.

Standardized Versus Portfolio Assessment

Program-specific, continuous assessment can evaluate how well a specific teaching practice is being implemented and help teachers do a better job of teaching within the framework of that practice. Decisions about program-specific assessment belong at the local site level where programs and teaching methods are selected. Program-specific assessment usually involves viewing samples of students' in-class work, called "portfolio" assessment these days. Teachers have probably used "portfolio" information to make daily adjustments and modifications in their instruction since the beginning of time. There is nothing new in the idea of having a student portfolio. What is new is the idea of using portfolios to make important long-lasting decisions. Portfolios are not standardized and therefore cannot be used to compare and evaluate students or school programs.

In order to truly improve education, states must be able to compare students with standards and compare school programs with standards. These comparisons require standardized criterion-referenced tests rather than the typical standardized norm-referenced tests, such as the CTBS and ITBS, that have been used in schools. High expected levels of performance are "criteria" for performance. Norm-referenced tests are referenced to average levels of performance, not high expectations, and therefore, norm-referenced tests can set nothing but mediocrity as a standard.

Nonstandardized portfolio evaluations are simply not fair and should not be used to make comparisons and evaluations. With portfolio work, one can never know how much help the student may have

received from peers or the teacher, or how many times the student may have practiced the activity with feedback from the teacher until it was right. "Standardized" simply means that the same tasks are administered under the same conditions. Standardized tests need not have only multiple choice questions; open-ended questions can also be standardized. Teachers may use portfolios very effectively in their daily decision-making. State assessment programs, on the other hand, should focus on developing the standardized outcomes / performance assessment that will serve to identify which students and which schools are meeting society's expectations.

Standards for Students

Bob Dixon discusses some important details of defining outcomes so that they can really serve to improve teaching. The American Federation of Teachers has also developed an excellent set of criteria (page 27) for evaluating slates of standards that are emerging from the different states. We have included a sample of standards from various states for our readers to evaluate using these guidelines.

Some states, such as Illinois, have standards that are only one page long. Other states, such as Michigan, have a set of standards that are over 200 pages long. These verbal descriptions of standards are important only for consensus-building. They should be something citizens can talk about and agree upon. The important part of making standards actually work, though, is in designing the tests that will evaluate the achievement of these standards. Test design is a highly technical activity in which typical citizens may be ill-qualified to participate. However, anyone should be able to look at the standardized assessments that a state designs to see how well they align with the standards that everyone has agreed upon.

Although Illinois has a very short set of standards, their state-level effort is focused on developing reliable and valid assessments of these academic areas. Michigan, on the other hand, in spite of having a very long list of standards, seems focused on implementing nondirective teaching approaches with no intent to translate their standards into a reliable assessment system. Michigan's philosophy is that "assessment and instruction are inseparable." This means Michigan is using the state reform legislation to promote nondirective teaching practices under a heavy layer of sugar-coated rhetoric about high standards.

Standards for Schools

The AFT criteria for evaluating standards are excellent. Using these criteria one could develop some fine standards for evaluating student perfor-

mance. Some additional criteria are needed though, if one is to use the standards to identify best practices. Standards must specify what percentage of students at what point in time are expected to have reached the specified level of performance. Many states reject this idea explicitly and emphasize allowing students to meet performance standards in their own sweet time. As compassionate as this may sound, it places no responsibility on the school to provide instructional programs that facilitate students meeting standards in a timely and efficient manner. Without this one crucial piece, there will be no motivation for schools to actually improve their teaching practices. Allowing time to vary places the entire responsibility for school improvement on students.

Figure 2 summarizes the important features of state reform legislation that need to be in place for true school improvement to occur. By having uniform state-wide assessments of agreed-upon standards that are administered at a standardized age, model schools can be identified. Model schools will be those schools that are achieving the best results. Their performance levels can become the benchmarks that other schools can strive to meet and exceed. Only the practices used in the highest-achieving schools should be recognized as best practice.

Popular Misconceptions

Applying the criteria for standards that we have provided to the examples of standards from various states reveals that all these states are far from having

"good" standards. Ironically, many states making the loudest claims about being "outcome-based" have developed the vaguest, most unusable standards, making all their rhetoric about "outcomes" and "results" meaningless. States where the controversy over standards rages loudest, have used consultants whose philosophy is actually opposed to the notion that schools should achieve measurable results. These consultants are not behaviorists, but rather are strongly anti-behaviorist. Mastery learning and behaviorism are completely inconsistent with the outcomes being established in these states.

Robert Slavin's research on mastery learning is often cited as evidence against OBE. Mastery learning is unrelated to the non-academic OBE that makes parents angry. Slavin provides a short explanation of his research on mastery learning on page 44. The longer article by Jonathan Solity on page 45 should be very informative for many who are confused about behaviorism and Direct Instruction. Behaviorism is the branch of education that can be characterized as "scientific," that is, behaviorists are those educators who look at the evidence before making conclusions. And they are the branch of education that really believes there are more and less effective educational practices. Only by looking at student performance data can we see how well children learned, and using that information we can identify better practices and improve our teaching. In other words, "a child's failure to learn can also be interpreted as a teacher's failure to teach." Behaviorists have nothing to do with non-academic outcomes, but they are into getting results.

Figure 2. Components of an Effective Educational Reform Law.

Uniform Statewide Standards

State Departments of Education should be required to develop valid and reliable measures of rigorous, academic standards that are uniformly administered to all students of the same defined age across the state. No students are exempted for any reason. AFT has provided examples of "world class" standards from other countries.

Free Market Economy in Teaching Practices

State Departments of Education should be prohibited from prescribing, proscribing, or even recommending any teaching practices, textbooks, materials, programs, methods, strategies, or any aspect of teaching practice. As it is, publishers develop tools to meet California's Department of Education guidelines and all the other states follow in adopting them. With a free market economy, there is less opportunity for a monopoly by a few publishing companies.

Bottom-up Rather than Top-Down Innovation

Local Schools should be encouraged to borrow, develop, copy, or design their own school program through the collaborative efforts of the teachers and with the cooperation of the parents. Teachers should be free to collaborate with any other resources they choose, such as consultants, publishers, educational researchers, and so forth.

Highly Publicize the Performance Levels of Model Schools

State Departments of Education should be required to publicize vigorously the performance levels (actual mean scores and standard deviations of specific age groups) of *only the highest-achieving schools* on the measures of standards. These high-achieving schools would become Model Schools for other schools to learn from. Model Schools should be identified for low, medium, and high socio-economic levels.

Local Accountability

Local school boards should review the student performance of the local school and of the model schools. The model schools will provide the resource from whom the teaching staff of schools who are not performing at comparable levels can learn about more effective practices. If local communities choose to develop different standards for their district, they may do so. For example, if local communities want to emphasize self-esteem instead of academics as an important outcome, or if they want to install additional standards, such as in music, art, karate, and so on, they may do so.

June 13, 1929

Our Nation's Next Step: A Perspective from the Past

Roger W. Babson
Founder of Babson's Statistical Organization, Incorporated

Reprinted from the Hillsboro Argus, Hillsboro, OR.

During the next 25 years there will be at least 25 truly great discoveries and inventions. Instead of trying to list them all, let me speak of one in particular. During the coming quarter of a century we shall discover that success can be taught, and we shall invent methods of teaching it. When you study men closely and constantly you are astonished to find how slight is the difference between the successful and the unsuccessful. We shall learn how to bridge this narrow margin between success and failure.

The question whether you will win or lose depends not upon knowing but upon doing. The differential between victory and defeat is not one of ability but of action. What is this magic gift which we imagine explains the triumph of those who succeed? Upon analysis it proves to be nothing more mysterious than the homely gift of doing what you don't want to do, when you don't want to do it! When you say of a successful man that: he, while others slept, was toiling upward in the night, you have uncovered his secret and disclosed his formula. It is plain dynamic character that puts men on top, not some strange and inimitable superiority.

Since this is so—since success is essentially simple—men and women can be taught to succeed, just as they can be trained to plow, sew, compile statistics, or drive a car. There will be courses in

success, the same as we now have courses in arithmetic, English, science and public speaking. Success involves four elements, physical, mental, spiritual and economic. Skillfully coach a person to qualify in those four fundamentals and success will follow, like the right answer when you press the proper keys of an adding machine. Those who are inclined to smile at this idea may well look back and recall their skepticism toward aviation, their doubts of radio, and their pessimism over world peace efforts.

The Russian idea of equality seems to be that all shall equally lose. The American idea of equality is that all shall equally win. Here in America there was established a democracy, deeper in degree and broader in scale than anything which the world had ever known. This democracy has been continually strengthening. Our people have learned to vote. At the last election there were record-breaking interest, registration and vote. Our people have learned to learn. Per capita attendance at schools and colleges is at new levels. Our people have learned to enjoy themselves. Wholesome diversions, recreations that really re-create, were never so abounding. This progress must continue. Democracy must reach its final flower and fruit—not only the present equality of opportunity, but equality of achievement. Our nation's next step is to teach success.

1 lb.
Coffee
23¢

9 lbs.
Oatmeal
29¢

Dr. William Coulson, Renowned Counseling Psychologist Stresses Nation's Need for a Return to the 'Absolutes of Academics' in Classrooms

Diana Finlay
Neighbors Editor for the *San Marcos Daily Record*

*Reprinted from the San Marcos Daily Record (San Marcos, Texas),
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The United States is suffering through an educational crisis that is no secret. As parents, teachers and administrators attempt to wade through the alphabet soup maze of new ideas and approaches to teaching, our children are learning less than ever before.

In 1983, the Commission of Education came out with a report titled "A Nation At Risk," in which they said that this generation of youngsters will not exceed its parental generation in academic attainment. For the first time in American history, the kids are not going to do better academically than their folks. The report said they are not even going to match them—in fact, they are not even going to come close.

The report said that if a foreign power would have done to us what we have done to ourselves in the name of bad educational theory, we would have called it an act of war. We have been making war on our own children.

Educational historians can point to the time of change. During the mid-'60s, a renowned psychologist and educator named Abraham Maslow received national attention for his self-actualization programs. The Maslow pyramid of self-attainment became the bandwagon that psychologists everywhere jumped upon.

At the same time, psychologists Carl Rogers and William Coulson were working in humanistic or experimental education in a Wisconsin psychiatric institute. They left their work with schizophrenics to move to California to join forces with Maslow to try their theories on normal people.

Their theories seemed sound at the time. They moved into the classrooms where they, unknowingly, began to destroy education.

Rogers wrote an educational best-seller entitled *Freedom to Learn: A View of What Education Might*

Become, coedited by Coulson. The book sold over a million copies and went through 17 printings—and came to be known as "The Bible of Humanistic Education."

Their new educational method became known as humanistic teaching. 17 volumes of their influential series, *Studies of the Person*, were published between 1968 and 1974. They worked closely with Maslow in bringing psychology into the classroom and setting aside the absolutes of academics to set the individual student on the path to self-actualization.

Last week, Dr. William Coulson was in San Marcos. The famed psychologist has been traveling throughout the country talking about what went wrong. Sort of like Attorney General Janet Reno after the Branch Davidian complex burned to the ground, Coulson stands before parents in gyms and high school cafeterias, banquet rooms and board rooms, and says, "I take responsibility." He admits, "I was a part of this nondirective approach that has taken over our education system. We were wrong."

Coulson explains, "Some methods Americans have brought into the classrooms would be quite appropriate in the psychotherapy clinic or the counselors office but are much misaligned in the classroom or even the living room at home."

"And it's my responsibility," he continued, "having brought much of this into our children's worlds, through my work with Carl Rogers and Abraham Maslow in the '60s, to bring this inappropriate method that I now see as quasi-amateur nondirective group therapy into the American schools, to a stop—to work to change the direction back to the traditional methods of teaching."

Coulson added that his term for the problem is TMP (Too Much Psychology). "Psychology is not a bad thing in its place, but it is no longer kept in its place. We are taking teachers off for 21 hours of

what they call 'training' to teach them to 'facilitate' the youngsters rather than to teach them."

"And it's my responsibility," he continued, "having brought much of this into our children's worlds, through my work with Carl Rogers and Abraham Maslow in the '60s, to bring this inappropriate method that I now see as quasi-amateur nondirective group therapy into the American schools, to a stop—to work to change the direction back to the traditional methods of teaching."

He said, "I came to San Marcos to identify with those teachers that still want to teach and still believe in the values of teaching and who are perhaps dragging their feet when they are pushed into becoming so-called facilitators or amateur counselors in the classrooms."

"I hope the things I say about education won't be taken personally by those of you who are educators," he said, "I don't mean to offend—I hope to enlighten."

Coulson told the San Marcos audiences at three lecture sessions that he hopes to help make the schools better—in the United States—and in San Marcos—by sharing some of his experience in research and observation.

"I understand that your schools here in town have been quite excellent. I think as late as 1987, San Marcos was designated one of the top school districts in the whole state—but that's not true anymore. I know that the parents and teachers who have gotten together to bring me here are hoping that it can be true again—not because of my intervention, because I am an outsider and will be kind of resented by those who run the local school system, I'm sure—but made better because those of you who are not intimidated by these more therapeutic or child-centered forms of education have the courage of your conviction to stand up for a return to academics. That is really what is needed," Coulson told the largest group session in the high school cafeteria on Wednesday evening. "We need to return to the teaching of subject matter—not to turn the clock back—because it couldn't be done even if we wanted to—but rather to help our children grow confidently into the next century possessing the same kinds of intelligence that we have."

"Children used to have an adult intelligence and that is because their parents would lend them their own—but by nature, they don't have an adult intelligence. Left to their own devices, children will turn out to be imbeciles. But before now, they were never left to their own devices. We always said, 'Think with our brain, see with our eyes, listen with our ears. Here, we'll lend them to you because we love you.' But that was before the age of TMP when parents started using phrases like 'I guess I get the feeling that what you're really saying is ...' And now, our children are being left without direction."

Coulson looked around the roomful of parents and teachers. "But if we who love our children don't give it to them—if we who love our children don't tell them what to do, it's not the case that they won't be told—it's the case that someone else will move in on them and try to give them that direction—and they won't love them. They will see them as a market to exploit."

"Carl Rogers in psychotherapy, or even Bill Coulson in psychotherapy, doesn't tell his patients what to do because that is not what psychotherapy is about—but it is what the classroom or the living room is about. That is the teacher or the parent's responsibility," he emphasized.

"Children used to have an adult intelligence and that is because their parents would lend them their own—but by nature, they don't have an adult intelligence. Left to their own devices, children will turn out to be imbeciles. But before now, they were never left to their own devices."

Coulson spoke of the current pseudo-psychology trends in teaching and parenting that lean toward the distinction between "You" and "I" messages. He used the example that when a child comes in late—after curfew, parents are instructed by "modern parenting experts" not to say "You naughty child—you shouldn't come in late." Rather, the modern parent should say, "I worry about you."

"Realistically," Coulson says, "This invites the child to say, 'Don't worry, Mama,' or 'Mama, you worry too much,' or 'Mama, you need professional help.' The whole arena of discourse which is ignored by the 'I' and 'You' messages is the realm of timeless messages. It is dealing in absolutes. Curfews are for keeping. That is not an 'I' or a 'You' message. It is an inceptive message that tells them

an absolute. When a child throws a shoe at his younger sister, you don't have to say 'You naughty child,' or 'I worry about you when you throw shoes.' To be successful, deal in absolutes. Say 'Shoes are not for throwing, they are for wearing.' About drugs: 'Drugs are not for taking, they are for flushing.' About sex: 'Sex is for saving until you're securely married.'"

"We have to restore the rights of absolutes," he said. "The rights of subject matter. There are certain subjects which we know about because we have our experience in them—and yet, we as parents and teachers have been persuaded to back away from them too far."

Coulson continued, "All young people have a natural debility called youth—Y-O-U-T-H. They are not adults and they don't deserve to be treated like adults. What I mean is that it is cruel to treat them like adults. I don't imagine that the driver's education instruction takes your child out to IH 35 and points out to them what most of us think of as the proper side of the road to drive on ... and I don't imagine he takes them to the concrete ramp and says, 'Now, most of us like to think of this as the off ramp, and therefore choose not to drive up it, but I'd like to hear how *you* feel about it.'"

"And the reason they don't say those things is because some of the kids would begin to understand that they might try to grow a little bit by driving up the off ramp," Coulson added.

Coulson sees this amateur psychotherapy in the classrooms as not only taking valuable time away from academics, which our children are falling behind in, but, he says, "We are prying open the mouths of all of the children in the classrooms and pouring down their throats medicine—clinical, psychological therapeutic medicine—which would be appropriate only for a few of them and then only if properly diagnosed and properly delivered—but all the kids are being made to take the medicine and only a few of them need it. All of the children are being forced to drink in this medicine because a few don't have an upbringing anymore. And when you complain about this you hear 'But the families are not doing their job ...' well, it's not *all* families who aren't doing the job—the parents in this room are doing their job or they wouldn't be here tonight—yet your children are getting the medicine as if you weren't ... and they are suffering academically as well."

"When Maslow, Rogers and I were teaching at the United States International University in San Diego in the late '60s and early '70s, we decided to let the students have their head to work at their own pace and not constantly be supervising their work, be-

cause then they would be doing *our* work instead of *theirs*—using *our* brains and not *their own*. We said that, in Psychology, we wanted our graduate students to have the initiative to do their own work instead of serving as apprentices to us and simply following our lead. We said we wouldn't grade students along the way, and we would simply look at their work when they decided they were ready to present it and we would decide whether or not they deserved our stamp of approval—whether or not they deserved a doctorate in psychology," Coulson remembered.

"The work that turned up was so appalling that we felt guilty for not having kept these students on task and we passed *everybody* ... their portfolios were abominable but we knew that it wasn't *their* fault. We knew that it was *our* fault because we didn't supervise them. Before they began to learn whatever they wanted to learn, they were supposed to learn what we knew—because we were the faculty and they were the students and that was why they were paying tuition. Instead, they learned what they wanted to learn—which was, a lot of it, pretty stupid—and yet, we had to pass them because we had seduced them into thinking that they had the capacity to learn their own work," he confessed.

Coulson's major objection to the psychologically-oriented or affective programs in public schools today, called Outcome-Based Education (OBE) or Grading by Objectives or Mastery Learning is that "you don't *make* the students work—rather you let them proceed at their own pace and when they fail a test, you give them an infinite number of opportunities to get it right or to make an A. You do not make the students work, and therefore you expect from them lesser results and that is what you get, because you are not making them work—and therefore you lower the standards because you realize that it's not their fault. Now you have more students getting As for less work—because everybody's doing less work—but we don't want it to look like the program is a failure—so we put more pressure on the teachers to bring the standards down."

Coulson stressed that when you look, as a scientist, at educational methodology, you have to be concerned with the aggregate effects of these programs. He said that if you look at the charts and scores in the San Marcos district, they are not good. "They are not going down in Texas generally—they are going down locally, and it has been a good, academically sound system—so something is indeed wrong. The truth is reinforced in traditional education.

"It is not that the students are *made* to do the right thing, they are *told* to do the right thing. But in a

system where they don't grade the kids down for spelling, if the kid says 'But spelling's important,' the teacher might act facilitatively and say, 'Well, thank you for sharing that,' or 'I see that you feel deeply about that and I respect your feelings,' but they won't validate that this is objectively true. But it is objectively true that people who do good work get good jobs and can be successful and support themselves," he said.

Coulson added that Maslow saw what was happening in the late '60s. He wrote in his journals that in nondirective process centered education, he observed a loss of such valuable benefits as all apprentice training as well as a loss of respect for teachers and education by the students. The loss of all demonstration by the masters was evident when this nondirective approach was taken. The children would not have the intellectual reasoning of their teachers. Maslow realized that the self-actualization program wasn't working successfully with everybody. In fact, before his death, he wrote that only 1% or 2% of the mature population is capable of this self-actualization—and it was never meant for children, he said in the journals that were published in 1979.

Maslow wrote in his journal that the net outcomes of this devolution would be "a generation of lousy professionals," since you cannot learn medicine or plumbing or chemistry in a sensitivity session or by discussions or by yourself. You have to be taught.

The trend for the last twenty years has been toward self-direction. Coulson has a first-hand understanding of the roots of this trend and has devoted the last 25 years of his life to intensive research on this subject. He co-wrote a book that many educators in our community as well as the nation have absorbed into our educational system.

Where do we go from here? It is obvious that Japan, Korea, Germany, France and Taiwan are outsmarting our students in academic competitions on a regular basis. Coulson says that while our children are sitting in circles and bringing out their own experiences and feelings, Japanese children are sitting at desks learning English. He feels that we are cheating our children out of a fair chance in global competition.

This man, who had much to do with bringing psychology into the classrooms, is an outspoken advocate for getting it out. "It's good psychology, but it has no place in the general classroom, so I would say our goal should be a return to academics. If we can get that kind of commitment, we can work to figure out what to do next for those children who need special help. We need *absolutes* in education—we need to bring academics back to the front line in the classrooms."

"We have confused psychotherapy, in which the therapist tries to guess what the person really means to say so that he can bring out the goodness (or success) that's within the person—and education, in which knowledge is transmitted from the teacher to the student. The two run in opposite directions and we've crossed them. That was our big mistake," the psychologist admitted.

"We need to explore values at home and learn subject matter in the classroom," Coulson reiterated. He advised parents who see a problem to take it up with their administrations or school boards—"and if, after that, they still doubt that the schools are going to fix themselves and let the teachers go back to teaching absolute subject matter, they might think seriously about alternate methods of education. In Baytown, Texas they have decided to put some of these experimental programs on hold because parents complained and the administration or school board—or both—heard them. In Nova Scotia, enough people have taken their children out and moved into private or co-op school situations that the public schools have started to listen."

Coulson cited a competition a couple of years ago between American youngsters and those from five other countries. Math and science put American youngsters on the bottom—but interestingly, they had the highest self-esteem. Kids from Taiwan and Korea were on top—yet had the lowest self-esteem.

"Who are you going to bet on in the competitive world," Coulson asked the audience. "The kids who are doing poorly and don't know it or the kids who are doing well and don't know it?"

Brief Biography of W.R. Coulson, Ph.D.

A licensed psychologist, Coulson is director of the Research Council on Ethnopsychology and long-time consultant to Georgetown University Medical School in Washington. In the 1980's he served as a member of the Technical Advisory Panel on Drug Education Curricula for the U. S. Department of Education. His background includes clinical internships with the Psychotherapy Research Group of the Wisconsin Psychiatric Institute and the Neuropsychiatric Service of the U. S. Veterans Administration Hospital in Phoenix. He has served as consultant on ethnopsychology for the Federal Bureau of Prisons and the Office of Juvenile Justice and Delinquency Prevention of the U. S. Department of Justice.

Holding doctorates in philosophy from the University of Notre Dame and counseling psychology from the University of California at Berkeley, in the 1960's Coulson was research associate to Carl R. Rogers and fellow humanistic psychologist Abraham H. Maslow at the Western Behavioral Sciences Institute in La Jolla, California. At WBSI he directed a program of facilitator training. From 1968 to 1974, the men co-edited a series of 17 volumes on humanistic education for Charles E. Merrill Publishing Company, then a major publisher of education textbooks.

In 1972, Harper & Row published Coulson's preliminary examination of the destructive influence of encounter groups on education, *Groups, Gimmicks and Instant Gurus*. He has since lectured widely on the parallel development of academic illiteracy in this country.

The Purpose of Japanese Education

Kenji Muro
Tokyo, Japan

Excerpted from "Star Techs: The Next Generation: A roundtable discussion about nurturing genius in children," The Wall Street Journal, Monday, May 24, 1993, pages R21-R22. Reprinted with permission.

The purpose of Japanese education, especially in the primary and junior high schools, in terms of content, is first and foremost to teach the reading and writing of the Japanese language.

In primary school the kids should memorize 1,000 characters and be able to combine and pronounce them (each one has a few different ways to be pronounced). To memorize the characters, the young children repeat large, rhythmic arm movements over and over. It helps their bodies remember the strokes needed to draw these characters. This "body memorization" is very different from "letter recognition" of the Western alphabet, and I think this mode of learning may help develop a different kind of intelligence in Japanese children.

Before students can graduate from high school, they must learn 2,000 more characters. So the minimum requirement to enter college is 3,000 characters.

The teaching of the Japanese language itself, with this need for character memorization, necessitates a kind of strict discipline and structure in the school. It may not be so conscious, but fundamental to the Japanese definition of who is Japanese is whether you can read and write the Japanese language. And like it or not, the Japanese schools accomplish this daunting task.

Teaching math is the second content task of the Japanese school. It is a very ordered, rigid, standardized curriculum taught all over the country because there is only one national educational department that controls everything.

History teaching is mostly date memorization for passing exams. Science involves lots of hands-on experiments in all the fields.

In the U.S., physical education is considered a kind of play. But physical education in Japan is again used to teach group harmony. The Japanese really like marching, and marching is seen as a way to teach how to be part of a group. Physical education is thought of not only as physical training but as a kind of spiritual training as well.

In music education, especially in the primary schools, the important thing is to sing old Japanese

songs all together, with the emphasis on the all together. To sing together in harmony is again a way to foster group belonging. It is considered very bad form to sing too loud and stand out. As you can see, there is hardly any idea that the school curriculum should find, nurture, develop or encourage individual creativity or genius.

Though there is some talk these days about needing to nurture individual creativity, most of it is just talk. The Japanese corporations may say they want more individual creativity, but individual creativity is based on individual desire, and they don't like that.

Adults in Japan are very much aware of how difficult their school system is, they also see it as a way of teaching a deeper meaning about life.

This all may look quite awful to Western eyes, but it is nonetheless a manifestation of a deeper Japanese philosophy. Learning is seen as something one does to attain enlightenment, and enlightenment is not supposed to come easily. The thinking is something like, "Only if you have a hard time doing something will your efforts bear fruit." So while the adults in Japan are very much aware of how difficult their school system is, they also see it as a way of teaching a deeper meaning about life. Pain and having a hard time are a part of life, and it is a good experience to learn how to handle it. And they definitely care for and about the students and support them while they are having their hard time.

About the Author

Kenji Muro, born and educated in Japan, is the author of several books about understanding cultural differences. His consulting firm, West-East Interface, based in Tokyo and in Emeryville, Calif., advises such Japanese companies as Panasonic, Hitachi, Canon and NEC on issues of education, technology and culture.

Reading, Writing and 'Rithmetic Taught without a Measuring Stick

Carl L. Kline
Child Psychologist, Vancouver, B.C.

Reprinted from The Vancouver Sun, Tuesday, February 2, 1993, page A11, with permission.

In January 1990 the heads of the University of B.C.'s 12 science departments unanimously censured the education ministry's plan for a revised school system called Education 2000. Prior to the actual adoption of the plan, they issued the ominous warning that it could "drastically undermine the province's economic growth in science and technological fields." It is more than puzzling that such a strong unanimous condemnation of the program by these respected professionals went unheeded. Unfortunately for the intellectual well-being of our children, the fears voiced by the department heads are being realized.

I was even more alarmed by Education 2000 than were these UBC professors. Looking at the format of the program, I felt that the premises upon which it was based were faulty. I already had more than 4,000 children referred to me because of learning problems, and I was conversant with the literature in the field.

I knew that reading failure was the leading cause of emotional problems in children in North America, and I knew that Education 2000 would dramatically increase the incidence of this problem because it is based on Language Experience (an extension of the disastrous whole-word method).

Furthermore, Education 2000 is "child centred." This means that children learn at their own pace, in their own way. Supposedly in order to protect their self-esteem, they receive no marks and fail no grades. They are grouped together regardless of academic ability. Students with superior skills are assigned to help slower or disadvantaged children.

On the surface this approach has obvious appeal. It seems humane, gentle and caring. However in reality it is a cruel hoax, a denial of the imperatives for healthy emotional development in children. These essential requirements are: 1) to learn to face reality and deal with it honestly; 2) to function at the highest level possible; 3) to receive appropriate recognition for personal effort.

Unfortunately, Education 2000 operates on the premise that poor performance, for whatever reason, can be disguised by withholding marks, and that superior potential can flower without visible measurement. This philosophy encourages the use of denial mechanisms and places a premium on pseudo-success. Parents might be temporarily blinded, but the children are not fooled. They quickly learn to mistrust adults and, in the process, experience ego damage.

Education 2000 also deprives children of the intellectual discipline that results from memorization of essential academic building blocks: the alphabet; the letter-sound foundation of our language; multiplication tables; historical dates; and the information that provides an early basis for cultural literacy.

Unfortunately, Education 2000 operates on the premise that poor performance, for whatever reason, can be disguised by withholding marks, and that superior potential can flower without visible measurement. This philosophy encourages the use of denial mechanisms and places a premium on pseudo-success.

Andrew Nikiforuk, writing on education in *The Globe and Mail* (Jan. 1, 1993), provided these thoughts about the new teaching practice: "By systematically dismissing 3,000 years of school history, modern educators have condemned themselves to reinventing the wheel. By showing great disdain for the teachers of old, they miss what these masters understood — that pedagogical problems have no new faces."

The research giants in early childhood development, such as Montessori, Piaget, Mahler, and Bender,

recognized that children love to learn and to work hard to achieve. For most children this struggle is the most gratifying part of the growing up experience. And schools that recognize the importance of intellectual discipline and structure consistently achieve the highest success rate.

Mitford Mathews, a University of Chicago scholar, wrote an important book called *Teaching to Read, Historically Considered* that documents the history of teaching reading from antiquity to the present. He says that every method introduced as "a new and exciting" way to teach reading has been tried hundreds of years ago and then discarded as a failure.

The various theories and techniques presented in Education 2000 are described by Mathews as failures of the past. I have asked educators if they have read this book, but I have yet to meet anyone who has even heard of it.

Because of its lack of structure, direction and purpose, and because of the associated chaos it creates, Education 2000 will become a major factor in the escalating incidence of hyperactivity in children. This is now called Attention Deficit Disorder (ADD). Once the label is applied, the child becomes a clinical entity subject to various medical manipulations, including the use of Ritalin and other potentially dangerous stimulant drugs.

By failing to provide beginning students with a structured, sequential, explicit phonics program, Education 2000 is depriving them of the best opportunity to learn to read, spell and write. Instead they are given Language Experience, a whole word program, which research has proven to be a major factor in the current 30 per cent illiteracy rate in the public schools.

The architects of Education 2000 have ignored the extensive studies which firmly establish the superiority of teaching children to read by a basic phonics program. The price being paid for this by children is appalling. Many of them will end up as poor readers and terrible spellers who are unable to express themselves in written language.

Because Education 2000 children are receiving inadequate training in the basics, they will be unable to cope effectively with higher math, science, history and literature. Children who cannot read, organize and memorize are unable to process advanced subject matter. They become academic cripples.

Education 2000 promises liberation and creativity in the classroom, but in reality it is the road to academic and personal disaster.

Zig receives 1995 Fred S. Keller Behavioral Education Award From the American Psychological Association

Letter to Zig:

On behalf of Division 25 I offer you congratulations for being selected the 1995 recipient of the Fred S. Keller Behavioral Education Award. Your pioneering, persistent work in educational applications of behavioral psychology has influenced many people both within and outside of behavior analysis. Division 25 is honored to be able to recognize your outstanding contributions to society through this award.

The award carries with it the expectation that you will give an invited address on a topic of your choice at the 1995 APA convention in New York. At the time of your talk, you also will receive a plaque from Division 25 as a token of our respect for your contributions to behavioral education.

We all look forward to celebrating this significant acknowledgement with you in New York next year.

Best regards,
Kennon A. Lattal

Can you say inflexible? Thought you could

Tony Brummet

British Columbia Minister of Education from 1986 to 1990

Reprinted from The Vancouver Sun, Thursday, February 11, 1993, page A15, with permission.

The article by Carl L. Kline in the Feb. 2 edition of the *Vancouver Sun* was just too much to let go by unchallenged. That such a highly educated person exhibits such a closed mind and paints such a distorted picture of the Year 2000 program is almost unbelievable.

Not only is Dr. Kline very selective in the sources he quotes and cites to support his personal bias, but also he contradicts himself throughout the article. Surely he must have studied some of the many other authorities on education, though he ignores them.

With reference to the University of B.C. science departments heads' condemnation of the Year 2000 program, Dr. Kline says: "Unfortunately for the intellectual well-being of our children, the fears voiced by the department heads are being realized."

On what does he base that statement? None of the products of Year 2000 has graduated yet, let alone arrived at the university, so by what mystic means have the heads formulated that judgment?

Their future students could well be the best informed, most advanced, and skilled group they have ever faced. These students will have been liberated to learn all they can and want without the constriction of pre-determined curriculum content.

According to Dr. Kline's own observation, the essential requirements for healthy, emotional development in children are: "1) to learn to face reality and deal with it honestly; 2) to function at the highest level possible; and 3) to receive appropriate recognition for personal effort."

I have to wonder if he even read any of the materials relating to the Year 2000 program since he seems to be unaware that those are the very concepts the Year 2000 embraces. The program is based on the accepted premise recognized by the research giants in early childhood development that children love to learn and to work hard to achieve.

It seems Dr. Kline, however, holds the opinion that basics can be learned only by memorization of pre-determined material in a structured environment wherein all pupils, regardless of their personal development stage, are reading from the same sheet at the same time. He apparently subscribes to the

theory that learning is a passive act — that students' minds are "empty vessels to be filled," and that their capacity be rated relative to some empirical norm and categorized accordingly. Would Dr. Kline at least acknowledge that this capacity rating can change depending on the child's growth and development?

Somehow, Dr. Kline concludes that the Year 2000 program will not provide adequate basic skills, and therefore students will be unable to cope with higher learning.

Year 2000 is designed to foster continual learning, which by its very nature requires a variety of sound basic skills upon which to build.

But children may not master the same skills at the same chronological age, nor is there good reason why they should be expected to.

I have to wonder if he even read any of the materials relating to the Year 2000 program since he seems to be unaware that those are the very concepts the Year 2000 embraces.

Surely as "a child psychiatrist with a special interest in learning problems" Dr. Kline must be aware of the frustration, disinterest and potential harm which can develop in children if they are measured against the same yardstick only because they are at the same age, with no regard for their individual differences.

To quote Dr. Milt McLaren of SFU: "There is a tendency to assume that it is important to obtain mastery of a common body of knowledge and skill, according to some common forms of learning, at a common rate, in a common sequence, and to demonstrate this in common forms of performance. The challenge is to provide alternatives to the commonality of means while recognizing the value of common, worthwhile, educationally sound purposes. We must learn to manage diversity as a value and an asset."

Dr. Kline obviously subscribes to the tendency above, but not the challenge, nor the recognition of

diversity. He may need the security of hanging on to that with which he is familiar.

Unfortunately, because of his elevated status of "respected professional," he can do a great deal of harm through his incorrect, distorted and unfounded evaluation of the Year 2000 program.

The "cruel hoax" is not the program, but rather the uninformed and erroneous criticisms.

I do not accept that pupils as individuals cannot be encouraged, stimulated and guided to function at the highest level possible by teachers who "learn to

manage diversity as a value and an asset" in a system which allows and encourages them to do so.

Many teachers are finding that pupils are learning more, showing greater interest, reading more, writing more and greater enthusiasm, and greatly expanding both their knowledge and horizons. Basic skills are being mastered and learning is taking place.

Come down from your ivory tower, Dr. Kline, and take a look at what is happening.

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Two Kinds of Assessment

Bob Dixon

National Center to Improve the Tools of Educators
University of Oregon

Editor's Comment: The following letter was sent to the State of Washington Commission on Student Learning by Bob Dixon, and is reprinted here in full with his permission. We are not reprinting the letter because of the belief that most readers of Effective School Practices are particularly concerned about assessment in the state of Washington. Rather, in the letter, Dixon differentiates two broadly different types of assessment in a way that might be of interest to any of our readers interested in state-wide assessment in general. Editor.

Dear Washington State Commission on Student Learning:

I am writing in reference to the May and June 1 *CSL Policy Briefs* published by the Commission on Student learning. In particular, I would like to share some thoughts on state-wide assessment.

I found interesting the many problems Vermont has had with reform/restructuring assessment, as described in the *Briefs*. I would think, however, that the guidelines presented in the Washington Education Reform Bill should spare Washington most of the assessment problems that have plagued Vermont and other states. Not all the problems, of course, but most. In addition, the Washington Education Reform Bill seems to circumvent the kinds of problems some other states have had in trying to use a single test to serve multiple purposes.

The standards and reform guidelines established by many states—and by other organizations as well—often fail to distinguish between content standards and performance standards. (Chester E. Finn discusses this problem in an *Education Week* article, with respect to the NCTM Standards—1993, Vol. 7, No. 17.) The Washington State Legislature, in contrast, has differentiated content and performance standards—and their evaluation—well enough to facilitate reasonably straightforward state-wide assessment in Washington.

For example, the *Briefs* states that one of the purposes of the assessments developed by the CSL is to improve instruction. Obviously, of course, the intent of the entire education reform bill is to improve instruction state-wide. Yet there are at least two major ways that *assessment* can contribute to improved instruction, and the Washington Legislature seems to have had only one of those ways in mind.

1. Program-specific Assessment: Assessing Content Standards. Some varieties of assessment are designed as on-going, direct, integral components of particular instructional methods. The vast majority of the arguments favoring portfolio assessment, for example, revolve around its use as a frequent indicator of progress within a specific curriculum. Some instructional programs come with built-in assessment, particularly computer-based integrated learning systems. In those cases, the very term “integrated” refers to the integration of assessment and instruction.

The distinctive features of an instructionally integrated, direct assessment of instruction are (a) assessment occurs frequently, and often informally, in the course of instruction, and (b) the intent of the assessment is that of making frequent modifications to the instructional program as a means of improving instruction. Much of the discussion of “alternative” and “authentic”

assessment in recent years has focused upon such assessment of content instruction. There is an *a priori* assumption underlying such assessment: namely, one assumes that the instructional program is "good" in some sense. Otherwise, the parties using it wouldn't be using it. Program-based content assessment is not designed to establish or refute that assumption; it is designed to improve the implementation of instruction that is assumed to be effective to begin with.

In short, direct assessment of an instructional program is inextricably tied to that program. If one were teaching beginning reading using an approach based predominately upon sight words, the appropriate assessment for improving the instruction would measure the acquisition of sight words. It isn't that a phonics-based assessment would be "unfair" in this instance. Rather, it would be inapplicable. Measuring phonics knowledge couldn't possibly contribute to the improved implementation of a sight-words program.

This is the type of assessment that seems to be causing so many difficulties for so many states. Vermont, for example, in stark contrast to Washington, has state-specified curricula. The specified curricula and assessments go hand-in-hand. The alternative assessments that accompany those curricula are the source of most problems, particularly those related to validity, reliability, and training costs. Because Washington actually *forbids* state specification of curricula, Washington is spared a great number of the difficulties that plague Vermont and some other states.

Essential Academic Learning Requirements Shall not Limit the Instructional Strategies Used by Schools or School Districts or Require the use of Specific Curriculum (p. 4, lines 11-14).¹ Were the CSL to develop assessment tools tied to any particular instructional strategies or specific curriculum or educational philosophy, it would definitely be limiting schools and districts to the strategies and curriculum tied to those tools. In effect, those strategies and curricula would become *de facto* requirements. No school or district could afford to use strategies or curricula inconsistent with the state-developed (i.e., CSL-developed) assessment.

Several states, then, have put themselves into a bind that Washington doesn't have to face: trying to provide both program-specific assessment and outcome performance assessment at the state level. Washington need only concern itself with the latter.

2. Outcome/Performance Assessment. The concern of the Washington State Legislature is that of *whether* students arrive at certain outcomes, rather than on *how* they got there. Assessments of outcomes should be independent of particular instructional strategies, curricula, and philosophies or ideologies.

Such assessments have far greater potential for improving instruction than program-based content assessments. Assume for the moment that Washington does develop instructionally-neutral assessments of crucial knowledge (essential learning), and that those assessments meet standard criteria for validity and reliability. (The education reform bill specifies that assessments be valid.) After a period of time, the students at some schools/districts will emerge as better educated than those at other schools/districts. Surveys of instructional strategies and curricula at those schools/districts producing the better-educated students will be of inestimable value in the following ways:

- fulfilling the state's role in establishing school accountability.
- providing objective data from which the Center for the Improvement of Student Learning can make crucial decisions.
- giving policymakers objective data for making decisions on awarding state training and implementation grants.
- allowing school personnel to capitalize upon the requirement of the education reform bill that "The assessment system shall be designed so that the results under the assessment system are used by educators as tools to evaluate instructional practices, and . . ." (p. 6, lines 23-25).

I used an example of reading above while discussing program-specific assessment. An

instructionally-neutral assessment would measure neither phonics nor sight-word knowledge, since those are approaches to instruction. Rather, an instructionally-neutral assessment would simply assess children's ability *to read*, regardless of how that ability was acquired (or not acquired). The criteria for such an assessment are not really very complicated, even though, as acknowledged in the *CSL Policy Briefs*, such assessments can be difficult and expensive to administer and score. However, there is great face validity to such assessment, and it need cover only "essential learning," rather than the multitude of topics both essential and marginal that are often assessed by norm-referenced instruments.

And speaking of standardized tests, there seems to be an impression by many in the field that all standardized tests are norm-referenced when, in fact, a *criterion-referenced* test can be standardized. The Washington Education Reform Bill specifies that among the valid types of tests used, criterion-referenced tests be included (p. 6, 16-18). All things considered, tests referenced to performance outcomes at various grade levels might be the only *valid* assessment tools that meet the requirements of the reform legislation.

In short, there are significant advantages to discriminating carefully between program-specific assessment and instructionally neutral outcome performance assessment:

- The entire task of developing assessments of essential learning outcomes is simplified considerably by eliminating program-specific assessment from consideration and by concentrating instead on valid, instructionally neutral performance assessment. This would mean a substantial simplification of the work of advisory committees to CSL.
 - The resulting assessments are most likely to conform to the education reform bill and, therefore, are less likely to be challenged, and the challenges that occur anyway are less likely to be based upon merit.
 - True improvements in instruction and curriculum are facilitated, since the data yielded by valid performance assessments are objective and are not subject to the confounds inherent in many forms of program-specific assessments.
 - The costs and mechanics of implementing the assessments can be substantially reduced.
- Thank you for your patient consideration of these thoughts.

Sincerely,

Bob Dixon

¹ p. 4, lines 24-31, define "performance-based education system" and further discuss the state *not* specifying "how instruction is provided."

Performance-Based Education: Facing the Reality

Bob Dixon

National Center to Improve the Tools of Educators

The recent trend toward education based upon performance outcomes in some states (Ohio, Arkansas, Washington, and elsewhere) is a promising development in some respects. The promise of outcome-based education rests in what it *is*, or aspires to be.

OBE can be defined in terms of four principles. The first in shorthand form, is *clarity of focus*. That means that all curriculum design, all instructional delivery, all assessment design is geared to what we want the kids to demonstrate successfully at the "real" end—not just the end of the week, the end of the semester, the end of the year—but the end of their time with us.

Principle number two is *expanded opportunity*. It means expanding the ways and number of times kids get a chance to learn and demonstrate, at a very high level, whatever they are ultimately expected to learn.

Number three is *high expectations*, which means getting rid of the bell curve. We don't want bell curve standards, expectations, and results; we want *all kids* [italics added] able to do significant things well at the end.

The fourth principle is *design down*: design curriculum back from where you want your students to end up. (Brandt, 1992-1993, p. 66)

Whether outcome based education realizes its aspirations, or the extent to which it realizes its aspirations, is dependent first upon differentiating outcomes from other educational goals, and then upon the specification of outcomes, and what is done with them once specified.

Outcomes and Non-Outcomes

Spady's Principle One above addresses the character of outcomes. Two criteria stand out: "real," and "ends." Both can be elusive, but identifying real tasks shouldn't be too difficult, if "real" means: something people frequently do when they're not at

school. We read for pleasure or for information or both, we calculate the family budget, and so on.

But "ends" is a little trickier. Some states, for example, list "lifelong love of reading" as a curricular outcome. In that case, the end is really the end. Twelfth grade is the end of high school—hopefully—but there are benchmarks along the road: e.g., everyone should be reading by the end of third grade, everyone should know pre-algebra mathematics by the end of sixth grade.

Perhaps the assessment of outcomes can be the most helpful in determining what is an outcome and what is something else. Outcome assessment should determine *whether*—not *HOW*—students achieved certain crucial outcomes. None of the types of assessments that are used by teachers to improve the implementation of a particular curriculum are outcome assessments. Such assessments—which, by the way, are extremely important—are concerned with the *how* of learning. Similarly, most of the tasks and activities that go on in school are directed toward the "how," toward the achievement of crucial outcomes.

The Specification of Outcomes

It doesn't seem inaccurate to say that "performance outcomes" share many characteristics with their predecessors, behavioral objectives and minimal competencies. The advocates of performance outcomes criticize minimal competencies on the grounds that they address small "pieces" of skill or knowledge, without giving due consideration to whether or how those pieces might contribute to broader educational goals.

I think a competency is a much larger construct [than a minimal competency] that integrates and applies a lot of related skills, similar to what are called transformational outcomes. Today, outcome-based educators are talking about complex roles performance in real situations with real demands. (Brandt, 1992-1993, p. 67)

There are, in my view, two problems associated with outcomes of any "size," problems that can very well yield outcome-based curricula as ineffectual as many objectives-based curricula have been. The first of those problems is that objectives or competencies or outcomes—irrespective of size—must be extremely *specific* if they are to influence curricula in any positive way. A frequent criticism of behavioral objectives has been that they are too specific. I am suggesting the opposite, that even the best written, "Mager-consistent" objectives are fraught with ambiguities—from both an instructional design point of view, and a policy-making point of view.

The second problem relates to the first. Assuming that objectives or competencies or outcomes are sufficiently specific, there is still no guarantee that they will lead to good curricula. Specific outcomes tell us specifically where we aspire to go, but tell us absolutely nothing at all about the best means for getting there. This second problem is one of *analysis*. What mechanisms are in place, exactly, for ensuring that a set of specifically identified outcomes will be analyzed in a way that ensures the development of effective instruction?

I readily concede that in general, instruction derived from specific outcomes is likely to be a little better than instruction derived from ambiguous outcomes, and much better than instruction derived from no particular outcomes. By accident, our chances of getting somewhere in particular are better if we have a particular destination in mind. But to claim that specific outcomes alone will automatically result in the attainment of those outcomes is an act of faith in the mystical.

Making Outcomes Specific

The state of Arkansas has identified four outcomes that "define what we expect all students to know and be able to do upon graduation from Arkansas public schools." Here is an example of one of those four outcomes:

Students will acquire core concepts and abilities from the sciences, arts, the humanities, mathematics, social studies, language arts, foreign languages, physical/health education, practical living studies, and existing/emerging technologies.

Proponents of one of many curriculum fads who believe any stated outcome is a bad one would not be impressed much with this outcome. For the rest of us, it is a harmless outcome at worst, but more likely, an admirable one. However, even the state of Arkansas, which drafted the outcome, does not claim

that it is *specific*, evinced by a sub-listing of learner outcomes and recommended indicators by subject area. For instance, one of the language arts indicators of the outcome listed above is:

- produce final writing products that adhere to appropriate standards of usage and grammar.

As infinitely more specific this indicator is than the previously stated outcome, it is still highly ambiguous. Any number of given "performances" might be thought by *someone* to satisfy this indicator. We could reasonably ask:

- How many products are indicative of successfully reaching the outcome?
- What standards will be applied to determine appropriateness?
- May students produce these products in collaboration with other students?
- Will writing aids be permitted in the production of these products: spell and grammar checkers, dictionaries, or other reference materials?
- Within which genres will these products fall?
- Will students be asked to write on content with which they have ready familiarity?
- Are there specific instances of grammar and usage on which student products *will not* be judged?
- *When* should these products be produced? At the end of 12th grade only? Fourth, ninth, and twelfth? Annually?

The problems inherent in *not* asking such questions become apparent when we examine specific, if hypothetical, examples. Let's assume, for instance, that in the minds of some parents, community leaders, legislators, and educators, the grammar and usage indicator above means that students will produce their products alone, without assistance in any form: peers, teachers, technological aids, or reference material. Let's say, further, that this particular group assumes that most, if not all, of the writing products will be various non-fiction genres or forms most useful for subsequent schooling and for the work place. And finally, let's assume that by "grammar and usage," this group means *all* aspects of grammar and usage by which educated adults are judged to be well educated, which would include such esoterica as the standard use of pronoun case in predicate nominative positions and the like.

Now, bear with me a moment more while we envision another group of Arkansas parents, etc.,

who have something else in mind altogether. Perhaps the members of this second group are thinking of writing products specifically as the fruits of collaborative effort, written by students with ready access to all manner of writing reference tools. This group might be more than satisfied with "basic" grammar and usage, and might be thinking primarily of written stories.

The point here is not that the indicator specifics envisioned by one group are *better* than those envisioned by another. Rather, the point is that the indicator, as stated by Arkansas, admits the two extremely different interpretations outlined above, as well as dozens of others. Put another way, radically different outcome performance by students in Arkansas could be taken as evidence of curricular effectiveness—by someone. Moreover, one person's success is another's failure in such an atmosphere of ambiguity.

Note that by specifying the details surrounding an indicator by answering questions such as the ones I've raised above does not in any way diminish the *size* of the outcome in question. I am not, by any means, suggesting a need or desire for fragmenting performance outcomes. I am advocating *specificity*, which is nothing at all like reductionism.

The Arkansas writing indicator could be specified considerably by literally raising and answering questions, in a verbal format. For instance,

Question: To what genres does this indicator apply?

Answer: Students will be expected to produce written non-fiction reports, explanations, arguments, analyses, comparisons, and summaries. (Writing fiction will be a highly valued but *elective* art in Arkansas, which will be taught and encouraged, but will not constitute an indicator of successfully completing outcome requirements.)

If enough such questions are raised and answered in reference to a given indicator, few citizens of Arkansas would have doubts about what the outcomes and their indicators are all about. In fact, the process of raising and answering questions would likely result in discussion aimed at revising indicators.

But there is still room for further clarity. Like most things cognitive, an example or two (or more) goes a long way toward improving clarity. Examples seem particularly important for outcome-based education, given the aspiration for "complex roles performance in real situations with real demands." Even the most precise verbal description of

an indicator might well fail to communicate clearly just what it is students will be expected to *do*. What *tasks* will they perform as indicators of success?

Here is an example of a specific writing task:

You are to write a letter to the president of an automobile company, in reference to the following situation: you bought a brand new car. After three weeks, the engine (or something) began to produce an annoying sound. You took the car to the service department of the dealership from which you bought the car. There was no charge for that visit, and the sound disappeared—for about another three weeks. You went back. This time, you were charged for the service. When you protested, you were told that the sound was not covered by the "bumper-to-bumper" warranty, and that you were fortunate that you hadn't been charged for the previous visit. One week later, the sound began again, louder and more annoying than ever before. You went back to the dealer. This time, you were charged again, and no more than a few blocks away from the dealership, the sound started up once again.

An example task such as this leaves little doubt about what students will be expected to do, particularly when accompanied by:

- a precise verbal description of the outcome in question, such as one resulting from the kinds of questions and answers I described previously, and
- a precise set of criteria for determining the performance on the task that constitutes achievement of the standard

With respect to the Arkansas grammar and usage standard, for instance, a precise verbal description would tell us the conditions under which students are to perform the task. (Working alone? Without reference materials? Within any time constraints?) The performance criteria would tell us how to evaluate whether a standard has been met. (How many violations of standard grammar and usage would indicate failure to meet the standard?)

A single task, such as the writing task, could and should assess more than one indicator. In addition to the grammar and usage outcome, it could assess other writing-related outcomes as well. For instance, my sample writing task calls for a persuasive text structure. Performance criteria would specify precisely those elements of persuasive text structures that must be discernible by evaluators in order

for a piece of writing to meet text structure standards. The criteria for evaluating other important aspects of writing, such as coherence, would also have to be established.

We have looked so far at phases of a reiterative process for specifying outcomes: loose verbal description, based upon performance goals; questioning that description thoroughly, in order to clarify its meaning; modifying or revising the original description to better fit the expectations of those involved; developing example tasks to demonstrate how the description might be assessed in practice; describing the criteria by which performance on tasks will be judged as satisfactory for meeting standards; and, possibly, changing the verbal description again as issues are further clarified by the example development process.

As crucial as this process of clarification and specification is for academic achievement, it is probably even more important with respect to values-oriented outcomes. For instance, another of Arkansas' outcomes is:

Students will demonstrate good citizenship and function as positive members of the local, national, and world communities.

The individual "indicators" of this outcome do not add much in the way of clarification, as indicated by this one:

As a result of K-12 education in our state, all students should be able to:

- Fulfill civic responsibilities

The process of asking clarification questions and developing clarification tasks helps demonstrate just how elusive the pursuit of such outcomes can be. The most obvious verbal clarification question is: what kinds of activities are indicative of one fulfilling civic responsibility? Brainstorming might help with this question.

doing volunteer community work
contributing financially to civic causes
voting
door-to-door stumping for candidates and issues
attending school board/city council/county council meetings
volunteering to serve on governmental committees
running for public office
originating civic projects

keeping the street clean in front of one's own house
licensing dogs and cats
observing burning ordinances
observing the law
intervening in crimes in progress
jury duty
participation in local church activities
participation in scouts
etc.

Surely, there are many, many more. Once a group interested in pursuing this outcome has arrived at a list it feels is relatively exhaustive, many questions remain. Are some of these indicators more important than others? Some might think that voting is more important than licensing dogs and cats, but some might think otherwise. Certainly, no one would suggest that one must participate in all the listed activities in order to fulfill civic responsibility. Should we develop criteria: three from the high priority list, two from medium priorities, and two from low? More specifically, by what criteria might one judge that the schools had been successful at enabling students to fulfill civic responsibility?

The problem becomes clearer yet when we attempt to convert verbal specifications to tasks. Can we agree on any tasks we could ask twelfth grade students to perform that would be indicative of the extent to which they are able to fulfill civic responsibility? I find it difficult to create such tasks, much less imagine widespread agreement regarding their validity.

So in addition to the obvious problems with values as outcomes—different people have different values—there is the operational problem, the inherent difficulty in specifying values outcomes precisely enough that curricula can be derived from them.

This is not simply another instance of "if you can't measure it, it isn't worth teaching." First, we probably *can* validly measure many things once thought to be too abstract. That's another essay. The real problem, I believe, is that of doing simplistic analyses of values and basing curricula upon those.

I don't know if the outcomes framers in Arkansas were extremely careful in their choice of words by intent, but they aspire only that students "be able to" fulfill civic responsibilities, or "be able to" demonstrate leadership skills, or "be able to" function effectively in a multicultural environment. Not that they ever *will* do any of these things—only that they will have the ability, should they choose to use it. That wording seems careful, since no one in a democracy is obligated to fulfill civic responsibility,

beyond the confines of the law. No one is obligated to be a leader. No one is obligated to even live in a multicultural environment, much less function effectively in one.

Yet we probably would all agree that these outcomes are desirable, given that curricula not infringe upon one's freedom of choice. It is this matter of *choice* that concerns me the most. My view, borrowed directly from Siegfried Engelmann, is that the better educated one is, the more choices one has. If that is the case, then a good civics curriculum would give students genuine *abilities* that accumulate toward fulfilling values oriented outcomes.

What would enable one to be a good leader, or to fulfill civic responsibility, or to function effectively in a multicultural environment? Knowledge. Knowledge. Knowledge. That pretty much takes us back to the academic outcomes, which, as a bonus, are at least potentially manageable.

Simple-minded values curricula have been around before, and they are easy to recognize. Kids are exhorted on the value of voting. They are informed of the intrinsic value of all cultures. In short, they engage in activity that bears some superficial resemblance to the value in question.

More complex and more effective curricula has to go much deeper. Kids *already* know that most adults think that voting is important. But can they read and listen critically, logically? Can they write effectively and persuasively? Are they articulate, well-informed, knowledgeable? Do they know history? Do they understand the fundamentals of economics? Can they evaluate evidence? Aren't these the kinds of things people need in order to "be able to" fulfill civic responsibilities? Aren't these the kinds of things people need to know in order to be inclined to *choose* to fulfill civic responsibilities, each in his or her own *chosen* way?

My views of these questions aside, I am aware of no means by which certain types of values can be specified beyond their initial, highly ambiguous statement. If that is the case, then there is no unambiguous means by which curricula and assessment can be developed, and no means by which anyone will ever be able to determine whether the instructional time devoted to these goals ever produced any desired outcomes.

Assessment

Because example tasks are in essence "assessment items," if not the actual items themselves, and because the development of curricula for achieving performance is the next phase in the development of outcome-based education, the approach to performance outcomes that I am describing could be char-

acterized as "assessment-based curriculum," in contrast to some notions of curriculum-based assessment or measurement. Now, normally, the hair would begin to stand up on the backs of just about every educator in the country upon hearing, "assessment-based curriculum." The phrase would conjure up images of a teacher getting his hands on a standardized test and "teaching the test" to his students all year long. Our strong, visceral reaction to "assessment-based curriculum," is probably based upon our mistrust of assessment instruments.

But if we consider the *tasks*, or examples, from the outcome indicator specification process to truly represent the outcomes to which we aspire, then teaching *something else*—something marginally related to the outcome indicator tasks—is the height of foolishness. In short, neither of two extremes makes any sense: teaching the test, or teaching something and testing something else.

Note that my example writing task would not be particularly easy to "score" or evaluate. Many educators have made the point that there are many desired learning outcomes that are not easily assessed. The *ease* of assessment is inconsequential in relationship to the inviolable demand that assessment be a *valid* indicator of student achievement. When assessment can be easy and valid, that's great. But great care must be taken to avoid sacrificing validity in the search for assessment tasks that can be reasonably evaluated.

Curricula Derived from Specific Outcomes

Once outcome indicators are established in specific detail, the primary job of developing curricula that leads students to achieving those outcomes remains. Recall one of Spady's defining principles of outcome-based education:

The fourth principle is *design down*: design curriculum back from where you want your students to end up.

We might refer to the same thing as "designing backward." We analyze *something* indicative of where we want students to end up. I have suggested above that the "something" to be analyzed are the outcome tasks.

Large volumes have been written on the complex business of analyzing *content* for the purpose of developing curriculum and instruction. Even a review of that work is beyond the scope of this paper. Rather, I can indicate some of the problems inherent in analysis of content.

First, many analyses are doomed to failure due solely or largely to ambiguities in stated outcomes.

Consider this "well constructed" behavioral objective:

Given ten sentences containing a choice of nominative and objective case pronouns, the student will choose 90% of the correct pronouns.

This objective is modest, relative to the "size" of typical outcomes. It is not a statement of an outcome at all, as defined in outcome-based education, but might be admitted as an *enabling* outcome. Yet it is highly ambiguous. Notice the difference between Sentence A and Sentence B below.

Sentence A: We/Us shop at K-Mart.

Sentence B: All of we/us prisoners are unhappy with the food here.

There are pronoun case choices that no native speaker of English, save those with severe language disabilities, will ever find troublesome, as in the case of Sentence A. Then, there are pronoun case choices that plague many educated adults—Sentence B, for instance. Of the latter class, the *utility* of some choices is much less than others. Should predicate nominatives be taught at all? If so, when? These are questions of *scope*, which are not addressed at all in the traditional objective.

Many questions of scope can be clarified with further verbal description. We can add a restriction on pronoun case, possibly focusing upon third person plurals in appositives, or pronouns in compounds: This belongs to Jerry and I/me.

Even so, such an elaborated verbal description fails to indicate what kind of task or tasks are most indicative of the desired knowledge being targeted. We don't have a clue. Any number of different tasks would seem to fit the bill: circle the correct choice, write the choice in a blank, write a sentences using *we* or *us*, etc. Non-educational "contract writers" for publishing companies can and do come up with limitless possibilities, every day. Although two different tasks may be quite similar, no two tasks are the same. No two tasks affect and indicate the same cognition. Occasionally, the trappings of a task render it ridiculous.

For example, it has been reported that all the perimeter problems on a certain standardized test were unshaded, while the area problems were shaded. That prompted a teacher to tell students to add all the sides on the unshaded problems and multiply two sides on the shaded ones.

A final potential problem with curricula derived from outcomes. There seem to be many educators

out there who believe that all the instruction *leading up* to a given desired outcome should strongly resemble that outcome. A student's first writing instruction should look just like her last, just as "real" and complete and complex. The rationale for that view—I suppose—is that if we want students to achieve real and complex outcomes eventually, they must be involved in real and complex instruction from the start.

In England several years ago at an educational conference, I was demonstrating the *first* lesson in a corrective reading program for older poor readers. A woman from the British Infant and Primary School tradition raised her hand and protested, "That doesn't look like real reading to me." I quickly switched my demonstration to the *last* lesson in the program, one that all participants agreed looked like real reading: a good story, with high interest level, complex syntax, and subtlety of plot. And, in the British tradition, I was polite—although I admit that I had a strong temptation to say, "If the students who place in this program could do the kind of real reading you're talking about, they wouldn't place in this program!"

The proponents of many fads ask us in essence to believe that children can *start* with outcomes. Some probably can, in some sense. But overall, the contention is ludicrous that discrete tasks—some simple, some contrived, some *apparently* unrelated to anything—can't be derived from highly valued outcomes, and subsequently be intertwined to lead up to the achievement of those outcomes. This is not a defense of stupid, mindless, unrelated, pointless, "unreal" tasks in instructional programs, but, rather, a defense of tasks that do in fact conspire together to help children achieve valued outcomes, and to do so efficiently. Simply having very specific, well-articulated, fully exemplified, valued outcomes available is no assurance that the curricula derived from them will actually contribute significantly to achieving them.

Conclusion

Education based upon performance outcomes is a mixed bag. Potentially, it can contribute substantially to significantly improved student learning. As described by Spady, it is highly unlikely—yet still possible—that fuzzy, faddish curricula will derive from outcome based education. The emphasis upon outcome performance *standards* nearly preempts that possibility.

It is only a hopeful beginning when a state (or district or school) commits to pursuing performance outcomes. The remaining, enormous task of identifying true outcomes and specifying them adequately

remains, as well as the even more immensely challenging business of deriving effective curricula from such specific outcomes, and the difficulty of meeting these challenges is dwarfed by the prospects presented by values-oriented outcomes. The veracity of performance based education is wholly dependent upon these critical but infrequently discussed matters.

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What Makes A Strong Set of Standards?

American Federation of Teachers Educational Issues Department

Use the criteria below to evaluate the various states' standards that follow.

When President Clinton signed Goals 2000 into law last spring, he gave us an opportunity to fundamentally reform our public schools. And in light of the wavering support and increased interest in vouchers and privatization, this couldn't have happened at a better time.

Academic standards are the centerpiece of Goals 2000. It asks states and districts to set "world class" standards and focus their resources and attention on helping students achieve those standards. This places enormous pressure on states to develop standards of very high quality. If standards are set too low, not much will change and student achievement will likely remain flat. If the standards are too vague, or if they are not firmly rooted in academics, they can't provide a firm basis for improvements in curriculum, assessment, or professional development. Moreover, many states have recently found that vague standards provide a welcome target for right-wing opposition groups interested in undercutting reform efforts and furthering their anti-public education agendas.

The best way to lay a sound framework for Goals 2000 and to disarm the opposition is to develop a strong set of student achievement standards. What do good standards look like? There is no perfect formula or model. Standards may come in many shapes and sizes and will often look quite different from subject to subject and state to state. But this is not the same thing as saying all standards are equally strong. In fact, nothing could be further from the truth. Only standards of very high quality will have the tremendous impact of our schools that we and other proponents of Goals 2000 are hoping for. And only states and districts that develop strong standards will have a chance to realize the great potential that Goals 2000 offers.

The American Federation of Teachers (AFT) put together the following "criteria" to serve as a resource for anyone involved in developing or reviewing student standards. While they are not intended to cover everything relevant, we hope these principles will help to surface the key issues and questions that one ought to consider when judging the quality of a particular set of standards.

Criteria for High Quality Standards

1) Standards must focus on academics and be grounded in the core disciplines—the purpose of setting standards is to improve students' academic performance. This should be the central mission of all our educational arrangements. Forging agreement around the academic content of the curriculum and the expectations we have for our children in each discipline area is the essential first step. But there are some who would rather have standards focus on social and behavioral issues than on academics. Across the country, we've watched debates and legislative battles unfold around proposed education standards or "outcomes" that stray from or avoid academics. These efforts, frequently referred to as "outcomes-based education," or "OBE," are being challenged and defeated, and not only by religious fundamentalists but also by concerned parents, business people, educators, and other public school supporters who have raised serious questions about some of the standards that have been developed.

2) Standards must be specific enough to assure the development of a common core curriculum—a good set of standards should outline the essential knowledge and skills that all students should learn in each subject area, and it should guarantee that all students, regardless of background or neighborhood, are exposed to a common core of learning. A strong common core would put an end to the unequal, uninspiring curricula that many disadvantaged kids get locked into from an early age; it would give teachers a much clearer idea of what their students learned the year before; and it would make life much easier on students who move from one school to another and often find themselves either way ahead or behind the rest of the class. Yet, if standards are to set forth the content of a common core, and if they are to be used by teachers, curriculum and assessment developers, textbook publishers, and others, they must be specific enough to guide people in their activities. How specific? There is no perfect formula. But it helps to keep in mind why we are setting standards in the first place and how they will be used.

Q: Are the standards organized by grade levels or age bands, or do they in some way clearly delineate the difference in expectations for students at different levels? If not, how could one use them to develop curricula or instructional materials for students of different ages or levels?

Q: Are the standards clear and specific enough to guide the development of curriculum frameworks that would describe the core units to be covered in every grade?

Q: If a state were to adopt these standards but give districts the responsibility for fleshing them out into a curriculum, what are the chances that students across the state would be learning the same core curriculum?

Q: If three teachers were to take the same single standard from this set and separately develop an assessment question or exercise to measure whether students have met the standard, how likely is it that they will be assessing the same knowledge and skills?

3) **Standards must be manageable given the constraints of time**—neither standards nor the resulting core curriculum should try to cover everything to be taught. A core curriculum should probably constitute somewhere between 60 and 80 percent of the academic curriculum; the exact amount is open for discussion. The rest can be filled in by local districts, schools, and teachers. As states begin to adopt standards, there undoubtedly will be competing demands for time in the curriculum—both within and among the disciplines. Standard-setters will need to exhibit restraint in the face of these pressures. Their job is to determine what is essential for students to learn. A laundry list that satisfies everyone will be self-defeating, leaving teachers right back where they are now—facing the impossible task of trying to rush through overstuffed textbooks and ridiculously long sets of curriculum objectives.

4) **Standards must be rigorous and world class**—standards should be rigorous enough to challenge all students and ensure that those who meet the standards are performing at a level comparable or superior to their counterparts around the world. There is a danger, however, that states will develop standards that are one slight peg above what students are expected to do now, and they will call these “rigorous” and “world class” achievement levels. Dressing up low standards will not improve student performance. If standards are truly rigorous and world class, they should stand up to some tough but sensible questions.

Q: Do the standards reflect various levels of knowledge and skills comparable to what students in high-achieving countries are expected to master?

Q: Will the standards lead to a core curriculum for all students—those headed for college and those headed for work—as demanding as in France and Japan?

Q: Will the standards result in assessments for the college-bound as rigorous as the German *Abitur*, the French *baccalaureat* exams, the British A-levels, or the Japanese university entrance exams? *Use sample test questions from pages 34-36 to answer this question.*

5) **Standards must include “performance standards”**—a strong set of standards will provide significant, concrete guidance to assessment developers by including performance standards that clearly indicate how adept or competent a student demonstration must be to signify attainment of the content standards. In short, performance standards should specify “how good is good enough.”

Q: Are the standards sufficiently specific so that their attainment can be measured? That is, do they define specific, valued, measurable results, such as a “four-minute mile,” rather than vague results such as “very fast running”?

Q: Is it made clear in the standards how students should demonstrate mastery, for example by writing an essay, conducting an experiment, drawing a map or solving a proof?

Q: Do the standards define “how good is good enough” when it comes to student performance? In other words, what would a passable or superior essay or map look like? How would an exemplary proof or experiment have to be conducted in order for a student to meet the standard?

6) **Standards must include multiple performance levels**—other high achieving countries, France and Germany for example, have rigorous standards for all their students, but they don’t expect all to meet the same standards. Some standards in these countries are for those who plan to attend universities; others are for those whose intentions are technical or vocational. It’s just not realistic to expect the same from everyone, and there is nothing wrong with admitting this. A single standard would either have to be set low enough for most to pass, which does nothing to raise student achievement, or too high for many to reach, which only turns students off to the idea of hard work. The trick is to set standards that are within reach, but still require dedication and hard work—to stretch all kids to their maximum potential.

Q: How many performance levels are defined by these standards? Is there one level of standard which all students are expected to meet, or can some go further and reach an advanced level?

Q: If there is only one level of standard, is it high enough to challenge all students, even the highest achievers? Is it so high that for some students it may be more dispiriting than motivational?

Q: If there are multiple achievement levels, is the lowest level high enough to sufficiently challenge all students?

Q: Do the standards ensure that all students will receive a challenging curriculum? That no students will be placed in low level, undemanding courses?

7) Standards must combine knowledge and skills, not pursue one at the expense of the other—Good standards will ensure that students develop the intellectual powers of observation, communication, reasoning, reflection, judgment, perspective, and synthesis that are often lumped together under vague phrases like “higher order” or “critical thinking.” But they must pursue these skills through the content of the subject areas. A skill that is cut free from content and context is meaningless—and impossible to teach or assess. “Critical thinking,” for example, cannot be taught in the abstract. However, it can be developed by having students analyze the contradiction between the principle expressed in the Declaration of Independence that “all men are created equal” and the existence of slavery at the time. Standards that focus too heavily on skills at the expense of content knowledge become very vague standards—they do not ensure that all kids are given a challenging curriculum, nor can they lead to assessments that reveal the depth and breadth of student knowledge.

Q: If you concluded earlier (criterion 2) that the standards are not specific enough, is that partly because they are too heavy on skills and too light on content?

Q: Do that standards require students to demonstrate certain skills—observation, interpretation, analysis—without clearly indication what specific subject matter they would be analyzing, interpreting, or making observations about?

Q: If a textbook publisher and an assessment developer were to use these standards in their work, is it likely the text and the test would end up covering the same knowledge (facts, ideas, concepts, issues, and information) and skills (ways of thinking, reasoning, working, communicating, and investigating)?

8) Standards must not dictate how the material should be taught—good standards are designed to guide not to limit instruction. They are intended to communicate to teachers and other school staff what is most important for students to learn, but not how the ideas or information should be taught. If, for example, a set of standards includes teaching activities, they should be there for illustrative purposes only. It is important that standards not be allowed to infringe on teachers’ professional responsibilities. Their ability to choose their particular methods and to design their lessons and courses in ways that reflect the best available current research and that are best suited to their students’ needs must not be compromised.

Q: Are there multiple ways that teachers can approach each individual standard in their teaching? Can they use a variety of resources and techniques, for example, or are they limited by what the standards says?

Q: Do the standards offer sample teaching activities? If so, how are they presented and for what purpose?

9) Standards must be written clearly enough for all stakeholders to understand—part of the challenge states will face with Goals 2000 and standards is how to generate broad public support. It is important, therefore, that standards not be written solely for an education audience. The standards must be written clearly enough for parents, students, and interested community members to understand—indeed, to be inspired by. Otherwise, they will risk alienating the very people whose trust and support they need. Our best advice to writers of standards is to consider what the language of each standard will mean to everyone who will be reading them, and avoid jargon.

Q: Are the standards clear enough for teachers to understand what is required of them and their students?

Q: For parents to understand what is expected of their children and to keep an eye on their progress?

Q: Do the standards send a coherent message to employers and colleges as to what students will know and be able to do when they leave high school?

Q: What about the students themselves? Will they be able to read the standards and get a clear idea of what is expected of them?

For a more complete discussion of what makes standards good, see the *American Educator*, Fall 1994, pp. 20-27.

COMPARE FOR YOURSELF

GOALS 2000: EDUCATE AMERICA ACT NATIONAL EDUCATION GOALS

By the year 2000:

1. All children in America will start school ready to learn.
2. The high school graduation rate will increase to at least 90 percent.
3. American students will be competent in core subjects.
4. U.S. students will be the first in the world in science and mathematics.
5. Every adult American will be literate.
6. Every school in America will be safe and free of drugs.
7. Parental involvement in schools will increase.
8. Teacher development and professionalism will be enhanced.

SAMPLES OF STANDARDS FROM THE AROUND THE STATES AND THE WORLD IN SCIENCE

Kentucky Science Outcomes

The entire set of science standards Kentucky developed is included below.

- 2.1 Students use appropriate and relevant scientific skills to solve problems in real-life situations.
- 2.2 Students identify, compare, and contrast patterns and use patterns to understand and interpret past and present events and predict future events.
- 2.3 Students identify and describe systems, subsystems, and components and their interactions by completing tasks and/or creating products.
- 2.4 Students use models and scales to explain or predict the organization, function, and behavior of objects, materials, and living things in their environment.
- 2.5 Students understand the tendency of nature to remain constant or move toward a steady state in closed systems.
- 2.6 Students complete tasks and/or develop products which identify, describe, and direct evolutionary change which has occurred or is occurring around them.

Arkansas Learner Outcomes, September, 1991

The following four outcomes define what we expect all students to know and be able to do upon graduation from Arkansas public schools:

1. Students will acquire core concepts and abilities from the sciences, arts, the humanities, mathematics, social studies, language arts, foreign languages, physical / health education, practical living studies, and existing / emerging technologies.
2. Students will apply various thinking / problem solving strategies to issues related to all subject matter fields and to real life situations.
3. Students will exhibit / demonstrate attitudes and attributes which will promote mental, physical, and emotional health.
4. Students will demonstrate good citizenship and function as positive members of the local, national, and world communities.

For the first outcome, the following indicators are listed in the area of science:

Science

Recommended Indicators

As a result of education in grades K-12, all students should be able to:

- Use thinking skills (observing, comparing, ordering, categorizing, inferring, questioning, and applying) to solve a problem using scientific methods.
- Apply scientific concepts: the universe and their place in it; the earth and how it works; the environment; the diversity and *development* of life; the human organism as a biological, social, and technological species; heredity and the human life cycle; natural systems and man-made systems; matter; energy; force; and motion.
- Demonstrate how humanity impacts the environment, climate, population growth, disease control, pollution, and waste and how citizens can bring about social, technological, and environmental change in a responsible and democratic manner.
- Apply the relevance of science in their daily lives.
- Design, conduct experiments, read, and communicate scientific information.
- Use math in all appropriate areas of science (arithmetic, symbolic math, statistics / probability, and measurement).

How Arkansas plans to assess the standards

Students should engage in a variety of meaningful learning tasks in order to meet the challenging expectations established by these learner outcomes. What follows is a brief list of examples of the kinds of work which should characterize an outcomes-based education.

Examples of student work:

Presented with case studies of student drug abuse, establish possible causes and identify critical points at which alternative decisions and behaviors could have occurred.

During a political campaign, identify propaganda techniques and logic fallacies in advertisements, speeches, and debates; through an oral presentation or student debate, summarize the major strengths and weaknesses of each candidate's platform.

When faced with a personal obstacle or problem, analyze causes, establish a course of action, and confidently persevere until the desired end is accomplished. Develop a commitment to a plan for a study schedule which requires a major change in behavior.

Identify a satisfying career or vocation and pursue it by engaging in the necessary course of education and / or training.

Research the origin of current problems in the Middle East and develop a plan to insure peace and stability in the region; roleplay U.N. ambassadors debating the merits of the plan(s).

Participate in community service activities which demonstrate concern for the needs of others or the community as a whole.

Analyze the strengths of a foreign competitor, and based on facts or research data, recommend changes in a U.S. industry designed to capture a larger share of the world market.

**Oregon's "Curriculum Content Framework
for Oregon Public Schools," March 4, 1994**

The complete set of standards for science are as follows:

Science

1. The study of science facts, concepts, principles and theories from physical systems, earth and space systems, and life systems that provide a foundation for understanding and applying science.
2. The study of science as inquiry, a set of interrelated processes by which scientists pose questions, investigate phenomena, and cultivate deeper understanding about the natural world.
3. The study of the connections among and within the natural sciences, between science and mathematics, and between science and technology/engineering.
4. The study of how science and technology are influenced by and, in turn, influence the culture and context in which they operate.

How Oregon plans to assess the standards

Oregon's implementation of the standards requires schools to submit a plan showing how the contents requirements will be incorporated into its instructional program. The state plans to provide a pool of sample assessment tasks that can be used in the classroom, and expects the teachers to design their own classroom-embedded assessment tasks, as well.

**Michigan's "Academic Core Curriculum Content Standards"
for Science, July 28, 1994**

All students will:

Construct new personal and scientific knowledge:

1. ask questions that help them learn about the world; design and conduct investigations using appropriate technology; learn from books and other sources of information; communicate their finding using appropriate technology; and reconstruct previously learned knowledge;

Reflect on the nature, adequacy, and connections across scientific knowledge:

2. analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge; how science is related to other ways of knowing; how science and technology affect our society; and how people of diverse cultures have contributed to and influenced developments in science;

Use scientific knowledge from the life sciences in real world contexts:

3. apply an understanding of cells to the functioning of multicellular organisms; and explain how cells grow, develop, and reproduce;
4. use classification systems to describe groups of living things; compare and contrast differences in the life cycles of living things; investigate and explain how living things obtain and use energy; and analyze how parts of living things are adapted to carry out specific functions;
5. investigate and explain how characteristics of living things are passed on through generations; explain why organisms within a species are different from one another; and explain how new traits can be established by changing or manipulating genes;
6. explain how scientists trace the origin and development of species; compare ways that living things are adapted (suited) to survive in their environments; and analyze how species change through time;
7. explain how parts of an ecosystem are related and how they interact; explain how energy is distributed to living things in an ecosystem; investigate and explain how communities of living things

change over a period of time; describe how materials cycle through an ecosystem and get reused in the environment; and analyze how humans and the environment interact;

Use scientific knowledge from physical sciences in real world contexts:

8. measure and describe the things around us; explain what the world around us is made of; identify and describe forms of energy ;and explain how electricity and magnetism interact with matter;
9. investigate, describe and analyze ways in which matter changes; describe how living things and human technology change matter and transform energy; explain how visible changes in matter are related to atoms and molecules; and how changes in matter are related to changes in energy;
10. describe how things around us move and explain why things move as they do; demonstrate and explain how we control the motions of objects; and relate motion to energy and energy conversions;
11. describe sounds and sound waves; explain shadows, color, and other light phenomena; measure and describe vibrations and waves; and explain how waves and vibrations transfer energy;

Use scientific knowledge from the earth and space sciences in real world contexts:

12. describe the earth's surface; describe and explain how the earth's features change over time; and analyze effects of technology on the earth's surface and resources;
13. demonstrate where water is found on earth; describe the characteristics of water and how water moves; analyze the interaction of human activities with the hydrosphere;
14. investigate and describe what makes up weather and how it changes from day to day, from season to season, and over long periods of time; explain what causes different kinds of weather; and analyze the relationships between human activities and the atmosphere.
15. compare and contrast our planet and sun to other planets and star systems; describe and explain how objects in the solar system move; explain how the solar system began; and explain how we learn about the universe.

Here is an example of benchmarks for the last standard

Benchmarks for Content Standard 15: All students will compare and contrast our planet and sun to other planets and star systems; describe and explain how objects in the solar system move; explain how the solar system began; and explain how we learn about the universe (Solar System, Galaxy, and Universe).

Elementary	Middle School	High School
• Describe the sun, moon, and the earth.	• Compare the earth to other planets in terms of supporting life.	• Compare our sun to other stars and star systems. • Explain common observations of the day and night sky.
• Describe the motions of the earth and moon around the sun.	• Describe, compare, and explain the motions of planets, moons, and comets in the solar system. • Describe and explain common observations of the day and night skies.	• Describe the position and motion of our solar system in the universe. • Explain why seasons occur on earth.
	• Explain how the solar system formed.	• Explain how stars form and how they produce energy.
		• Explain how technology and scientific inquiry helped us learn about the universe.

How Michigan plans to assess the standards:

"Assessment and instruction are so tightly interwoven that one is indistinguishable from the other, and both include student work—exhibitions, projects, portfolios—and foster student self-evaluation." (p.8)

Sample Items From the French *Baccalaureat* and the German *Abitur* College-Entrance/School Completion Exams in Science

Excerpt from 1992 French Baccalaureat Exam in Biology (Time allotted for entire exam: 3 hours)

SECTION 2

PART A. Organized Recall of Knowledge (10 points total)

Show that the hypothalamus is the integration center in fighting cold. In doing this, explain the process of integration of afferent messages at the level of a neuron of this center, and using the example of an effector controlled by hormones, show that the hypothalamus participates in maintaining body temperature in response to cold by adapting the response of the effector selected. ⑥

PART B. Interpretation of Documents (10 points total)

Document 1

In the brains of people displaying the characteristics of this disease, there are observable deposits of a protein "P" which is synthesized in larger-than-normal quantities. One segment of

the polypeptide chain of this protein P has been sequenced.

Segment of the polypeptide chain:

--- GLU - PHE - ARG - HIS - ASP - SER - GLY---

Question

1. Based on the sequence of amino acids proposed and with the aid of Document 1, reconstitute a possible sequence of the gene segment responsible for producing the polypeptide segment. Specify the stages of your approach, but do not detail the mechanisms. (3 points)

Documents 2a, 2b, and 2c

Document 2a illustrates the karyotype of a subject suffering from Down's syndrome, while Document 2b illustrates that of a normal individual.

Question

2. Provide two types of information gained by the comparison of these two karyotypes. (1 point)

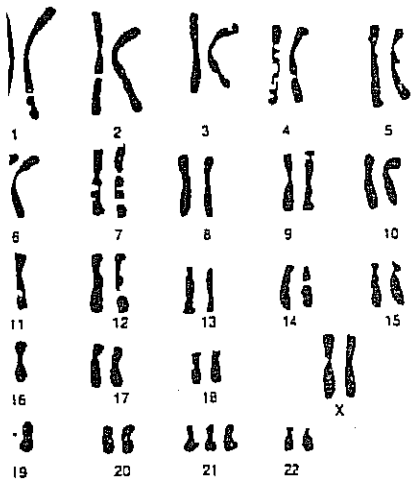
Document 1
NUCLEOTIDES - POSITION 2

		U	C	A	G	
NUCLEOTIDES - POSITION 1	U	UUU } Phenylalanine	UCU }	UAU } Tyrosine	UGU } Cysteine	U
		UUC }	UCC }	UAC }	UGC }	C
		UUA } Leucine	UCA }	UAA }	UGA }	A
		UUG }	UCG }	UAG }	UGG } Tryptophane	G
	C	CUU }	CCU }	CAU } Histidine	CGU }	U
		CUC }	CCC }	CAC }	CGC }	C
		CUA }	CCA }	CAA }	CGA }	A
		CUG }	CCG }	CAG }	CGG }	G
	A	AUU } Isoleucine	ACU }	AAU } Asparagine	AGU } Sérine	U
		AUC }	ACC }	AAC }	AGC }	C
		AUA } Methionine	ACA }	AAA }	AGA }	A
		AUG }	ACG }	AAG }	ACG } Arginine	G
	G	GUU } Valine	GCU }	GAU } Acid aspartic	GGU }	U
		GUC }	GCC }	GAC }	GGC }	C
		GUA }	GCA }	GAA }	GGA }	A
		GUG }	GCG }	GAG }	GGG }	G
						NUCLEOTIDES - POSITION 3

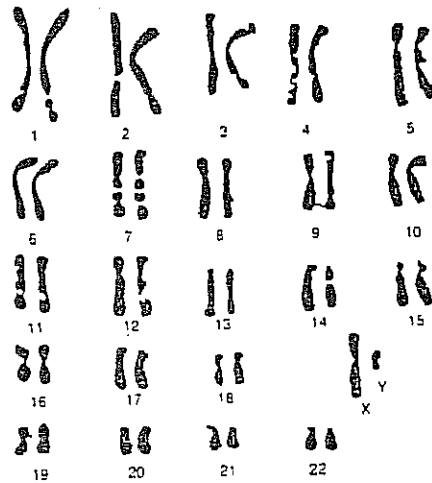
Genetic Code - mRNA. A: Adénine U: Uracil G: Guanine C: Cytosine.

Ala: Alanine. Arg: Arginine. Asp: Aspartic acid. Asn: Asparagine. Cys: Cysteine. Glu: Glutamine. Glu: Glutamic acid. His: Histidine. Ile: Isoleucine. Leu: Leucine. Lys: Lysine. Met: Methionine. Phe: Phenylalanine. Pro: Proline. Ser: Serine. Trp: Tryptophan. Tyr: Tyrosine. Val: Valine. Gly: Glycine. Thr: Threonine.

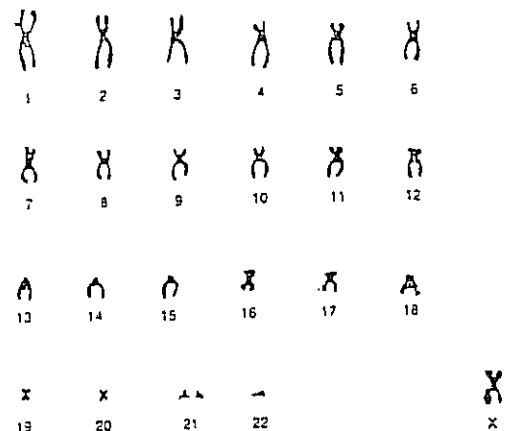
Document 2a
karyotype of a subject suffering from Down's syndrome.



Document 2b
Normal human karyotype



Document 2c
Karyotype of a spermatocyte II



Document 2c represents the karyotype of a spermatocyte II from a male subject with a normal karyotype. This spermatocyte II is identical to that which made the birth of subject 2a possible.

Question

3. After analyzing the karyotype of Document 2c, draw an *annotated* diagram of the anaphase of the division, which is responsible for this type of spermatocyte II. (In your answer, consider only the chromosomes affected by the abnormality and the gender chromosomes.) (2 points)

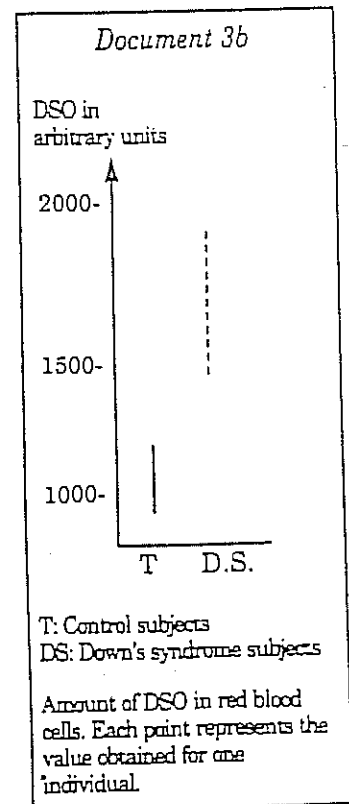
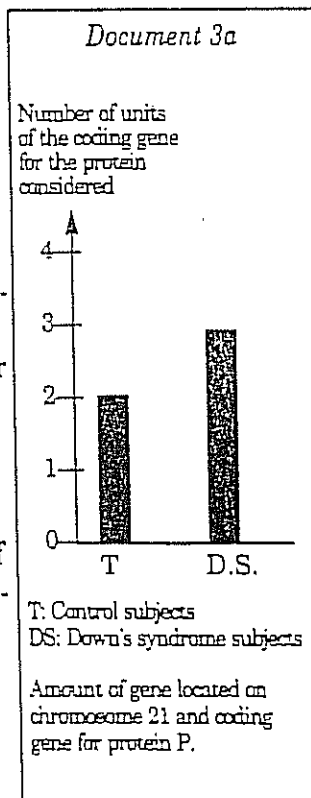
Documents 3a and 3b

Using radioactive tracers, the coding gene for the protein P considered in Part 1 was identified and quantified. This gene was located on chromosome 21. Document 3a shows the number of units of this coding gene for protein P for healthy subjects (T) and for subjects suffering from Down's syndrome (DS). Document 3b relates to the amount of an enzyme, dimutase superoxide (DSO), found in the red blood cells of healthy individuals (T) and of individuals suffering from Down's syndrome (DS). This enzyme is coded by a single gene.

Question

4. Based on arguments drawn from documents

3a and 3b and from karyotypes 2a and 2b, suggest a hypothesis regarding the location of the coding gene for the enzyme DSO. In developing this hypothesis, identify the general location of genes P and DSO on a diagram on the chromosomes of a subject suffering from Down's syndrome. (4 points)



Part III: Genetics

Hereditary deafness can be caused either by anomalies in the inner ear (Family A) or by the degeneration of the auditory nerve (Family B). Deaf people have intimate social contacts among themselves and frequently marry. Illustration 1 shows the family trees of two families in which types of deafness appear.

1. a. Decide whether this handicap in Family A and Family B is dominant or recessive, and whether it will be inherited autosomally or gonosomally. Explain with the aid of Illustration 1. Give the genotypes of persons 1 through 6.
- b. Explain why person 7 and 8 are phenotypically healthy. Give their genotypes.

Questions 2-3

For about 20 years it has been possible, through amniocentesis (aspiration of amniotic fluid), to determine certain inherited ailments in the embryo. To do this, it is necessary to construct a karyogram.

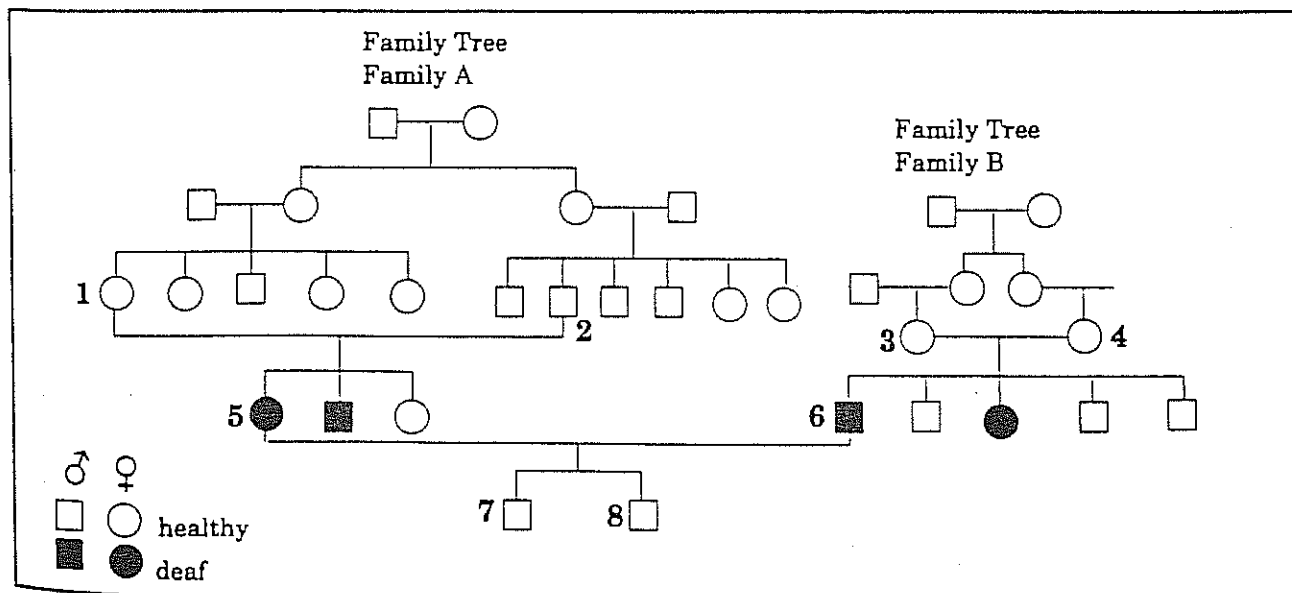
2. a. What does a karyogram represent and what information can it give? Ⓐ
- b. Why can't the deafness be diagnosed even with a karyogram? Ⓐ
3. What inherited human ailments can be recognized with the help of a karyogram? Give three examples and state the corresponding changes in the karyogram. Ⓐ

Questions 4-5

In 1908 HARDY and WEINBERG, independently of one another, formulated an important law of population genetics.

4. a. Explain what is meant by "population" in population genetics. Ⓐ
- b. Formulate the HARDY-WEINBERG law and explain what it states. Under what conditions is the HARDY-WEINBERG law valid? Ⓐ
5. A certain recessive hereditary trait appears in 16% of a population. How high is the percentage share of the carriers of the recessive allele? Ⓐ

Illustration 1: Family Tree



HOW DO WE COMPARE?

Matt Gandal

American Federation of Teachers Educational Issues Department

Reprinted from What College-Bound Students Abroad are Expected To Know About Biology, 1994, co-published by the American Federation of Teachers and the National Center for Improving Science Education/The Network, Inc., with permission.

Editor's Comment: What follows is the final chapter of a book entitled *What College-Bound Students Abroad Are Expected To Know About Biology*. The preceding chapters provide detailed examples of the school completion / college-entrance examination procedures in England and Wales, France, Germany, Japan, and the United States. The test items reprinted on pages 34-36 provide only a small glimpse of the nature of these examinations. The final chapter that follows summarizes the differences found among these countries. Find information on obtaining the complete research report at the end of the article.

Perhaps the most striking finding from our research has nothing to do with which country's exams are hardest, but rather with how many youngsters take them. Every country but the United States manages to bring a significant number of students up to the level of performance demanded by advanced subject-specific exams. As illustrated in the accompanying graph, approximately one-third to one-half of the age cohort in England and Wales, France, Germany, and Japan take advanced subject-specific exams like the ones shown on pages 34-36 (though not necessarily in biology). In sharp contrast, only 7 percent of U.S. 18-year-olds take one or more AP exams.

Somelike to downplay the high standards reached by students in other countries by labeling those systems as elitist. But this claim is difficult to justify in light of the numbers. As the graph shows, from one-quarter to over one-third of the age cohort in every country but the United States is able to meet the high standards reflected in these exams. (It is important to note, however, that the AP exams are offered in fewer than half of the high schools in the United States and—unlike the other examinations on pages 34-36 they are not required for university entrance.

How do these countries prepare so many students to take these exams? Is there anything we in the United States can learn from these countries? Indeed, there are some basic ingredients in their education systems that differ from practices in the United States and that warrant further discussion.

National Coordination of Curricula, Assessments, and Incentives

In each country except the United States, college-bound students know that if they want to study in a university they will have to pass a demanding set of

exams. Furthermore, their course of study in secondary school is strongly tied to these exams. This reality serves as a powerful incentive for students to work hard and take school seriously. It also gives them, their parents, and their teachers something tangible to aim for.

Perhaps the most striking finding from our research has nothing to do with which country's exams are hardest, but rather with how many youngsters take them.

In the United States, by contrast, a high school diploma is normally conferred based on taking a certain number of courses, not on reaching a certain standard of achievement. Although few states, including New York and California, administer voluntary exams that may influence university admission and are tied to the curriculum covered in high school, there are no exams that all students nationwide must pass in order to be eligible for university study. Admission standards vary from institution to institution to the extent that some open-enrollment colleges and universities permit almost any student to attend. Unless students are among the few who plan on applying to highly selective institutions, there are no external incentives encouraging them to work hard and do well in difficult courses. This is markedly different from the incentives their European and Japanese counterparts face.

Central to each of these successful foreign systems is a clear relationship between the curricula and the exams. If schools are to prepare students to do well on a set of high-stakes exams, these exams must test what is covered in the curriculum. This is

also essential to a meaningful incentive system for students. Students who see a link between what they are learning each day in school and the exams they will eventually need to take are likely to be motivated to concentrate on their schoolwork.

Three of the four foreign countries we examined—England and Wales, France, and Japan—have national curricula (developed by the national government) that describe, with varying degrees of specificity, the subject matter that students should be exposed to during their elementary and secondary years. In each of these countries, the key assessments taken by students throughout their educational careers are tied to the curriculum.

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Although there is no national curriculum in Germany, and each *Land* (or state) exercises authority over education within its boundaries, the link between what is taught and what is tested is strong. In the case of the *Abitur*, it is the teachers themselves who are responsible for coming up with the questions for the exams in most *Länder*. However, in doing so they are expected to follow guidelines set at the state and national levels by various government bodies. This arrangement serves both to maintain some comparability of curricula and exams across the country and to ensure that exams of such importance are firmly rooted in the curriculum taught by the teacher. It is also testimony to the significant trust and responsibility vested in German teachers.

In contrast, the two exams that most commonly serve as a gateway to college in the United States, the SAT and ACT, are not based on the curriculum students study in school. The AP exams are based on AP curricula, but those courses only last for a limited time, usually one year. Also, the courses are not required as a prerequisite for taking the AP exams.

National Leadership and Local Autonomy

There are concerns in these foreign countries, as in the United States, about the extent to which national leadership with respect to educational standards and exams impinges upon local autonomy. Each country addresses the issue of local control in a different way. But in every one of these countries, the national government plays some role in establishing or coordinating the establishment of a publicly known, rigorous standard of achievement. In

England and Wales, France and Germany, before students can be admitted to universities, they are required to pass certain exams that ministerial authorities ensure are pegged to a comparable standard. Yet none of these countries has a single national test that all college-bound students must take.

In England and Wales, France and Germany, students in various parts of each country take exams that different governmental or government-monitored organizations develop according to a national specification. Hence, for these countries, the “national” exam is actually a set of comparable exams used by different regions.

In Japan, each university exercises its autonomy by developing its own set of entrance exams, though the content of these exams reflects the national curriculum. Japan does have a set of national exams—the UECE, produced by university faculty on behalf of the Ministry of Education, Science, and Culture—that college-bound students may take, but only a portion of the universities require students to take these exams. Only universities’ individual entrance exams are required of all students aspiring to higher education.

Each country addresses the issue of local control in a different way. But in every one of these countries, the national government plays some role in establishing or coordinating the establishment of a publicly known, rigorous standard of achievement.

Narrowly Defined Versus Broad-Based Curricula For College-Bound Students

The caliber of these foreign exams and the corresponding pass rates may lead one to wonder whether students in these countries are becoming proficient in some subjects at the expense of others. Are students who spend their time studying for these biology exams neglecting other important subject areas?

In England and Wales, France, and Japan, the national curricula ensure that all students are exposed to challenging courses in core subject areas such as language/literature, math, science, and history. In Japan, the national curriculum applies to students all the way through high school. In England and Wales and in France, college-bound students begin to specialize and narrow their focus upon entering the upper level of secondary schooling. French students choose among 38 different

baccalauréat tracks, each with its own set of courses and exams, usually numbering between seven and ten. Students in all tracks, however, take courses and exams in some or all of the core subjects previously mentioned. In England and Wales, those studying for their A-levels normally limit their studies to three subject areas in which they have chosen to be examined. Universities and departments within universities have varied criteria on the number and subjects of exams that must be passed by applicants.

In Germany, all *gymnasium* students are required to take certain core courses all the way through secondary school, including their final two years as they study for the *Abitur* exams. Students eventually choose four subjects in which to take the exams, but they are required to take at least one in each of three major curricula areas: language, literature, and the arts; social sciences; and math, science, and technology. Course grades as well as the exams are factored into each student's final *Abitur* score.

College-bound students in the United States are not required to take any advanced subject-specific exams. The most common requirement of college-bound students is that they have obtained a minimal number of course credits—or Carnegie units—though this is not necessarily a reliable indicator of their academic performance. Those who take AP exams may do so in any subject in which the exams are offered, but there are no government or university requirements in terms of subject areas or numbers of exams to be taken.

Which Countries Exams are the Most Rigorous?

Comparing exams at this level is not an easy task. As part of a separate project being undertaken by the National Center for Improving Science Education, an international team of experts has been assembled to make comparisons of these and other exams. (The full report from that effort will be released in late 1994.)

While we cannot draw any final conclusions about which exams are the most rigorous, we can provide readers with a framework for making their own comparisons. A variety of factors contribute to the rigor of an exam. Some have to do with characteristics of the exams themselves, others with elements of the examination systems that affect either the exams or the students taking them. Following is a discussion of some of the more significant factors one should consider when making judgments about rigor.

- *Exam Length.* The exams differ significantly in length. The Tokyo University entrance exam in biology is two and one-half hours long, whereas students in England and Wales are expected to spend up to nine hours on the A-level. A longer exam does

not necessarily translate into a more rigorous exam, though it does require students to demonstrate their command over a substantially wider or deeper range of material. The more important issue, however, is how much material students are expected to work through—and at what level of complexity—during a given amount of time. For example, are Japanese students expected to cover more material at a more complex level in the two and one-half hours than their counterparts in England and Wales during the same amount of time? If so, that is more meaningful than the difference in length alone.

Longer exams, such as the A-level, require students to display higher levels of discipline and fortitude.

There is a further implication of exam length that is also worth considering, though it is not as relevant to the discussion of rigor. Many readers will be impressed when they learn that students in England and Wales are expected to spend nine hours on an exam, and rightly so. It is rare that we ask the same of students in this country. The fact is, longer exams, such as the A-level, require students to display higher levels of discipline and fortitude.

- *Question Type.* There are a variety of different types of questions used in the five countries, including multiple choice, short answer, essay, and even an example of a performance-based exercise. The European exams only employ open-ended questions. These require responses varying from short answers (words, phrases, a sentence or a few sentences) to extended essays (a paragraph or multiple paragraphs). The U.S. and Japanese tests are the only ones to use multiple choice questions. In fact, 60 percent of the AP biology score is compiled from multiple choice questions.

The European exams only employ open-ended questions.

To what extent does question type reflect on rigor? There is no rule that says multiple choice questions are any easier to answer than open-ended items. However, a few important differences are worth pointing out. First, multiple choice questions give students the opportunity to guess the correct answer, whereas other types of questions provide less of an opportunity to do so. Second, there are certain limitations to what multiple choice questions can

assess. Whereas open-ended questions can ask students to make and defend judgments, demonstrate scientific method, explain complicated logic in clear prose, and otherwise show how they arrived at their answers, multiple choice questions cannot. Third, though multiple choice questions can be crafted to assess higher order thinking, oftentimes they simply ask students to recall facts, definitions, equations, etc. from memory. (It should be pointed out, however, that the process of scoring open-ended items is more complicated and labor-intensive than it is for multiple choice.)

In contrast, the European exams make greater use of questions that require students to innovate, show their work, explain their answers, and back up their conclusions. For example, students taking these exams must be able to work through the often complicated steps necessary to solve the scientific problems posed, give explanations based on scientific principles, and plan or carry out scientific experiments. While the AP and Tokyo University entrance exams do require students to engage in these types of activities, they do so for a relatively small proportion of the exam. As mentioned earlier, both of these tests make use of multiple choice questions, the AP much more so than the Japanese exam. Of 24 questions on the Tokyo University exam, 10 are multiple choice questions. Of the 124 questions on the AP exam, 120 are multiple choice, though the four open-ended questions represent 40 percent of the total grade.

European exams make greater use of questions that require students to innovate, show their work, explain their answers, and back up their conclusions.

• *Breadth Versus Depth.* Educators are always debating this issue: Is it better to expose students to a large body of material or to limit the material and teach it in greater depth? The same is often asked of exams. There is no correct answer to this question, but it is instructive to think about how each country approaches the issue in these exams. While it is clearly true that an exam with greater depth and breadth is more rigorous than one with less of both, in most cases the issue is not so clear-cut. Of the exams we examined, for example, some emphasize depth more than breadth, others take the opposite approach, and some try to do both.

It is misleading to think about the depth and breadth of an exam, and impossible to accurately judge its rigor, without also looking at the curricu-

lum students study in preparation. The exam is only part of a larger equation. Take France, for example. Even a quick read through these tests reveals a significant difference between the *baccalauréat* and the AP. While the French exam requires students to go into considerable detail on a small number of topics, the AP covers a substantially wider area in much less depth. Does this mean that the *baccalauréat* requires depth of knowledge but not breadth? Not necessarily. If the curriculum students study prior to taking the exam has breadth, then the students must know all of the subject matter in depth in order to do well on the exam, since they do not know which topics will be chosen. In this situation, neither depth nor breadth has been sacrificed, and it makes for a very rigorous test. On the other hand, if the French curriculum were narrowly defined and studied in depth, the *baccalauréat* would be considerably easier for students.

The England-Wales A-level in biology is an example of an exam that is able to emphasize both depth and breadth. Nine hours long, it covers quite a bit of ground, some of it in significant depth.

• *Complexity of Knowledge.* One of the most important issues to confront when comparing exams, but also one of the most difficult, is how sophisticated or complex students' knowledge of a particular topic or concept must be. This is at the heart of what it means for one test to be more rigorous than another. One way to make such a comparison is to isolate questions of the same type and on the same topic, and determine which calls for more advanced knowledge. It is important to keep in mind the depth/breadth issue here, however, because some exams may cover more content but require a less thorough understanding of each issue.

• *Grading Standards.* Comparing the complexity of the questions on these exams only deals with part of the issue. Just as important is how well students are expected to do on those questions. What is considered a good answer? How much is each question worth? Who grades the answers and using what scale? Are the scales for passing exams comparable? For example, is 60 percent considered a pass in one country but 70 percent a pass in another? The process of grading exams is different in each country, and in every case it is quite complicated. This book offers a glimpse at how the exams are graded, what is considered a strong answer, and what is needed to pass, but a more serious investigation is necessary in order to draw final conclusions.

• *Preparation.* When considering how difficult these exams are for students, it is important to determine how well prepared students are to take them. As mentioned earlier, in order for an assessment to be a

useful educational tool, it must be linked to the curriculum students study. It would then follow that the stronger the link between an exam and the curriculum, the better prepared the students will be to take it. (Of course this assumes, among other things, that educators do their part to effectively teach the curriculum.) If this is the case, it is important to ask certain questions: Do students in each country receive comparable instructional time in a tested subject area? To what extent is the secondary curriculum tailored to the subject areas of the exams? Do students in one country receive more instructional time in biology than students in another?

Students in England and Wales who take the A-level in biology normally take exams in two other subjects of their choice, whereas French students taking the *baccalauréat* in biology must also take exams in French, history/geography, mathematics, philosophy, physics/chemistry, and a foreign language.

Other important questions to ask: To what degree can teachers and students in these countries anticipate exam topics, and thus study narrowly in preparation? To what extent can students learn how to do well on the exams through mastering certain methods, apart from the content knowledge?

A Broader Look at the Question of Rigor

What additional academic expectations do students face above and beyond the particular exams discussed in this book? After all, the ultimate question many readers will want to answer goes beyond comparing the particular exams and deals more broadly with the question of rigor. Put simply, how demanding are the expectations for college-bound students in these countries? Following are some of the issues worth considering:

- *Scope of the Examination System.* Beyond the biology exams, how many other subjects are students tested on? How many of those subjects are outside the sciences? For example, so students who take these biology exams take other science exams such as physics or chemistry? Do they take exams in other subject areas, such as language/literature, mathematics, or history? Students in England and Wales who take the A-level in biology normally take exams in two other subjects of their choice, whereas

French students taking the *baccalauréat* in biology must also take exams in French, history/geography, mathematics, philosophy, physics/chemistry, and a foreign language.

- *How Much Does Each Exam Count?* In every country but the United States, the exams in this book must be passed to gain admittance to a college or university. But there is a big difference between the value of a single exam in Germany and in England and Wales. A-level candidates take an average of three exams, and their scores on these exams are the main piece of information weighed by admissions offices in the universities. In Germany, on the other hand, students' scores on their four *Abitur* exams make up only a fraction of their total *Abitur* grade. While this does not make one exam easier than another, it may put comparatively greater pressure on students to do well on the A-level.

- *Expectations Beyond the Exams.* In the years leading up to the exams, do students have to study subject areas in which they will not be examined? Or is every course tied to a corresponding examination? In Germany, *Abitur* candidates must take 28 courses over a two-year period, but they are only tested in four of those areas. By contrast, in England and Wales, A-level candidates study almost exclusively the subjects they will be examined in.

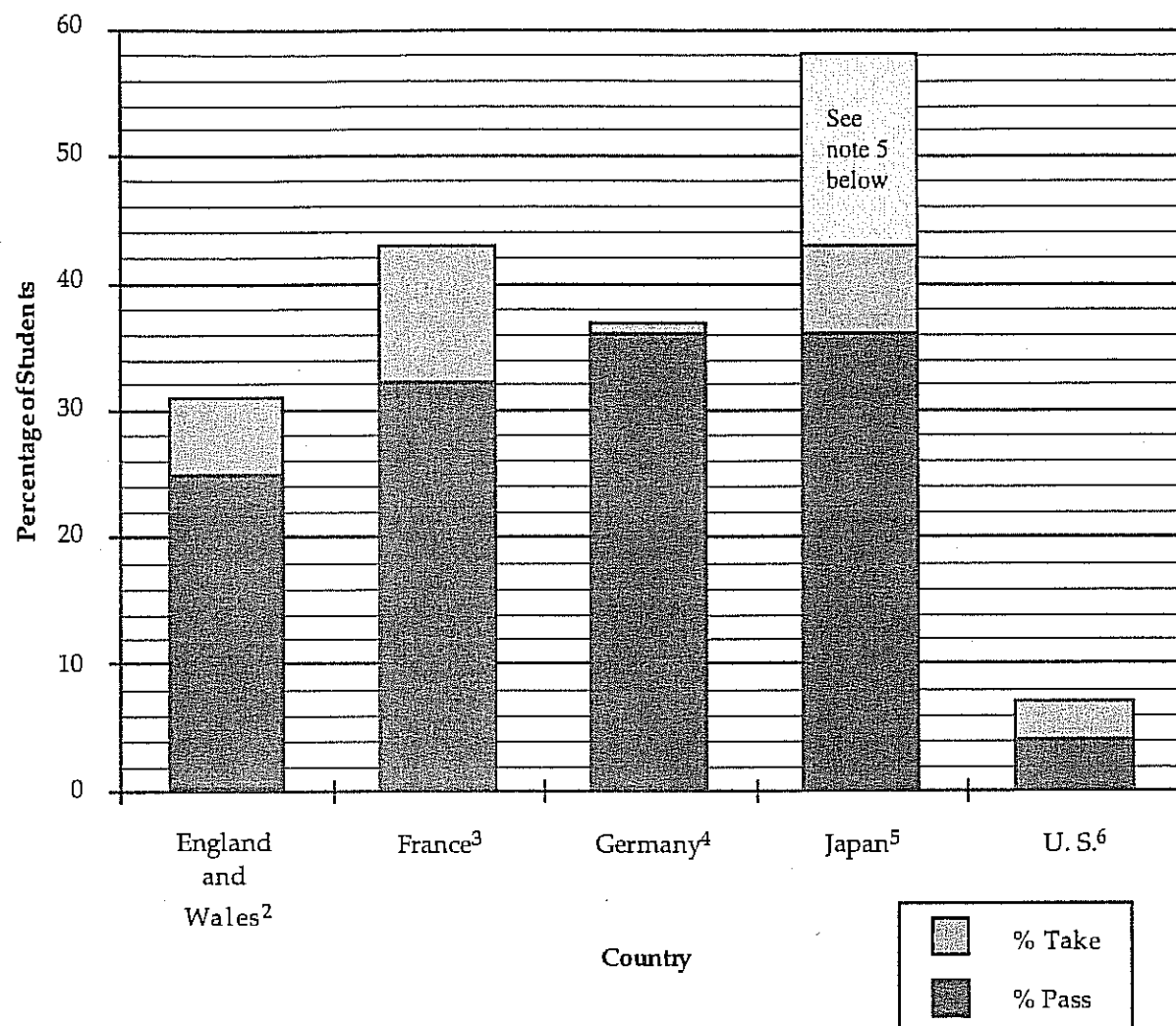
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These are just some of the factors readers should consider when comparing the exams discussed. It is by no means an exhaustive list. But it should serve as a helpful guide to anyone interested in contemplating what it means to have high standards for students. That is, after all, the purpose of the book from which this report is drawn and the AFT's *Defining World Class Standards* series—to provide people in the United States with a firsthand look at what is expected of students in other countries so that we may become more informed judges of the standards we set for our own students.

What College-Bound Students Abroad Are Expected To Know About Biology was co-sponsored by the American Federation of Teachers and the National Center for Improving Science Education, and is the inaugural volume of the AFT's *Defining World Class Standards* series.

Copies of the book are available for \$10. Shipping and handling costs are included. Send prepaid orders to Biology Book, AFT Order Dept., 555 New Jersey Ave. N.W., Washington, D.C. 20001. Checks should be made payable to the AFT.

Figure 1. Percentages of Age Cohort¹ Who Take and Pass at Least One Advanced Subject-Specific Exam.



¹ The age cohort for England and Wales, France, and the United States is approximately 18-year-olds, the age at which most students in these countries complete secondary school. For Japan, the age cohort is approximately 18- to 21-year-olds (see Note 5 below). For Germany, the age cohort is all 18- to 21-year-olds; the range is due more to frequent grade retention and the fact that the *Abitur* is taken at the end of what would be a 13th grade in the other countries.

² A-level candidates generally take three subject-specific exams. Approximately 15 percent of the age cohort earned three or more passes, 6 percent earned two passes, and 4 percent earned one pass. (Source: Associated Examining Board)

³ *Baccalauréat* candidates generally take subject-specific exams in six or more subjects, depending on the track chosen. Percentages shown represent the proportion of the age cohort who tried for and received one of the general (academic) *baccalauréats*. Overall, 51 percent of the age cohort earned either an academic or vocational *baccalauréat*. (Source: Embassy of France)

⁴ *Abitur* candidates take four subject-specific exams, at least two of which must be at an especially advanced level. (Source: Embassy of the federal Republic of Germany)

⁵ Since Japanese students must take subject-specific exams in order to apply to universities, and pass these exams in order to gain admission, the figures in this chart represent the number of Japanese applying to and enrolling in universities in 1990. It is common for university applicants who fail the entrance exams to retake them in subsequent years. It is also common for some university applicants to delay applying to universities for the first time for one or more years. For these reasons, the age cohort used for Japan includes individuals over the age of 18. The reason for the range shown here is that approximately one-quarter of applicants in 1990 had graduated from high school in earlier years, but it is not clear how many of them had previously applied to college, and thus had taken the exams already. The 43 percent figure assumes that *all* applicants who had graduated in years prior to 1990 had previously applied to universities. The 58 percent figure assumes that no applicants who had graduated in years prior to 1990 had previously applied. We estimate the actual percentage of first-time applicants in 1990 to be between 45 percent and 50 percent of the age cohort. (Source: "The University Exams in Japan" by Tae Ryu)

⁶ (Sources: Advanced Placement Program and the U.S. Department of Education publications)

International Math and Science Study Finds U.S. Covers More in Less Depth

Lynn Olson

Reprinted from *Education Week*, June 22, 1994, with permission.

Albuquerque, NM. Science and mathematics curricula for elementary and secondary students in the United States typically cover more topics, but in less depth, than those of other countries, according to the preliminary results of an international study.

The Third International Mathematics and Science Study, or TIMSS, compares math and science curricula in roughly 50 countries. It also looks at student achievement at ages 9 and 13, and at the completion of secondary schooling.

Researchers will release the first reports from the international comparisons next year. The volumes will focus on the content of each nation's curriculum, how it is sequenced, and the performance level expected of students. Actual student testing will begin in the fall in the Southern Hemisphere.

U. S. researchers involved with the effort gave a report on their work during an annual assessment conference sponsored by the Council of Chief State School Officers here last week.

As part of the study, researchers from the participating countries have conducted detailed analyses of national and regional curriculum guides for math and science and of the most commonly used textbooks at, approximately, grades 4, 8, and 12.

American textbooks are "very encyclopedic" in their orientation, said William H. Schmidt, the national research coordinator for TMSS in this country and an applied statistician at Michigan State University.

"We cover lots and lots of things, more than anybody else in the world," he said. "But we don't do anything in great depth. The rest of the world seems to focus."

Science textbooks in the United States typically are two to four times longer than those in other countries, he noted, "and yet it's just these constant snippets of information." While some countries expect 13-year-olds to cover 10 to 15 scientific topics in depth, U. S. textbooks rush them through 30 or 40 topics.

In addition, Mr. Schmidt said, there are "astrophysical differences" in how textbooks are struc-

tured. In many Asian countries, the science texts consist largely of pictures that detail the steps of an experiment. In contrast, he said, the U.S. textbooks used by 13-year-olds are dense with verbiage.

Some Surprising Comparisons

The international study is said to be the most comprehensive of its kind ever undertaken. In addition to analyzing more than 500 textbooks and 500 curriculum guides, detailed background questionnaires of educational experts, administrators, teachers, and students examine the structure of the education system in each country and what is actually taught in classrooms.

The United States has more in common with Bulgaria than with South Africa, Britain, Canada, or New Zealand.

"Nobody has ever attempted anything of this sort internationally," Mr. Schmidt said. He added that the data could help inform the debate about what constitutes "world class" standards.

"How in the heck could you ever compare kids' achievement across the world when there are all these differences to begin with?" he asked. "It has to be a very sophisticated comparison."

One option, he said, is for the United States to compare the performance of its students with that of students in countries that have a generally comparable curriculum.

But attempts to group countries according to similarities in their curricula may also yield some surprises. For example, a preliminary analysis of how countries treat topics in the physical sciences in grade 8 finds that the United States has more in common with Bulgaria than with South Africa, Britain, Canada, or New Zealand.

In this country, TIMSS is coordinated by Michigan State University, the National Center for Education Statistics, and the National Science Foundation.

Outcome-Based Learning Is Not Mastery Learning

By Robert E. Slavin

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One of the questions often raised in the debate over outcome-based education (OBE) is whether any research supports this approach. To my knowledge, no studies directly compare students in OBE classes or schools to students in similar control schools. This being the case, advocates on both sides of the debate have attempted to make inferences about OBE from other areas of research.

In particular, opponents of OBE have often cited my 1987 review of research on group-based mastery learning as evidence that OBE is ineffective (Slavin 1987). Such a comparison is inappropriate. The research I reviewed involved strategies in which teachers teach a series of lessons and then give a formative test. Students who score below a pre-established mastery criterion (say, 80 percent correct) then receive a few hours of corrective instruction, while others do enrichment activities. A second summative test is then given, and the cycle may be repeated if many students still score below the mastery criterion.

My review was a response to Bloom's assertion that mastery learning could produce gains of two standard deviations (1984). He based his claim on brief laboratory studies in which students who did not master the material on the first test received substantial additional time, one-to-one tutoring, or both. I concluded that in more realistic settings, mastery learning had far less impressive results. Group-based mastery learning often produced modest increases in performance on tests closely tied to the material being taught, but achievement on broader-based measures did not improve.

I hope it is clear that my review of group-based mastery learning had nothing to do with OBE. In its broadest definition I find it hard to oppose the concept of OBE; who would argue that educational programming should not be based on some idea of what we want students to know or be able to do? On the other hand, it is legitimate to debate what kinds of outcomes we want, how they will be measured, and what happens if students don't achieve them.

In the absence of research, OBE proposals being made by various states and districts must be evaluated on their details. Certainly, the whole community should decide what schools or students should be held accountable for. Without the details of these proposals, I don't have a position on any of them, but I do know that my mastery learning review has nothing to do with the issue one way or the other.

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An English Perspective: The Relevance of Behavioural Approaches and the English National Curriculum

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Background: Two decades ago, England installed as official educational policy the "progressive" form of instruction that is currently becoming state policy in many places of North America (British Columbia, Alberta, Oregon, Kentucky). England recently rejected that policy because of the lowering educational achievement levels of English students. England adopted a National Curriculum in 1988 that defined academic learning outcomes. England now seems to be turning to behavioral (more structured) approaches to teach that curriculum, as indicated in the following article.

Introduction

Within the last 10 to 15 years many changes have taken place in the field of special education. One of the most significant has been the emergence and development of behavioural approaches to teaching children with special educational needs. This amongst other things has required teachers to become familiar with a new vocabulary and set of concepts. As the number of books and articles published in the area has steadily grown, there has been uncertainty about the aims and role of different approaches and very little discussion of their complementary nature and how they interrelate.

Recent books and articles have raised questions about the role of behavioural approaches in mainstream settings (e.g. Ainscow & Twedde, 1988; Dessent, 1988; Whitaker, 1988). Collectively they argue that behavioural approaches are based on some questionable assumptions and have proved difficult to implement satisfactorily in many mainstream settings. In the light of such criticisms, there will be a tendency for teachers in mainstream schools to reject the use of such methods, just at a time when they are being urged, in response to the 1988 Education Act, to adopt similar principles to those which underpin behavioural applications to teaching. It is the emergence of the current legislation and the demands it makes on the teaching profession, that lead me to suggest that an examination of the principles underlying applications of behavioural approaches to children's learning is timely.

This article, therefore, looks at the background to the use of behavioural approaches in the teaching of children thought to be experiencing a difficulty in learning and provides a brief description of three behavioural approaches that have influenced the practice of a considerable number of teachers and educational psychologists. These are: task analysis, direct instruction and precision teaching. The article discusses the assumptions on which they are based, looks at their similarities and considers how they interrelate within a process of assessment known as assessment-through-teaching. Finally the relevance of behavioural approaches in the light of the National Curriculum will be considered. First of all though, the article looks at why behavioural approaches have appealed to many of those working in the field of special education.

The Background to Using Behavioural Approaches

It is principally when a child is seen to be experiencing a difficulty in learning that a teacher's ability to teach is most openly challenged. On a day to day basis, it is usually assumed that the range of educational experiences offered to children contribute to their successful learning. However, the evidence is rarely available to show that it was these experiences, and these experiences alone, that resulted in successful learning. In the majority of cases, it cannot be demonstrated that the daily classroom activities on which children become engaged, result in positive learning outcomes for the children.

When a child fails to learn however, we can conclude that the classroom experiences of that child have not facilitated progress. We know that neither the school or home environments are bringing about the learning we seek. The uncomfortable position to be faced, therefore, is that although we cannot state with complete confidence which experiences lead to successful learning, we do know which experiences have not promoted positive learning outcomes for individual children.

However a number of studies provide grounds for challenging the assumptions underlying the notion that the child is the 'cause' of the difficulty.

The starting position for many teachers when children are seen to fail is that 'these children have not made progress despite our most determined efforts.' Furthermore, there is a tendency to believe that as all the other children have learned as intended, the approaches used have generally been successful. Thus, children that fail to learn, do so because they have a learning difficulty. It is not often that their failure is attributed to the quality and appropriateness of the learning experiences, themselves.

This was clearly illustrated in the study carried out by Croll & Moses (1985) into the assessment and incidence of special educational needs in mainstream schools. They found that teachers (428 junior class teachers in 61 schools) rarely attributed a child's failure to learn either to the school or teacher. Where difficulties were experienced in learning, failure was said to be the fault of the school or teacher for only 3.6% of children seen to be slow learners and 3.4% of children designated as poor readers. This compares to 70.5% of slow learners and 64.8% of poor readers having their failure attributed to 'within child variables.' Home factors were said to account for failure in 29.9% of slow learners and 30.4% of poor readers.

A number of assumptions lie behind the belief that failure is due to 'within child variables' or home factors, rather than being attributed to factors within the school. It is assumed that the child's opportunities for learning have been the same as those available to peers. Equally it is felt that exposure to the same teaching environment as peers, automatically ensures that they have shared the same learning experiences. Finally, and perhaps most importantly, it assumes that everything possible has been done at a local authority, school and classroom level to en-

sure that the child's learning environment has been optimally organised to meet the child's educational need. However a number of studies provide grounds for challenging the assumptions underlying the notion that the child is the 'cause' of the difficulty. For example, Bennett et al. (1984) and the primary survey (DES 1978) indicate that the match between what children are taught and their educational needs is not always appropriate.

Bennett et al. (1984) found that on some occasions, the children in their research were on appropriate tasks for approximately 40% of the time only. They also found that whilst teachers were often able to judge when tasks were too difficult, they never judged tasks to be too easy. Furthermore, given tasks were often seen by the research team to be promoting different areas of learning from those intended by the teachers. Barker-Lunn (1984) showed that a high level of class teaching is still taking place, with the implication that individual children are not having the curriculum geared to their particular needs. We can no longer conclude that being exposed to the same curricular experiences as peers guarantees that children's needs are being met.

The view that children fail to learn because they have a difficulty, resulted in a particular approach to assessment in which the child became the focus of the assessment process. The purpose of assessment was to establish what was wrong with the child. If this could be diagnosed it was hoped that the 'fault' could be corrected through appropriate ameliorative action. A key element in the assessment process was the administration of a series of normative tests and, in particular, IQ tests. During the 1970s, the use of psychometric instruments as an integral part of the assessment procedure was increasingly questioned, particularly after the revelations about Cyril Burt (for his excellent summary of the issues involved here see Colman, 1987).

The application of behavioural approaches represents a shift in emphasis from the questions 'How do children learn?' and 'Why do they fail to learn?' to 'What is the most effective way of teaching?'

It was in this context, that an increasing number of teachers and psychologists adopted a broader perspective in their analysis of why children might be experiencing difficulties in school. It was argued that the appropriateness of the environment in which

learning takes place should also be assessed, together with a thorough exploration of the nature of interactions taking place between pupils and their teachers.

This broader perspective was endorsed, in principle at least, in the 1981 Education Act (DES 1981). Here assessment is seen as a continuous process, focusing on the interaction between a child and his/her environment, in order to establish the child's education needs and the most appropriate provision to meet those needs. It is the suitability of the environment and the child's interaction with it that is being evaluated, not the child. Engelmann & Carnine (1982) have argued that it is only reasonable to conclude that a child has a learning difficulty when it has been demonstrated that the educational environment has been organised in such a way that nothing more could have been done to improve the quality of teaching offered. Thus, the salient aspects of the child's learning environment must be examined in considerable detail.

Behavioural approaches lend themselves to this view of assessment, as they concentrate on aspects of learning and teaching which can be observed, described and influenced by teachers, and which can then lead to principles of effective instruction being articulated for teaching children seen to be experiencing a difficulty in learning.

When the appropriateness of the learning environment is being assessed, teaching becomes experimental as different ways of teaching are tried out and their effects on children's learning evaluated. Behavioural approaches lend themselves to this view of assessment, as they concentrate on aspects of learning and teaching which can be observed, described and influenced by teachers, and which can then lead to principles of effective instruction being articulated for teaching children seen to be experiencing a difficulty in learning.

This then is the scenario in which the use of behavioural approaches have been advocated most frequently by those working in the field of special education. The application of behavioural approaches represents a shift in emphasis from the questions 'How do children learn?' and 'Why do they fail to learn?' to 'What is the most effective way

of teaching?' Considering how children learn, rarely acknowledges the teaching arrangements that have contributed to that learning, a point emphasised by Ainscow & Muncey (1989), in their review of recent developments in special education. Posing the alternative question, 'What is the most effective way of teaching?' requires that these factors are noted and then related to a child's learning outcomes.

Behavioural Teaching Approaches

Three behavioural approaches (task analysis, direct instruction and precision teaching) will now be described briefly and the way in which they interrelate illustrated through considering an assessment-through-teaching model. The descriptions will also draw attention to the processes they facilitate, which have been recently emphasised in discussions about implementing the English National Curriculum.

Task Analysis: Descriptions of task analysis have tended to vary depending on whether they have been discussed in relation to teaching physical skills or academic skills. As the discussion here is largely about mainstream applications of behavioural approaches, the model of task analysis presented relates to teaching early numeracy and literacy skills. Solity & Bull (1987) have described a three-step procedure.

The first step requires that the skill to be learned is described in *observable terms* which refer to what the child will be able to do in order to indicate that a new skill has been learned. Tasks are, therefore, expressed in behavioural terms. The second step *identifies all the necessary pre-skills* that a pupil must be taught to master the skill specified in step 1. These pre-skills can then be arranged in a suitable sequence, where teaching the earlier skills facilitates the learning of the later, and possibly more complex, ones. A characteristic feature of this step is that each pre-skill identified differs in nature from others in the sequence and make different demands on the child. Thus, if children are learning to name colours, pre-skills of this task might be matching, sorting and recognising these colours.

This can be contrasted with the third step, known as *slicing*, where the identified pre-skills are made easier in some way but without actually changing the nature of the pre-skill to be learned. When teaching a child to name colours the task might be changed from naming five different colours to naming only two.

This three step process aims to clarify what is to be taught, whilst at the same time ensuring that the curriculum develops children's learning through the progression it offers. It also differentiates the curriculum in such a way as to make it accessible to

children with a range of attainments and so facilitates an appropriate match between what children can do already and the tasks they are subsequently given. This process is clearly important in implementing the national curriculum effectively. Many of the statements of attainment are vague and do not adequately differentiate skills and knowledge that children of different levels of attainment will learn. This point was emphasised in the School Examinations and Assessment Council's publication, *A Guide to Teacher Assessment* (SEAC 1989). This publication encourages teachers to define ambiguous terms and reach a consensus on what children will be expected to do to demonstrate that learning is taking place.

The processes of clarifying what children learn, ensuring there is progression and differentiation within the curriculum and providing an appropriate match between what children can do already and what they are taught has been recommended widely in mainstream teaching. More recently they have been highlighted in the NCC publication *A Curriculum for All* (NCC 1989) about children with special needs and the National Curriculum.

Direct Instruction: Direct Instruction is also concerned with curriculum development, and in addition, provides an analysis of appropriate instructional methods for teaching children experiencing difficulties. Some readers may have encountered the DISTAR (Direct Instructional Systems for Teaching Arithmetic and Reading) materials which are based on the principles of Direct Instruction. However, the principles can be applied effectively, independently of the DISTAR programmes.

Direct Instruction is clearly not unique in its emphasis on generalisation and the teaching of concepts. However, it recognises that unless children experiencing difficulties are shown how to generalise they may not in fact learn this important step for themselves.

Direct Instruction makes a significant contribution to the classroom application of behavioural approaches through stressing the importance of teaching concepts and generalisable skills to children experiencing a difficulty in learning. Where children are seen to be behind their peers in acquiring early literacy and numeracy skills, the aim is to enable them to bridge the gap in attainments so that ultimately they are able to perform at a level commensurate with other children. For this to happen

they must have their rate of learning accelerated so that they can 'bridge the curriculum gap.' They must, therefore, be shown directly how the knowledge they acquire can be generalised and applied to new settings. Curriculum development is an essential element in facilitating this process.

Direct Instruction is clearly not unique in its emphasis on generalisation and the teaching of concepts. However, it recognises that unless children experiencing difficulties are shown how to generalise they may not in fact learn this important step for themselves. The obvious concern with hoping that children will learn to do this on their own is that some pupils will not achieve this goal. As a result, they will be disadvantaged in comparison with more successful peers who have learned to generalise and apply skills, knowledge and concepts.

Carnine & Silbert (1979) and Silbert et al. (1981), have described a six-step model of curriculum development. It starts by articulating what children are to be taught in the form of clear and precise behavioural objectives and then proceeds to make provision for developing problem solving strategies and effective teaching procedures. It is the combination of curriculum design, problem solving strategies and teaching procedures that has enabled concepts and generalisable skills to be taught so effectively to pupils thought to be experiencing a difficulty in learning.

It is perhaps the teaching methods that have been the subject of most criticism and concern from those who have become acquainted with Direct Instruction through the DISTAR programmes. These methods have a number of features which are particularly unappealing to British teachers and have become the subject of considerable suspicion. In some senses this is unfortunate but, nevertheless, understandable since their specific purpose may not always be immediately apparent.

What needs to be borne in mind is that they have been designed, with the clear intention of systematising the teaching children receive, to ensure that the usually limited teacher-pupil contact time is maximally effective and that the match between what children learn and existing levels of attainment is appropriate. These procedures are some of the most extensively researched in special education (Becker et al., 1982) and a rationale for their selective use in the classroom can be found in Solity & Bull (1987).

Precision Teaching: Precision teaching is the third widely applied behavioural approach. Its name has often been found to be misleading because precision teaching is not actually a method of teaching but a way of finding out which teaching methods are

effective. It emphasises the need for carefully structured curricula, provides techniques for collecting detailed information on children's progress and enables the teacher to evaluate the effectiveness of selected teaching procedures. Precision teaching does not provide details about how to teach but can tell the teacher whether those methods have been successful.

Raybould & Solity (1982) and Solity & Bull (1987) have outlined five basic steps in precision teaching. As in task analysis and direct instruction, the first step is to specify desired pupil performance in observable, measurable terms. Subsequent steps require that children's progress is recorded daily, is expressed visually on specially prepared charts and is related to the teaching methods adopted by the teacher. Finally, overall progress is examined daily to determine whether it is satisfactory or whether changes are required to accelerate progress still more, to help bridge the curriculum gap.

The appeal of precision teaching is its capacity to help teachers find out what works in the classroom. It requires teachers to relate how a child is taught with what the pupil learns. Instruction needs to be systematic, carefully planned and closely allied to a thorough record keeping system and which notes important aspects of the classroom environment which are related to subsequent pupil learning. Like Direct Instruction, applications of precision teach-

ing have also been the subject of frequent misunderstandings and misconceptions. Some of these have been addressed by Raybould & Solity (1988 a and b).

Assessment-Through-Teaching

The three behavioural approaches described interrelate within an assessment-through-teaching model (ATT) which has been described by Solity & Bull (1987) and by Solity & Raybould (1988) in relation to the 1981 Education Act and is shown in Figure 1.

The first step in the process requires that the curriculum is clearly defined. This involves stating both long term and short term teaching targets for children. In the past this step has sometimes been seen as controversial, particularly amongst those who have advocated experiential approaches to learning. For those promoting experiential approaches, it appears that it is more important how children learn, rather than what they learn. To some extent the implementation of the National Curriculum pre-empts such debate since what children are to learn is now enshrined in law.

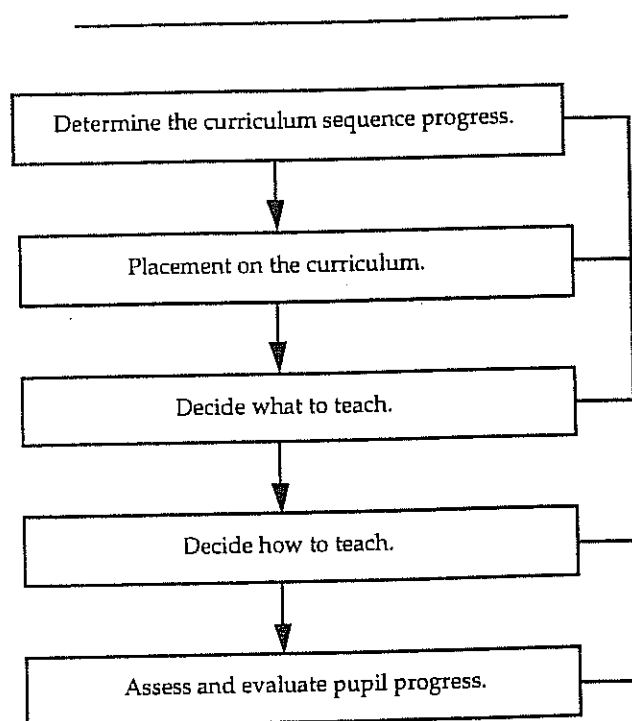
However, two points need to be made in relation to this issue and the debate it has provoked. First of all, when children are seen to be failing a curriculum sequence had already been implied even if it has not been articulated explicitly. Children are only seen to be 'failing' in relation to what constitutes 'success' and success, in this context, is usually interpreted as children learning literacy and numeracy skills and concepts.

A second issue relates to the pre-specification of learning outcomes prior to teaching which is seen by some to narrow children's learning experiences. It is unlikely that any teaching can take place when teachers set no goals for children's learning, a point endorsed by Shipman (1984). Shipman suggests that it is equally absurd to suggest that teachers have no objectives in view when they plan their work as it is to close all options to advance through stating every anticipated learning outcome in measurable terms. Shipman states "objectives are guides to teaching, and are also guides to assessment when mastery of content is being considered" (p. 25).

When children are felt to be failing it seems reasonable to expect some indication of what it is that children are failing to learn. To do so, in no way prevents a teacher from encouraging and observing learning that had not been specified in advance. Nevertheless, the emphasis is likely to be on teaching the knowledge, skills and concepts that the child had so far not yet learned.

The second step in the ATT model, placement on the curriculum, identifies which skills have been

Figure 1. Assessment Through Teaching.



learned and maintained in a given curriculum area and those which still need to be taught. It is concerned with facilitating a suitable match between children's current attainments and what they will be taught next. This step enables the teacher to pinpoint precisely where a pupil is on the curriculum and ensures that when teaching begins, skills and concepts are taught which are of an appropriate level of difficulty. As mentioned earlier, Bennett et al. (1984) found that this match was rarely achieved by the teachers.

The third step is deciding what to teach next. Within the curriculum framework suggested here, learning earlier skills and concepts should facilitate the learning of later and possibly more complex ones. Skills should therefore be selected which have not yet been learned and which are next in the curriculum sequence. It is also important to appreciate that some skills and concepts are relevant across curriculum boundaries and children should therefore be encouraged to develop their knowledge and newly acquired skills as broadly as possible.

The next step is to select suitable teaching methods, materials and patterns of classroom organisation. These decisions are influenced by a particular child's stage in learning a new skill. The methods which might be most appropriate in the early stages of teaching are probably less beneficial later on when a child is learning to generalise and apply knowledge (Solity & Bull, 1987). In this context Haring & Eaton's (1978) Instructional Hierarchy is a valuable source of guidance. It incorporates two broad levels to learning new skills, knowledge and concepts. The first is retained over time and can be used with accuracy and fluency. The second level focuses on *generalising and applying* newly acquired skills, knowledge and concepts to real life problems. Children must be able to generalise and apply knowledge and skills and this can be seen as reflecting their understanding of what they have learned.

When turning to the final step in the ATT model, it is helpful to remember that teaching approaches are not merely concerned with facilitating progress but ensuring that this takes place at an optimal level so that children are placed in a position where they can begin to close the curriculum gap that exists with their peers. There are, therefore, two strands to the final step in the model, which involve assessing and evaluating children's learning outcomes.

On the one hand we wish to ensure that children are learning and improving on previous attainment levels and are doing so in a manner which enables their progress to be accelerated. At the same time though, within the overall context of the assessment procedure being advocated here, the teacher is try-

ing to determine the most appropriate methods for teaching particular children. Records should therefore reflect the relationship between what children learn and the teaching arrangements which secure progress. The process of evaluation addresses these issues.

The Complementary Nature of Task Analysis, Direct Instruction and Precision Teaching

ATT is concerned with gathering information on the overall aspects of the learning environment and their impact on children's progress. It provides a framework for identifying children's educational needs and determining the most suitable forms of provision to meet them. Behavioural approaches concentrate on both facilitating and accelerating children's learning.

Task analysis, direct instruction and precision teaching are involved at different stages within the process of ATT. The curriculum is arranged through applying principles derived from task analysis and direct instruction. Within task analysis, tasks are analysed into sequences of skills which are ordered according to their level of difficulty. The overall aim of helping children bridge the curriculum gap will be achieved if the initial task analysis can be extended to incorporate the principles of direct instruction. This allows the original task analysis to be developed so that the eventual curriculum facilitates the processes of generalisation and children's application of their skills and knowledge.

One of the most effective and efficient ways of placing children on the curriculum is through a procedure derived from precision teaching known as 'placement probing.' It is a form of criterion-referenced assessment where a child's level of performance is observed on certain selective tasks which are representative of the entire curriculum. The purpose of placement probing is to find out what children have already learned and what needs to be taught next.

Teaching arrangements are best based on teachers' own views of the most effective ways to teach and should thus reflect their own educational philosophies. They need not be based on behavioural principles. What is important is that a teacher can clearly articulate his/her chosen methods so that their overall effectiveness can be assessed. Solity (1989) describes a series of strategies for planning how to teach using behavioural approaches (including Direct Instruction) within the context of ATT.

The extent of children's learning is determined by procedures drawn from precision teaching. In some instances, the techniques adopted within precision teaching are directly applicable to the tasks being

taught. However, where the subject matter does not readily lend itself to evaluation through such techniques, they can be modified where appropriate. At such times the essential principles can be recognised and retained even though the actual methodology is adapted.

Behavioural approaches have rarely been presented in a way which emphasises their complementary nature. They have been seen as distinct and separate rather than in any sense interrelated. Task analysis, Direct Instruction and precision teaching interrelate within a specific context. They fulfill different functions and so to use one in preference to another will almost inevitably lead to a lack of overall success. Furthermore, their respective contributions to a comprehensive assessment of children's educational needs has rarely been considered. Their role within the context of ATT is to enable teachers to appreciate the nature of a child's educational needs and the type of provision likely to be required in the future, to meet those needs.

Just as task analysis, Direct Instruction and precision teaching are seen as unrelated approaches to overcoming children's learning difficulties, so teaching, learning and assessment are rarely seen as integral components of the same process. Teaching usually refers to what teachers do, how they plan and organise the learning environment and the strategies they adopt and implement to facilitate children's learning. Teaching is not therefore functionally linked to children's intended learning outcomes. When it is, teaching refers not only to what teachers do but also to whether it results in children learning. This leads to the view that there is no teaching without learning.

ATT views teaching, learning, assessment and evaluation as elements within the same process. They cannot be, and should not be, regarded as separate, unrelated entities. The aim is to look closely at what children are taught, the manner in which they are taught and relate this to what children learn.

Issues Surrounding the Use of Behavioural Approaches

Applying behavioural approaches to teaching invariably raises a number of issues, as illustrated by Raybould & Soly (1988 a and b). The concerns teachers and others express are probably no different from those confronting teachers daily but are brought into sharp focus within a behavioural framework, especially when related to children experiencing difficulties. The final section of this article considers some of the issues arising from applications of a behavioural approach to children's learn-

ing and discusses their implications for future practice.

Introducing Teachers to a Behavioural Approach

The first introduction of many teachers to behavioural approaches is likely to occur on initial teacher education courses. Textbooks for students on the curriculum have invariably presented behavioural approaches in a negative light. For example, Barrow (1984) sees behaviourism as a "rigid school of thought" (p. 134) and "that behavioural objectives involve a narrow and mean-spirited approach to education" (p. 138). He argues that "a reduction of our planning to a systematic and detailed set of behavioural objectives is inherently trivialising and anti-educational" (p. 139). Lawson (1986) views the use of behavioural objectives as representing a "conservative model likely to appeal to those worried about standards, measurement and minimal competency" (p. 142). Other authors have described the approach in similar ways and so it is unlikely that many teachers will develop positive attitudes towards behavioural approaches from initial teacher education courses.

More general introductions to behavioural psychology vary enormously in terms of style of presentation and the emphasis placed on the respective importance of setting events and consequences. So, for example, Sylva and Lunt (1982) introduce behavioural psychology through describing some of the early experiments of Pavlov and Skinner. They also stress the importance of reinforcement in children's learning and do not mention the potential influence of setting events. Similarly Docking (1987) and Fontana (1986) concentrate almost exclusively on the role of reinforcement and again give little recognition to the power of setting events. These descriptions are unlikely to find favour with either students or teachers especially when couched in the language of "conditioning" and "modifying children's behaviour."

The above authors focus on particular aspects of behavioural psychology which are considerably less appealing than more recent descriptions by advocates of the approach. Bull and Soly (1989), Wheldall and Glynn (1988; 1989) and Merret and Wheldall (1990) all emphasise very different elements of behavioural psychology. In particular, they stress the value of setting events and how these may be arranged to promote desired learning outcomes. Whilst these accounts focus on what can be observed, they see teachers as "facilitators" of children's learning. In addition they highlight the importance of children taking responsibility for their own behaviour and learning and discuss how this may be achieved within a behavioural framework.

A child's failure to learn can also be interpreted as a teacher's failure to teach.

Discussions about a behavioural approach tend to neglect its underlying assumptions and instead usually focus on descriptions of the techniques and the procedure they incorporate. The initial attraction of a behavioural approach may be the ready-made technology which helps to make the teaching process explicit and which may be an enticing proposition in the face of a crisis. Teachers may latch on to the techniques without fully appreciating their underlying philosophy. The fact that a behavioural approach is usually only introduced to teachers when everything else may have failed places it in an unenviable position.

Behavioural Approaches and Assessment

The interpretation of a behavioural approach offered in this article is generally teacher rather than child focused and suggests that a child's failure to learn can also be interpreted as a teacher's failure to teach. Accepting this interpretation, by either teachers or psychologists, may be seen as threatening. It is much more comfortable to suggest that a failure to learn results from individual characteristics of the child rather than being a reflection of the teacher's effectiveness.

Research by Croll and Moses (1985) into teacher's explanations of a child's failure to learn indicates a clear reluctance on the part of teachers to attribute the cause of difficulties to factors other than those residing within the child. The main reasons offered for a child being either a "slow learner" or "poor reader" were the child's "IQ ability," "other within child variables" or "home/parent." The teachers in the study were reluctant to accept responsibility for children failing to learn.

Studies by Bennett et al. (1984) and Bennett and Kell (1989), indicate the considerable mismatch between what teachers say and do. Whilst there is often a commitment to individualised learning, children were often on tasks which were not matched to their existing skills and knowledge. Bennett et al. found as many as 60% of pupils on tasks which were not appropriate on some occasions. They also examined the range of learning experiences offered to children who were designated low achieving pupils. They found that lower achieving children were rarely given opportunities either to practise or consolidate newly acquired skills and knowledge or to generalise and apply them to problems. In fact, they were given new tasks and activities more frequently than high achieving children. The high achieving

children spent most of their time practising new skills and also had few opportunities to generalise and apply their skills and knowledge.

More generally, the success with which teachers individualise learning for children has occupied the attention of researchers for some time. The collection of articles edited by Cohen and Cohen (1986) illustrate that, in reality, much educational rhetoric about individualising children's learning is not borne out in practice. This was endorsed in the recent study of Bennett and Kell (1989) which examined the nature and quality of learning experiences of four year-old children in infant classes.

The evidence available suggests that many children are on inappropriate tasks and are not having their educational needs met. When children fail, or make poor progress, this is not seen to be a school or teacher problem. Children are believed to fail due to their inherent ability or poor home background. Introducing ATT into the classroom is not about finding out what is wrong with a child which prevents learning but demands that teachers and psychologists see the nature of a child's failure to learn in a very different light. Children fail to make progress because of the curriculum or aspects of the learning environment. They do not fail because of their IQ or ability or their home background.

Implementing a behavioural approach in the classroom and relating this to a process of continuous assessment can be seen to highlight these issues. The teaching process is made explicit and gathering regular, sometimes daily, data on children's progress, may well be threatening. Thus, a willingness to adopt a behavioural approach is not only a question of examining the educational practice it promotes but also of evaluating the assumptions on which it is based. The above evidence suggests that becoming aware of a child's failure to progress rarely becomes an opportunity for critical self-reflection on the part of the teaching profession. An approach to teaching which adopts this as its starting point is, therefore, less likely to find favour than one which rests more readily with the alternative construction, namely that a failure to learn can be attributed to specific personal learning characteristics of the child, or the child's home environment.

Involving Children in Their Own Learning

One further area needs to be considered which has not been addressed so far in the discussion. However, it should nevertheless be seen as an integral part of any approach to teaching. This concerns the involvement of children in negotiating and assessing their own learning. Bennett and Kell (1989) have indicated that children learn more effectively when they appreciate the nature of the tasks on

which they are to become engaged. They are likely to become more successful learners through becoming directly involved in the teaching and learning processes, through negotiating aspects of their own learning, through making decisions about the nature of the learning environment and through becoming active partners in assessing and evaluating the outcome of their efforts.

A behavioural approach clearly lends itself to this philosophy. It becomes much easier to negotiate with children the nature of learning experiences to be encountered as so much of what a teacher does in the classroom is made explicit within the approach. That this does not appear to have happened in many accounts of implementing a behavioural approach in the classroom may be related to the contexts in which it has been applied. For example, where children have been failing to learn to read, a behavioural approach has often been implemented in a fairly direct manner. To some extent, this is understandable. If a child of nine is referred as being a non-reader, those teaching only have 2 academic years in which to teach the child to read to a level commensurate with 11 year old peers before he or she transfers to secondary school which would be an acceptable target to many. Circumstances such as these give a particular emphasis to teaching and learning and one that is very different from attempting to teach four, five and six year olds the same set of concepts and skills.

The extent to which children's perceptions of the teaching and learning processes are acknowledged by teachers within a behavioural approach depends more on the personal beliefs and philosophies of the teachers concerned than the dicta of a theoretical stance. Certainly a behavioural approach can be used cynically with little regard for the pupils' own perceptions and observations of their behaviour or progress in learning. Nevertheless, the opposite is also correct in that the approach can be implemented sensitively with due regard to the pupils' understanding of those classroom processes that influence their learning in school. How a behavioural approach is brought to bear in the classroom depends on the teacher not the theory.

The National Curriculum and Assessment

Making the teaching process explicit, clarifying objectives for children's learning, looking carefully at the conditions under which children learn best and gathering evidence to show they have learned, is becoming an increasing feature of classroom life under the 1988 Education Act. Those teachers who have been implementing an ATT model can already be seen to have been responding to the assessment

requirements of the TGAT report (DES 1988).

More recently, the guidance form SEAC in 'Pack C' of *A Guide to Teacher Assessment* (SEAC, 1989), makes numerous references to behavioural principles in its advice to teachers on how to implement effective teacher assessment. For example in relation to setting tasks *The Teacher's Guide* states the following:

TGAT proposed that teachers should assess only that which is observable. (p.5)

Statements of attainment will need to be interpreted. One of the best ways of describing what statements of attainment mean is through an example of attainment in action. (p. 6)

The interpretation of such statements by the teacher will have implications for the nature of the evidence. In such cases, teachers need to:

- agree on definitions of some commonly used terms, such as understand, know, appreciate, use;
- agree with colleagues on some examples which interpret language;
- use these definitions whenever interpreting statements of attainment which use similar terms. (p.55)

There is considerable emphasis when setting tasks on clarifying intentions and doing so in a manner which leads to observable learning outcomes for the children. Much of what has been learned from previous experiences about the use of behavioural objectives can be helpful in ensuring that the curriculum is not trivialised. The task thus facing those promoting behavioural approaches to children's learning, is how to overcome the problems of the past and take steps to ensure children experience a broad curriculum in the future. To achieve this aim, teachers and psychologists require a framework for describing children's learning experiences, such as the one encompassed in Haring and Eaton's (1978) instructional hierarchy. Here the early emphasis is on accuracy and fluency which are seen to be the necessary foundations for children becoming effective at generalising and applying the skills, knowledge and concepts they learn.

The model of ATT presented earlier, can therefore be depicted in a slightly different way (see Figure 2) to take into account current curriculum demands identified in NCC documents, and the DES and HMI reports referred to earlier.

The essential principles of the ATT model are retained, but can now be seen in a broader context.

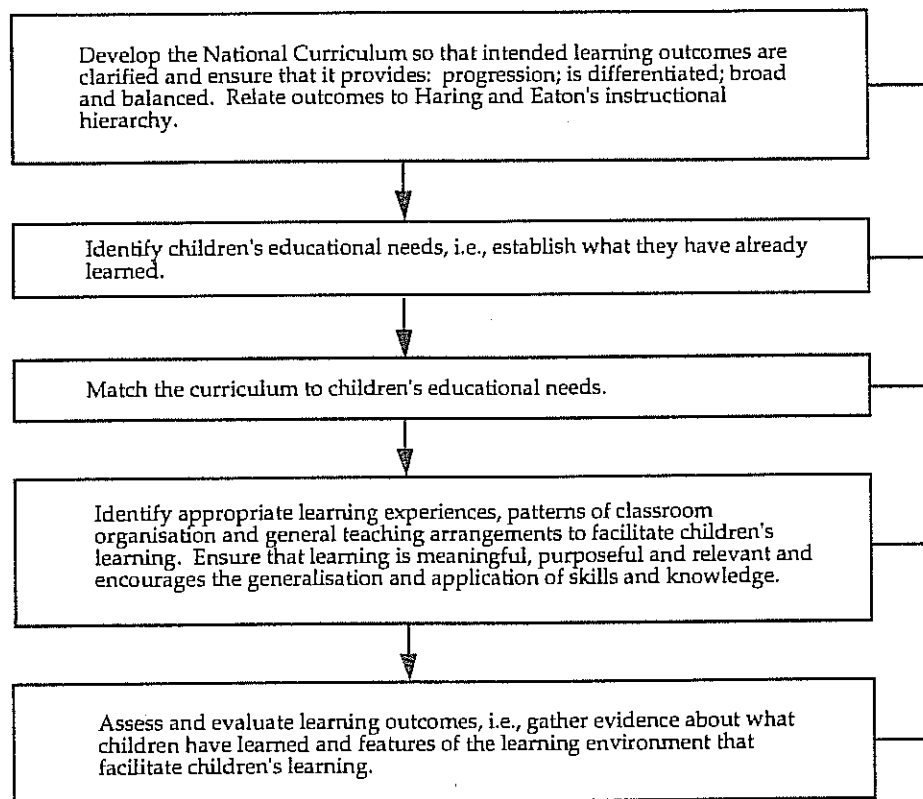


Figure 2. Assessment Through Teaching and the National Curriculum.

Teachers are currently being urged to collect details of the progress of all the children in a class and not only those over whom concern is expressed. ATT effectively brings together mainstream and special education. Until now this model has only emerged with any force in the literature on special education. The current demands on teachers necessitates that they engage in more detailed assessments of all the children in a class on a wider basis than has hitherto been the case.

The early emphasis is on accuracy and fluency which are seen to be the necessary foundations for children becoming effective at generalising and applying the skills, knowledge and concepts they learn.

If teachers become increasingly successful in meeting a diverse range of educational needs, through adopting similar teaching and assessment approaches for all children, they will be bridging a gap between mainstream and current perceptions of

special education. This view that "good teaching" and "good special needs teaching" are the same thing that was endorsed in Circular Number 5 from the NCC which stated: "Schools that successfully meet the demands of a diverse range of individual needs through agreed policies on teaching and learning approaches are invariably effective in meeting special educational needs" (NCC, 1989).

If teachers embrace the model in their everyday classroom practice for all the children in the class, teachers will not then have to do something different for those children they feel may have a difficulty in learning. They will be applying the same procedures for all the pupils in the class. This creates the opportunity for making all schools more effective rather than the ordinary schools special (Dessent, 1987) or the special school ordinary (Baker and Bovair, 1989). Appreciating the principles and purposes behind a behavioural approach to learning and sensitively implementing the approach in the classroom can play a fundamental role in achieving this aim.

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FOUR QUESTIONS FOR PARENTS TO ASK

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Last spring, Maureen Beebe became a reluctant revolutionary and asked the Peterborough County Board of Education in Central Ontario four subversive questions. The queries all pertained to her son and several other children reading and writing below their grade level.

The Grade 3 and 4 students had been unwitting guinea pigs of a new educational fad called activity-centered learning. Little direct teaching takes place in this method. Children merely discover math in sandboxes and stories in books, travelling from one fun center to another like corporate executives on holiday.

Ms. Beebe and a brave group called *Parents for Education* had some concerns about this fad and the absence of a curriculum in their children's school. They innocently asked their incendiary questions at a meeting with the superintendent and principal of South Monaghan Public School on May 23. Here they are: What are our children learning? How will they learn it? When will they learn it? How will you know, the teacher know and the parent know that the child has learned it?

In response, Ms. Beebe and company received a long talk on early child development theory, and a copy of *The Formative Years*, an outdated government guideline that reads like a hippie treatise on free education. They also heard the classic four brushoffs: Parents worry too much; we are the professionals; schools are not how you remember them; and every child develops in his own good time. Be patient, Johnny will blossom.

When Ms. Beebe asked how long she had to wait for Johnny to blossom, the educators didn't answer. When schools become gardens, it's hard to tell who will blossom when.

But the educators did promise research on the fertility of the learning centers and said they would "work hard on something." They also said they welcomed "parent participation," especially if the parents asked their questions nicely.

Last month, Ms. Beebe asked the four questions again at a meeting with the school board's director of education and the superintendent of curriculum. She was told that only the Education Ministry could

answer her skill-testing questions. At another meeting, board administrators told Parents for Education (Ms. Beebe couldn't attend—you know, hostile body language) that the board would look into a curriculum for junior education. The super said it might take a year.

Then the director of education (who confessed that she can't spell and said it didn't mean you couldn't become a success—and she's right) decided to provide a one-day symposium on Oct. 19 for parents to "listen and discuss the nature of primary and junior education" in Ontario. The symposium will include a free lunch and talks from education experts about research on "active learning" and Ontario's child-centered curriculum.

Ms. Beebe, of course, is not impressed. She says she didn't want a circus, just answers to her four questions. She doesn't want the activity centers stopped or changed, just good teaching for children whom the fad has failed. "We are asking for common-sense education. If there is a problem, let's solve it. If it takes some instruction and systematic phonics, what's the big deal?"

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- What are our children learning?
 - How will they learn it?
 - When will they learn it?
 - How will you know, the teacher know and the parent know that the child has learned it?
-

The big deal is Ms. Beebe's steadfastness. In fact, the board now considers the 33-year-old mother of three *persona non grata*. She can't even talk to a teacher without the director present. Educators have accused her of "harassing" teachers with questions and "upsetting" the children. The director has also warned Ms. Beebe that she might have to take the well-being of her staff and school into consideration—jargon for a lawsuit.

At the beginning of the school year, Ms. Beebe put two of her sons into a nearby separate school. Its staff is more concerned about teaching than gardening.

Despite her outlaw status, Ms. Beebe plans to attend the symposium along with other members of Parents for Education. They are hoping to hear answers to their four questions.

Sixteen of the public school children who can't read or write well will soon receive some phonics

instruction. There is still no curriculum for children in Grades 1, 2 and 3.

And the director of education, the one who says she can't spell (but that doesn't mean you can't be a success and she's right), will soon become an assistant deputy education minister.

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to School?*

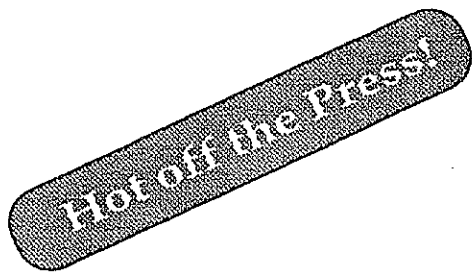
by
ANDREW NIKIFORUK

Andrew Nikiforuk has been *The Globe and Mail's* popular and controversial "Education" columnist for three years. An award-winning journalist, he is also the author of *School's Out: The Catastrophe in Public Education and What We Can Do About It*, which was short-listed for the Gordon Montador Award. A parent and former teacher, he lives in Calgary, Alberta.

"I compiled this guide (much material has been drawn from my Globe and Chatelaine columns) on the premise that there are a lot of good schools out there but they are often hard to find; that parents, first and foremost, are responsible for their children's education, that school reform is largely a community-based activity and that there are so many new ideas, interests and innovations in the schools that parents need some help sorting the chalk from the dust."

—Andrew Nikiforuk

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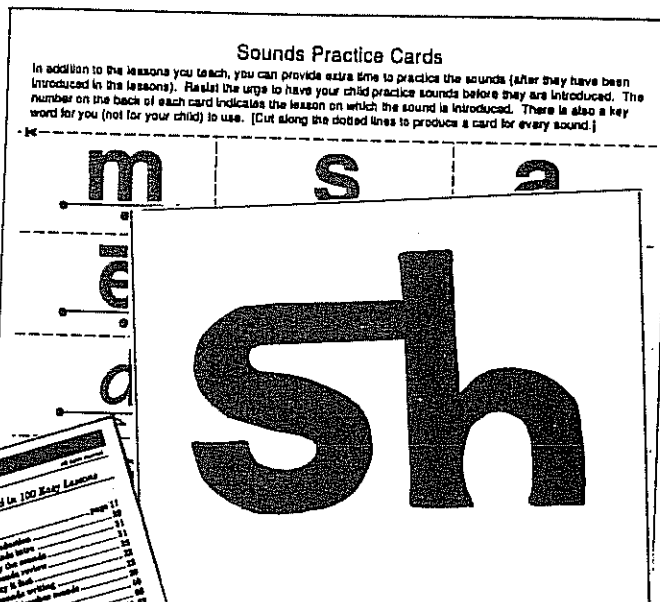
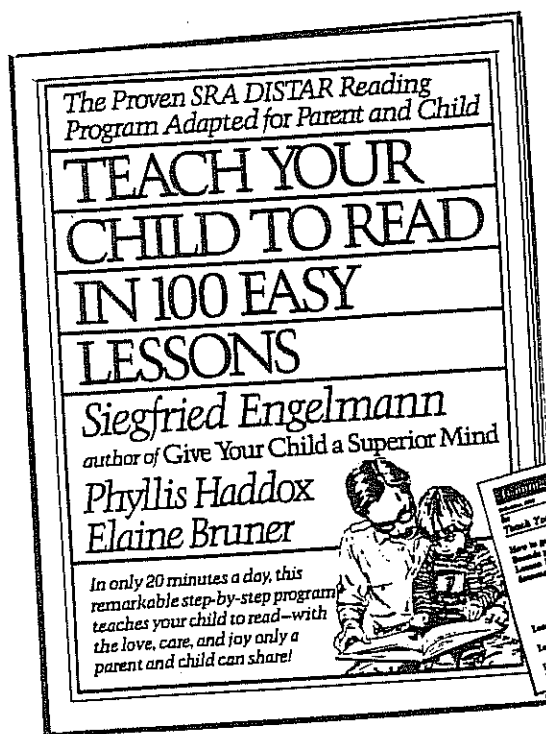
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*Robert C. Dixon and Siegfried Engelmann are principal co-authors of SRA's *Spelling Mastery* and *Corrective Spelling through Morphographs*.

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One of the most popular books distributed by ADI is now being handled by the author, Phyllis Haddox. The book is a modification and extension of DISTAR READING I which is now published as READING MASTERY I. The book, published by Simon and Schuster, was designed to be used by parents or others who want to tutor using an effective direct instruction program for beginning readers. In addition to the book, Dr. Haddox has developed both video and audio training tapes. The tapes demonstrate how to pronounce the sounds, present exercises in an encouraging manner and do corrections. On the video, Dr. Haddox is shown teaching 3-year olds. Also now available are "kid-sized" flash cards which have long been asked for by parents. The Sounds Practice Cards are printed on card stock. For teachers and parents, large blackline masters of all the sounds (each printed on a 8 1/2 X 11 sheet) are available for duplicating onto cardstock in your favorite color—to use in classroom display or for decorating a child's room.



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Join the Association for Direct Instruction

The Association for Direct Instruction is a non-profit organization dedicated to dissemination of information on effective, research-proven practices for schools. ADI publishes a quarterly magazine *Effective School Practices* featuring research from the field, implementation descriptions from schools around the world, and expert, easy-to-understand answers to questions about the problems school personnel face in teaching, supervising or administrating every day. ADI also publishes monographs on special topics and books, sponsors workshops, and markets other products that are available to members at a discount.

Please consider becoming a sustaining member. ADI is increasing its efforts to promote the use of proven practices in schools and your contributions will help.

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Join a local ADI chapter

The persons below are organizing local ADI chapters. They plan to form local support groups and to sponsor local workshops, discussion groups, and newsletters. Contact the person nearest you for more information on local chapters. If your name is not on the list and you would like to form a local chapter, contact ADI, PO 10252, Eugene, OR 97440 or call (503) 485-1293.

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Philadelphia, PA 19147
Fax: 215-551-9790

Susan Kandell
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Kathleen Schaefer
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NEW!

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To subscribe to *Effective School Practices* electronic discussion group, or "list," send the following message from your e-mail account:

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By subscribing to the *EFFSCHPRAC* list, you will be able to participate in e-mail discussions of topics of interest to ADI members. You will automatically receive in your e-mail box all

messages that are sent to the list. You can also send your news out to the list subscribers, like this:

To: Effschprac@oregon.uoregon.edu
Subj: *Whatever describes your topic.*
Message: *Whatever you want to say.*

Do you have a special need? Perhaps there is someone in the discussion group who has an answer or can help. Are you looking for a job where you can use your DI skills? Or are you looking for DI teachers to employ? Do you have a news flash? Send it all the *EFFSCHPRAC* list.

ADI MATERIALS PRICE LIST

Theory of Instruction (1991)

by Siegfried Engelmann & Douglas Carnine

Membership Price: \$32.00

List Price: \$40.00

The Surefire Way to Better Spelling (1993)

by Robert Dixon

Membership Price: \$8.75

List Price: \$12.00

Teacher Monitoring Program (1992)

by Colin Bird, Elizabeth Fitzgerald, & Margaret Fitzgerald

Membership Price: \$15.00

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Structuring Classrooms for Academic Success (1983)

by Stan Paine, J. Radicchi, L. Rosellini, L. Deutchman, & C. Darch

Membership Price: \$11.00

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Effective School Practices, Winter 1994, Volume 13, No. 1

ABSTRACT: Research still shows that systematic phonics instruction with a code-based reader are important components of effective initial reading instruction and are not incompatible with most whole language activities. Read Keith Stanovich's analysis of reading instruction issues in *Romance and reality* and Patrick Groff's review of *Reading Recovery* research. Read how a highly successful school teaches reading to Spanish-speaking children. Edward Fry also provides a set of tools for solving common reading problems.

Achieving Higher Standards in Mathematics..\$5.00

Effective School Practices, Spring 1994, Volume 13, No. 2

ABSTRACT: The standards from the National Council of Teachers of Mathematics prescribe teaching practice more than they set standards for student performance. Several research articles provide evidence that the NCTM teaching practices are probably not the best practices for achieving the student performance standards implied in the standards.

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Discriminatory Educational Practices \$5.00
Effective School Practices, Spring, 1993, Volume 12, No. 2

ABSTRACT: Research has documented discriminatory effects for two popular school reforms: whole language and "developmentally appropriate practice" as it has been defined by the National Association for the Education of Young Children. This edition summarizes the research evaluating effects of these reforms on the upward mobility and learning of economically disadvantaged children, minority children, and special education children. These diverse learners in programs incorporating the popular "child-centered" pedagogies are less likely to acquire the tools they will need for economic success and have lower self-esteem than children in traditional programs.

Heterogeneous Grouping and Curriculum Design \$5.00
Effective School Practices, Winter, 1993, Volume 12, No. 1

ABSTRACT: Heterogeneous grouping is a superficial and ineffective solution to the problem of discrimination in education. Equal access to education involves much more than having equal access to a seat in the classroom. This edition presents research summaries and perspectives surrounding grouping decisions. Research finds subject-specific homogeneous grouping most effective in subjects that are skills-based, such as reading and mathematics. The reprinted education survey by the *Economist* compares educational systems around the world and finds America's attempt to provide equal education for all a failed experiment. The *Economist* praises Germany's ability to turn out the most highly skilled workers in the world. Both *Forbes* and the *Economist* criticize many of the currently popular American reforms, such as whole language and heterogeneous grouping, for the mediocrity they seem to encourage.

Listing of Effective Programs \$5.00
Effective School Practices, monograph, 1993, also *ADI News*, Vol 12, No. 5.

ABSTRACT: This issue features a complete annotated listing of Direct Instruction, programs authored by Zig Engelmann and his colleagues. Also included are procedures for obtaining funding, addresses of funding sources, and a model proposal.

Wholistic Approaches \$5.00
ADI News, Summer, 1992, Volume 11, No. 4

ABSTRACT: Effective instruction (e.g., Direct Instruction,) provides wholistic integration of skills that have been specifically taught. Wholistic programs that do not teach important component skills are inferior. A study is reported that shows that students learning from Direct Instruction programs in mathematics achieve higher scores than students learning from the new teaching standards promoted

by National Council of Teachers of Mathematics. A synthesis of studies in reading shows that using Direct Instruction reading programs result in higher reading scores than whole language programs that provide no instruction in component skills, such as decoding.

ADI News, Volume 11, No. 2 \$5.00

ABSTRACT: This edition includes a study comparing the effects of four procedures for parents to use in teaching reading to their children. Parents using *Teach Your Child to Read in 100 Easy Lessons* (see ADI materials list for ordering information) obtained the highest reading improvement scores with their children. This edition also reports a comparison of the achievement scores of Wesley Elementary, a Direct Instruction school, with ten other schools, the results of a comparison of meaning-based versus code-based programs in California, and other reports of the effectiveness of Direct Instruction programs with special populations.

Historical Issue III \$5.00
ADI News, Volume 8, No. 4

ABSTRACT: The historical series reprint highlight articles and contributions from earlier editions. The featured articles in this edition are divided into the following sections: (1) Implementation strategies and issues, (2) Direct Instruction research studies, and (3) Research related to DI's goals. Russell Gersten's response to a study that is widely discussed among promoters of the current child-directed instruction reform is reprinted in this edition. That study by Schweinhart, Weikart, and Larner is highly critical of DI preschool programs. Gersten criticizes that study primarily for using self-report data to evaluate delinquency and for interpreting nonsignificant differences as if they were significant.

Historical Issue I \$5.00
ADI News, Volume 7, No. 4.

ABSTRACT: The featured articles in this issue are divided into the following sections: (1) Introduction, (2) Research studies, and (3) Management strategies. These include a classic essay by Zig Engelmann "On Observing Learning," a high school follow-up study on Follow Through children in Uvalde TX, a meta-analysis of the effects of DI in special education by W.A.T. White, and other studies reporting the effects of DI in teaching English as a Second Language, poverty level preschoolers, secondary students, and moderately retarded children. Also included are classroom management tips from Randy Sprick and Geoff Colvin, along with a school-wide discipline plan.

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CONTRIBUTOR'S GUIDELINES

Effective School Practices provides practitioners and decision-makers with the latest research and development news on effective teaching tools and practices. The journal emphasizes practical knowledge and products that have proven superior through scientific testing. Readers are invited to contribute to several different columns and departments that will appear regularly:

FROM THE FIELD: Submit letters describing your thrills and frustrations, problems and successes, and so on. A number of experts are available who may be able to offer helpful solutions and recommendations to persons seeking advice.

NEWS: Report news of interest to ADI's membership

SUCCESS STORIES: Send your stories about successful instruction. These can be short, anecdotal pieces.

PERSPECTIVE: Submit critiques and perspective essays about a theme of current interest, such as: school restructuring, the ungraded classroom, cooperative learning, site-based management, learning styles, heterogeneous grouping, Regular Ed Initiative and the law, and so on.

RESEARCH STUDIES: Present data from your classroom or the results of scientific research. The data should guide other practitioners and decision-

makers in evaluating alternative options for school reform.

TRANSLATING RESEARCH INTO PRACTICE Integrate a larger body of empirical research into a defined practice that can be implemented in schools.

BOOK NOTES: Review a book of interest to members.

NEW PRODUCTS: Descriptions of new products that are available will be featured. Send the description with a sample of the product or a research report validating its effectiveness. Space will be given only to products that have been field-tested and empirically validated.

LIST OF DEMONSTRATION SITES: We wish to maintain an on-going list of school sites with exemplary implementations and impressive student outcomes. Submit the name of the exemplary school or classrooms, the names of the programs being implemented, and contact information so that visitations may be arranged.

TIPS FOR TEACHERS: Practical, short products that a teacher can copy and use immediately. This might be advice for solving a specific but pervasive problem, a data-keeping form, a single format that would successfully teach something meaningful and impress teachers with the effectiveness and cleverness of Direct Instruction.

MANUSCRIPT PREPARATION

Authors should prepare manuscripts according to the third revised edition of the *Publication Manual of the American Psychological Association*, published in 1983. Copies may be ordered from: Order Department

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Send an electronic copy, if possible, with a hardcopy of the manuscript. Indicate the name of the word-processing program you use. Save drawings and figures in separate files. Electronic copy should replace text that is underlined according to the APA format, with italic text.

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Completed manuscripts should be sent to:

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Acknowledgement of receipt of the manuscript will be sent by mail. Articles are initially screened by the editor for content appropriateness. Then sent out for review by peers in the field. These reviewers may recommend acceptance as is, revision without further review, revision with a subsequent review, or rejection. The author is usually notified about the status of the article within a 6- to 8-week period. If the article is published, the author will receive five complimentary copies of the issue in which his or her article appears.

Recommended Resources

Teach Your Child to Read in 100 Easy Lessons (1983) by Siegfried Engelmann, Phyllis Haddox, & Elaine Bruner.

Price: \$22.00 postage paid

Mail orders to: Phyllis Haddox
Training Materials
PO 10459
Eugene, OR 97440

Beginning to Read: Thinking and Learning About Print (1990) by Marilyn Jager Adams (A summary by the Center on Reading).

Price: \$5.00 Prepaid orders postage free

Mail orders to: University of Illinois
Summary
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Direct Instruction Reading (Revised, 1990) by Douglas Carnine, Jerry Silbert, & Ed Kameenui.

Price: \$40.00

Order from: MacMillan Publishing
1-800-257-5755
ISBN: 0-675-21014-3

If Learning Is So Natural, Why Am I Going To School? (1994) by Andrew Nikiforuk.

Price: \$16.99 from Penguin

ISBN: 0-14-02.4264-3

Ask for it at your local bookstore.

Becoming a Nation of Readers (1985)

The Report of the Commission on Reading.

Price: \$4.50 Prepaid orders postage free

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Direct Instruction Mathematics (Revised, 1990) by Jerry Silbert, Douglas Carnine, & Marcy Stein.

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Attention Members: Please think about volunteering to review drafts of standards for the upcoming joint IRA-NCTE "Standards for English Language Arts." If previous attempts to develop such standards are any indication, the upcoming standards will have next-to-nothing to do with effective school practices and everything to do with the holistic/constructivist party line. To volunteer, contact:

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Research* Division

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