True education reform will come about only when we replace the reigning psychometric educational psychology with a developmentally appropriate one, Mr. Elkind asserts. Unfortunately, the prospects for such a shift are not good.

BY DAVID ELKIND

The idea of developmentally appropriate educational practice — that the curriculum should be matched to the child's level of mental ability — has been favorably received in education circles. However, this positive reception is quite extraordinary, for developmentally appropriate practice derives from a philosophy of education that is in total opposition to the "psychometric" educational philosophy that now dictates educational practice in the majority of our public schools. Perhaps for this reason developmental appropriateness has been honored more in word than in deed.

In what follows I highlight some of the differences between these two educational philosophies and contrast a few of their practical implications. My purpose in doing so is to argue that true education reform will come about only when we replace the reigning psychometric educational psychology with a developmentally appropriate one.

TWO PHILOSOPHIES

Any philosophy of education must include some conception of the learner, of the learning process, of the information to be acquired, and of the goals or aims of education. The developmental philosophy differs from the psychometric philosophy on all four counts. I should mention that the developmental philosophy that I present here derives from the research and theory of Jean Piaget.2

Conception of the learner. Within a developmental philosophy of education, the learner is viewed as having developing mental abilities. All individuals (with the exception of the retarded) are assumed to be able to attain these abilities, though not necessarily at the same age. For ex-

Illustration by Kay Salem
ample, we expect that all children will attain the concrete operations that Piaget described as emerging at about age 6 or 7. These operations, which function much like the group of arithmetic operations, enable children who have attained them to learn and to apply rules. However, not all children will attain these operations at the same age. Accordingly, a developmental philosophy sees individual differences in ability as differences in rates of intellectual growth.

This conception of mental ability contrasts sharply with that of a psychometric philosophy of education. According to the psychometric position, the learner is seen as having measurable abilities. This philosophy assumes that any ability that exists must exist in some amount and must, therefore, be quantifiable. For example, intelligence tests — the flagships of the psychometric philosophy — are designed to assess individual differences in the ability to learn and to adapt to new situations. A psychometric perspective regards individual differences in performance as reflecting differences in amount of a given ability.

Both of these opposing conceptions of human ability contain some truth. However, they have far different pedagogical implications.

From a developmental perspective, the important task for educators is matching curricula to the level of children's emerging mental abilities: hence the principle of developmental appropriateness. Curriculum materials should be introduced only after a child has attained the level of mental ability needed to master them. This in turn means that curricula must be studied and analyzed to determine the level of mental ability that is required to comprehend them.

From a psychometric point of view, the most important task for educators is matching children with others of equal ability. Bright children are assumed to be able to learn more in a given time than less bright children. In practice, this philosophy leads to so-called “ability grouping,” which in effect allows bright children to go through the material more quickly than slower children. This psychometric orientation also underlies the provision of special classes for the gifted and for the retarded.

Conception of the learning process. Within the developmental philosophy of education, learning is always seen as a creative activity. Whenever we learn anything, we engage the world in a way that creates something new, something that reflects both our own mental activity and the material we have dealt with. We never simply copy content; we always stamp it with our unique way of viewing the world. The child from Connecticut who heard the Lord's Prayer as "Our Father, Who art in New Haven, Harold be thy name" is not the exception but the rule. Everything we learn has both a subjective and an objective component.

The conception of learning as a creative or constructive process has a very important practical implication. It means that we cannot talk of learning independently of the content to be learned. The material to be learned will always interact with the learning process in some special way. Long after Piaget discovered the successive stages and organizations of mental operations, he continued to study the ways in which children attained different concepts, such as space, geometry, time, and movement and speed. In so doing he emphasized the fact that merely knowing the stages of mental development does not provide special insight into how children use the operations at any given stage to attain any particular concept. The only way to discover how children go about learning a particular subject is to study children learning.

By contrast, the psychometric philosophy views learning as governed by a set of principles (e.g., intermittent reinforcement) and consisting of the acquisition of a set of skills (e.g., decoding) that are independent of the content to be learned. Early workers in this tradition enunciated such principles as “mass versus distributed” or “whole versus part” learning, which were presumed to operate independently of the content to be learned. Indeed, early studies of memory employed nonsense syllables in order to eliminate the effect of content on the study of memory.

The limitations of this approach were dramatically demonstrated by Jerome Bruner, Jacqueline Goodenough, and George Austin in their seminal work on problem solving. Before the publication of their work, problem solving was spoken of in terms of “trial and error” or “sudden insight” because most of the work had been done with animals. What Bruner and his colleagues demonstrated was that human subjects, when presented with complex problems, employ complex problem-solving activities — in other words, “strategies.” Put differently, the content of the problem determines the level of the problem-solving activities that humans employ.

Nonetheless, this insight seems to have been lost. The current interest in teaching young children such things as thinking skills, learning strategies, or computer programming reflects a regression to the idea that thought and content can be treated separately. It is assumed that once children learn thinking skills or learning strategies or computer programming — these skills will automatically be transferred to different kinds of content. To be sure, transfer of training does occur, but it is far from automatic. Transfer happens when students are active, not passive, learners. But what can we possibly mean by activity if not that students are consciously aware of the content they are thinking about or applying strategies to? Mental processes are always content-oriented.

The developmental approach implies that there is little or no automatic transfer from one subject to another, whereas the psychometric approach assumes that the skills and strategies of thinking often transfer spontaneously to new areas.

Conception of knowledge. From a developmental perspective, knowledge is always a construction, inevitably reflecting the joint contributions of the subject and the object. This is far from a new idea, and it harks back to the Kantian resolution of idealist (all knowledge is a mental construction) and empiricist (all knowledge is a copy of an externally existing world) interpretations of how we
come to know the world. Kant argued that the mind provides the "categories" of knowing, while the real world provides the content. Knowledge is thus always a construction of the mind's interaction with the world and cannot be reduced to one or the other.

What Piaget added to the Kantian solution — and what makes Piaget a neo-Kantian — was the demonstration that the categories of knowing (the mental operations of intelligence) are not constant, as Kant had supposed. Rather, the categories change with age. This idea adds a developmental dimension to the Kantian version of the construction of knowledge. As their mental operations develop, children are required to reconstruct the realities they constructed at the previous developmental level. In effect, a child creates and re-creates reality out of his or her experiences with the environment.

The reality of the young child — his or her knowledge of the world — is thus different from the reality of the older child and adult. For example, young children believe that a quantity changes in amount when it changes in appearance — that, say, the amount of liquid in a low, flat container is greater when it is poured into a tall, narrow one. Older children, whose reality is different, can appreciate the fact that a quantity remains the same in amount despite changes in its appearance. In other words, older children recognize that quantity is conserved. From a developmental perspective, the young child's conception of quantity is not "wrong." It is, in fact, developmentally appropriate as the older child's grasp of conservation.

From the psychometric point of view, knowledge is something that a child acquires and that can be measured independently from the processes of acquisition. This separation is reflected in the distinction between intelligence tests and achievement tests. One consequence of the separation between learning and content is that knowledge is measured against an external standard that is independent of the learner. When compared to such an external standard, a child's responses can be assessed as being either "right" or "wrong."

Certainly, there is a right and a wrong with respect to some types of knowledge. For example, the Bastille was stormed in 1789, not in 1650; two plus two equals four, not five. We have to distinguish here between what I have elsewhere termed fundamental knowledge, which we construct on our own, and derived knowledge, which is constructed by others and which we must acquire at second hand. The terms right and wrong are useful only in connection with derived knowledge.

The developmental approach introduces the idea that there can be differences in knowledge without any reference to "right" or "wrong." The idea of difference, rather than of correctness, is important not only with respect to fundamental knowledge, but also with respect to creative thinking. For example, many bright children come up with ideas that are different from those of their peers and teachers. Unfortunately, these ideas are often regarded as wrong rather than as different and original. One bright child, when asked to write something about the color blue, wrote about Picasso's Blue Period and was teased and jeered. A greater appreciation for such differences would make the life of bright children in our schools a lot easier.

Conception of the aims of education. The aims of developmental education are straightforward. If the learner is seen as a growing individual with developing abilities, if learning is regarded as a creative activity, and if knowledge is seen as a construction, then the aim of education must surely be to facilitate this development, this creative activity, and this construction of knowledge. Piaget put the aims of education from a developmental perspective this way:

The principal goal of education is to create men who are capable of doing new things, not simply repeating what other generations have done — men who are creative, inventive, and discoverers. The second goal of education is to form minds which can be critical, can verify, and not accept everything that is offered. The greater danger today is of slogans, collective opinions, ready made trends of thought. We have to be able to resist them individually, to criticize, to distinguish between what is proven and what is not. So we need pupils who are active, who learn early to find out by themselves, partly by their own spontaneous activity and partly through material we set up for them; who learn early to tell what is verifiable and what is simply the first idea to come to them.

The aim of developmental education, then, is to produce thinkers who are creative and critical. This aim will not be achieved, however, by teaching thinking skills to children and adolescents. Rather, the way to pursue this aim is by creating developmentally appropriate learning environments that challenge the child's emerging mental abilities. Creative thinking and critical thinking are not skills to be taught and learned. They reflect basic orientations toward the self and the world that can be acquired only when children are actively engaged in constructing and reconstructing their physical, social, and moral worlds.

The aim of psychometric education is to produce children who score high on tests of achievement. In other words, the
The developmental approach seeks to create students who want to know, not students who know what we want.

The aim of education is to maximize the acquisition of quantifiable knowledge and skills. Perhaps former Secretary of Education William Bennett stated this view of the aims of education as well as anyone:

We should want every student to know how mountains are made, and that for most reactions there is an equal and opposite reaction. They should know who said “I am the state” and who said “I have a dream.” They should know about subjects and predicates, about isosceles triangles and ellipses. They should know where the Amazon flows and what the First Amendment means. They should know about the Donner party and about slavery, and Shylock, Hercules, and Abigail Adams, where Ethiopia is, and why there is a Berlin Wall.12

In this statement Bennett echoes a theme that was also sounded in A Nation at Risk, which was published three years earlier and decried the poor performance of American students on achievement tests, especially when compared to the performance of children from other nations. Moreover, Bennett’s remarks foreshadowed the best-selling critiques of U.S. education by Allan Bloom and E. D. Hirsch, Jr., which charged that American education was failing to provide children with the basic knowledge of western civilization.13

Young people should certainly be exposed to Shakespeare, they should know the basics of geography, and they should be familiar with current events. A developmental approach to education does not deny the importance of such knowledge. The difference between the two approaches is a matter of which acquisition comes first. Those who hold a developmental philosophy believe that children who are curious, active learners will acquire much of the knowledge that Bennett, Bloom, and Hirsch call for — and many other things as well. But, from a developmental perspective, the creation of curious, active learners must precede the acquisition of particular information. To put the difference more succinctly, the developmental approach seeks to create students who want to know, whereas the psychometric approach seeks to produce students who know what we want.

IMPLICATIONS OF A DEVELOPMENTAL PHILOSOPHY

Now that we have looked at these two contrasting educational philosophies, we can review a few of the implications for the practice of education of adopting a developmental perspective. Once again, my interpretation is largely based on the Piagetian idea of the development of intelligence.

Teacher training. Students of most disciplines must learn the basic material of their discipline. A physics student has to learn about the rules that govern the physical world; a chemistry student must learn how the basic chemical elements interact; a biology student must learn about plants and animals. Education is perhaps the only discipline wherein students do not learn the basic material of the discipline at the outset. Students take courses in curriculum, in methods, in educational philosophy, in assessment, and in classroom management. They take only one (or at most two) courses in educational or developmental psychology.

But the basic material of education is not curriculum. Nor is it assessment or methods. The basic material of education is children and youth. A teacher training program that is truly developmentally appropriate would have its students major in child development. Trained in this way, a teacher would be, first and foremost, a child development specialist. Students with a strong foundation in child development can integrate what they learn about curriculum, assessment, and management with what they know about how children of various ages think and learn.

From a developmental point of view, the recommendation of the Holmes Group that we do away with the undergraduate major in education and substitute a year or two of graduate training and internship will not produce better teachers. There is a need for teacher training at the undergraduate level — not in traditional education courses, but in child development.

Curriculum. From a developmental point of view, there are several principles that should guide the construction of the curriculum. First, a curriculum must be constructed empirically, not a priori. There is no way to figure out how children learn a subject without studying how they actually go about learning it. Thus it is truly a scandal that curriculum publishers not only fail to do research on the materials they produce, but also fail even to field-test them! In no other profession would we allow a product to be placed on the market without extensive field-testing.

In a truly developmental system of education, teachers would have the opportunity to construct and test their own materials. They could see what works and what doesn’t, and they could try out different sequences and methods. The way curriculum materials work will always depend on the specific group of children in the classroom in any given year. So a curriculum should never be final; it should always be open, flexible, and innovative. Such a curriculum is existing for the teachers and for the pupils and makes both learning and curriculum innovation cooperative ventures.

Second, I believe that a curriculum should be localized, particularly for elementary schools. I know that this is contrary to trends in other countries, which have uniform curricula for all children. Japan and France are but two of the countries with such uniform national curricula. England, too, will be initiating a uniform national curriculum in 1990. But such national curricula eliminate the possibility of localizing materials to include particulars from the environment in which children actually live and learn.

Such localized curricula hold a great deal of intrinsic interest for children. For example, in learning math, children living in Hawaii might be asked to match coconuts and palm trees, whereas children living in the Northeast might be asked to match acorns and oaks. Likewise, it would add to children’s enjoyment if the stories they read took place
in their own community or one similar to it. In social studies, too, children are delighted to find a picture of a building that they have actually been in, rather than one that they have never seen. To be sure, children like stories about places and events that are new to them. Nonetheless, they also enjoy reading stories that relate directly to the world they live in. Children, no less than adults, appreciate both fantasy and the realism of local reference.

Finally, we need to study curricula to determine their level of developmental difficulty. Developmental difficulty is quite different from psychometric difficulty. The psychometric difficulty of a curriculum or a test item is determined by the number of children of a particular age who successfully learn the material or who get the item correct. A curriculum or test item is generally assigned to the grade or age level at which 75% of the children can succeed.

Developmental difficulty, by contrast, must be determined by examining the actual "errors" children make in attempting to master a problem or task. For example, when young children who have been taught the short /a/ sound are asked to learn the long /a/ as well, they have great difficulty. The problem is that they are being asked to grasp the fact that the same letter can have two different sounds. Understanding that the same symbol can stand for two different sounds, however, requires the attainment of the mental abilities that Piaget calls concrete operations. A teacher who holds a developmental philosophy would thus avoid teaching phonics until he or she was quite sure that most of the children could handle concrete operations. Because the developmental difficulty of any particular problem or task can be determined only by active investigation, part of the experimental work of teaching would be to explore the developmental difficulty of the available curriculum materials and to try out new materials that might work differently or better.

Instruction. Developmentally speaking, it is as impossible to separate the learning process from the material to be learned as it is to separate learning from instruction. This is authentic teaching. From this perspective, the teacher is also a learner, and the students are also teachers. The teacher who experiments with the curriculum is learning about the curriculum and about the children he or she teaches. And children who work cooperatively and who experiment with curriculum materials are teaching as well as learning.

One way to highlight the difference between authentic teaching and psychometrically oriented teaching is to look at how each type of instruction handles the asking of questions. In psychometrically oriented teaching, the teacher often asks students questions to which the teacher already knows the answers. The purpose is to determine whether the students have the same information as the teacher. But asking questions to which one already has the answers is not authentic behavior. A much more meaningful approach is to ask children questions to which one doesn't have the answers. Finding the answers can then be a learning experience for teacher and students alike. The authentic teacher asks questions to get information and to gain understanding, not to test what students know or understand. Such questioning reflects the fact that the authentic teacher is first and foremost an enthusiastic learner.

Assessment. Developmental assessment involves documenting the work that a child has done over a given period of time. Usually this is done by having a child keep a portfolio that includes all of his or her writing, drawing, math explorations, and so on. In looking through such a portfolio, we can get a good idea of the quality of work that the child is capable of doing and of his or her progress over the given period.

Psychometric assessment involves measuring a child's achievement by means of commercial or teacher-made tests. A child's progress is evaluated according to his or her performance on such tests. Unlike a portfolio of work, the psychometric approach yields a grade that symbolizes both the quantity and the quality of the work that the child has done over a given period of time. Although some testing can be useful, it is currently so overused that many children and parents are more concerned about grades and test scores than about what a child has learned. The documentation of a child's work tends to avoid that danger.

I have tried to demonstrate that, while the idea of developmentally appropriate practice has been well received among educators, it really has little chance of being widely implemented. Without a change in underlying philosophy, changes in educational practice will be superficial at best. No classroom or school can truly be developmentally appropriate if its underlying philosophy is psychometric.

How can we change that underlying educational philosophy? It might seem that what is required is a paradigm shift of the sort described by Thomas Kuhn as characterizing major scientific revolutions. Yet neither the developmental thinking of Freud nor that of Piaget has been sufficient to effect such a shift. This may reflect the fact that educational practice is dictated more by social, political, and economic considerations than it is by science. Unfortunately, a major shift in educational philosophy is more likely to come about as a result of economic necessity than as a result of scientific innovation.