A Conversation with Benjamin Bloom

Professor Bloom is respected by educators throughout America and around the world for his achievements including the landmark book, Human Characteristics and School Learning *(New York: McGraw-Hill Book Company, 1976). In this interview with Executive Editor Ron Brandt, Bloom answers criticisms of mastery learning and explains why he believes it is so important.*

EL: What accounts for your interest in mastery learning?

Bloom: With a mastery approach, almost all students who are provided with favorable learning conditions learn well. In the United States we've assumed that one half to a third of our students would learn poorly in school and that is what nature and God intended. We rank students frequently, we make judgments about them daily, and we very quickly persuade the lower students that they are of a different order from those at the top.

EL: Isn't that true in other countries? Don't most societies use a sorting and selecting process?

Bloom: In Japan, elementary teachers believe that if a child is not learning there is something wrong, and they must do something about it. In Japanese elementary schools, teachers with 45 to 50 children find ways for almost all of them to learn to a high standard at each grade level. As a result, each subsequent teacher starts with a group of students who are at about the same level in terms of prerequisite learning.

The procedures they use were developed by the teachers' union rather than the Ministry of Education. The union, having won most of its goals as to conditions of work and pay, is now focusing on the professional tasks of the teacher.

EL: I'm told that in the Soviet Union they refuse to use intelligence tests. Are you concerned about the tendency in our country to categorize children for special education purposes as retarded, gifted, and so on?

Bloom: That's quite another subject. We've just begun a four-year research project on the development of the great talents in music, sports, mathematics, art, and science. We're studying the progress of talented individuals from the age of three until the time their great talents were fully developed. What we find is that somebody "thought" each of these individuals had special gifts at an early age. They persuaded people around the child to treat him or her as special, as gifted. This illustrates what Froebel had in mind when he created the kindergarten: teach each child as though he/she were gifted.

EL: The research summaries suggest that some of the more widely successful programs of mastery learning are in countries like Korea where the political situation is quite different. Is it possible that mastery learning or any other approach can be used widely and consistently only in societies where schools and teachers are accustomed to doing what some authority expects them to do?

Bloom: That's a mistaken interpretation of education in other countries. My scholarly interest is in trying to understand about human variability and human ability. I find that in every country of the world children's achievement is normally distributed when conventional group instruction is used. If on the other hand each child is taught by a very good tutor, all will learn to a high standard with very little variation, although some may take slightly more time than others.

Now, it is obviously very costly to teach each child with a private tutor. The question is what we can do when we're teaching 30 children at a time that will be

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closer to what we would do if we had the resources to teach them one at a time. What we are seeing in some other countries—in Latin American countries, Canada, England, Australia, Israel, and the Asiatic countries—is a search for a variety of ways to come closer to this ultimate criterion, and to emphasize the learning process rather than the judgmental process.

The thing I am after is not the mass use of a particular approach to mastery learning, but the identification of highly favorable learning conditions that can be made available to most learners.

EL: What are some of these favorable conditions?

Bloom: The most important is the feedback-corrective process. I recently reread Professor Broudy's[1] summarization of the great exemplars of teaching methods, starting with the great teachers of two thousand years ago: Socrates, Plato. Every method of teaching he reviewed had a point at which the student was given a *trial* test and then the student was helped to correct learning difficulties. This was followed much later by an *evaluative* test which was used to judge the learner.

As we have become involved in teaching large groups of students, we have given up the use of the trial test. When we give a weekly or monthly quiz it's as much a part of the final test and grading procedure as we can make it. The student is rarely given an opportunity to learn from his/her errors and be retested. When the feedback-corrective process is used well, we begin to understand the enormous learning potential of all our students. They have the prerequisites for each new learning task, they begin to use learning time more effectively, and the

amount of time required to learn each new step becomes more similar for most students.

Individual or Group Instruction

EL: You've advocated a group-based approach, at least initially, and that seems to some people the opposite of individualized instruction, which can mean that not only the pace but even the goals and content of education should be different for different individuals.

Bloom: There are two major approaches to mastery learning. One is the Keller approach, called "Personalized System of Instruction," in which each student goes at his or her own pace. The other is the group-based approach, in which the teacher teaches a class, then uses feedback as the basis for individualizing the corrective procedures for the students. Both can yield very positive results. The problem with the Keller approach is that while students who finish on time do very well, a sizeable proportion drop out of class because they find they have procrastinated too long.

The Learning for Mastery approach may sound too rigid, but if you are going to teach all students a common body of content, it seems to me they should all have a chance to learn it. I would hope that teachers could also help each student do something unique, but most teachers are caught in such schedules and with such numbers of students that they cannot find the time and means to do it.

EL: At the elementary level some would say that children have developmental needs. With a group-based approach, children may be pushed to learn what, if we just waited a little while, they would be readier to learn.

Bloom: We have tested students at the end of grade two and followed them through the next two grades. The correlation between what they've learned at grade two and what they've learned by the end of grade four is very high. The only difference is that the successful students and the unsuccessful ones get further and further apart. So I don't think that waiting is the answer.

EL: More students seem to learn using mastery learning, but some still don't. What about them?
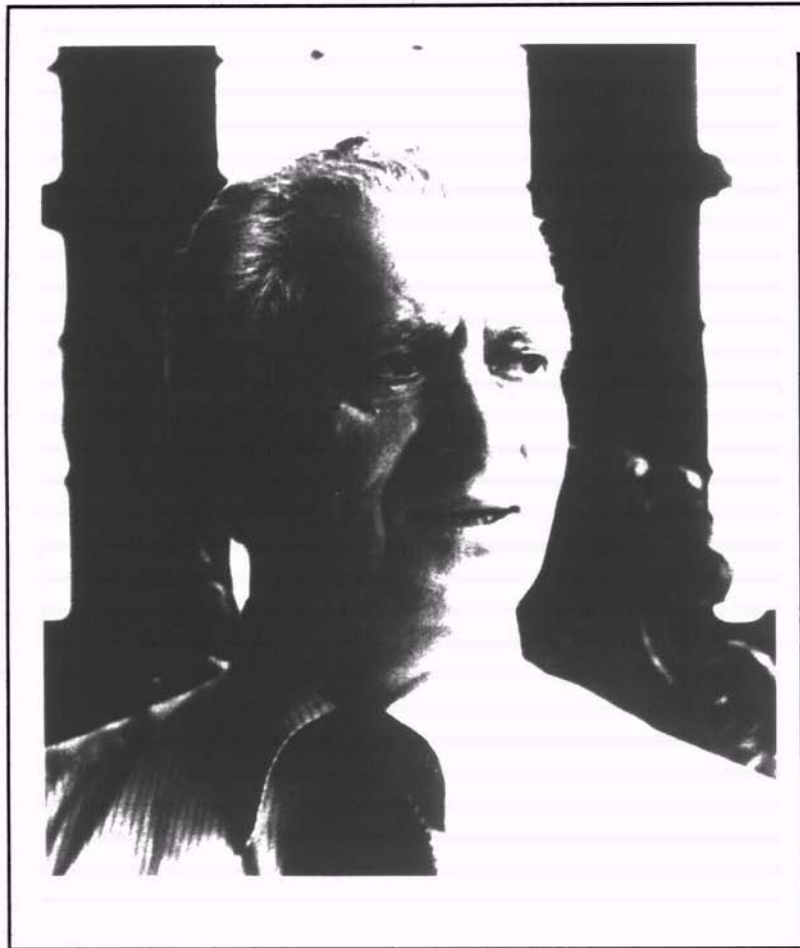
Bloom: In the research my students have done, they find there's a great deal to be gained by bringing most students to mastery on each task, because it will pay off later on in the same course. The problem is a pragmatic one: how much time can the teachers—and the students—devote to reaching mastery on a particular skill?

EL: Is there any reason to question the concept of mastery itself? Teachers observe that students seem to know something at one time, but a couple of weeks later they don't know it anymore.

Bloom: What is important is that students have the prerequisite skills and knowledge for entry to the next task. They won't remember everything for the next ten years, but they must be adequately prepared for the next learning task, especially if the learning is sequential.

EL: Another objection to mastery learning is from teachers who

[1] Harry S. Broudy. "Historical Exemplars of Teaching Methods." In: N. L. Gage, editor. *Handbook of Research on Teaching.* Chicago: Rand McNally and Company, 1963. pp. 1-43.

students make errors or have difficulties with their writing, she indicates their errors and insists that they rewrite correctly. That's a perfect example of what I mean by teaching for mastery.

Many elementary school programs in reading, and to some extent in arithmetic, are using something close to the mastery approach—not always very systematically, of course. If the program is to be fully effective, there must be detailed trial tests and a great variety of feedback-correctives.

EL: Athletic coaches use mastery learning, don't they?

Bloom: In the development of highly talented athletes, we invariably find much use of the feedback-corrective process. When teaching is one-to-one, it's always there. It's not just pointing out errors; it's helping the student overcome the errors so he or she can move on to another stage.

EL: Do you think, then, that the mastery approach will be used more widely by teachers as time goes on?

Bloom: The history of medicine shows that professionals in a field can survive for thousands of years without necessarily having very good answers. When I first came to Chicago, there were more hospital beds used for tuberculosis patients than for almost all other illnesses combined. Even the best of the doctors didn't know how to cure tuberculosis. Although they understood the causal role of the tuberculosis bacillus, they didn't know what to do about it.

With the development of new drugs in the 1930s, it became possible to cure tuberculosis, and in about five or six years, it was practically eliminated. Today, any

say it's not so much a question of whether students *can* learn; it's that some don't seem to *want* to learn. What about motivation?

Bloom: Teachers all over the world have tried teaching one group of students by the mastery approach while using another group as a control. The students taught by mastery learning get much more enthusiastic about what they are learning and less fearful about failing; they become more confident about their ability to learn. Of course not all students come to class wanting to learn what the school expects to teach, but it is possible for as high as 90 percent of the students to develop great interest in what they're learning.

Use of Mastery Learning

EL: If mastery learning is so effective, why isn't it used more widely in the United States?

Bloom: In the first place, it *is* being used widely. At least a million students are presently using mastery learning at various school levels including junior college and college. In addition, a sizeable number of teachers are using the mastery concept without knowing it. There was an article in one of the local papers about a junior college teacher of writing who inveighed against the use of mastery learning. She said it's just a set of multiple choice questions that aren't relevant to the subject of writing. She said that when her

qualified physician is able to cure tuberculosis.

I think I see a similar development in education; we're beginning to understand the learning process. Until now we have been asked to try all kinds of new things in the schools just because some authority thought it might solve a problem. We've acted as though any nostrum that anybody could devise should be tried in schools. That must not continue. We must look at the evidence; find out how well a particular method works and under what conditions it works or doesn't work.

We are beginning to understand some of the underlying principles of school learning which I believe are likely to change the course of educational history. So I emphasize "alterable variables," because those are what we can do something about. In the paper I gave you,[2] I contrasted the so-called static or nonalterable variables with the recently identified alterable variables. Static variables, such as intelligence, the socioeconomic status of the home, and the testing used for grading purposes, are very useful for the prediction and classification of students. More alterable variables, such as cognitive entry behaviors (prerequisite knowledge and skills), the home environment interactions between parents and children, and the feedback-corrective process, are vital

for the improvement of teaching and learning.

EL: A lot of people feel that schools are not as effective as they should be, and some of them are losing confidence in education. Are you pessimistic or optimistic about education?

Bloom: I've spent a good portion of the last 20 years abroad studying the curriculum and teaching methods used in various countries. When I look at the world as a whole I have great optimism. When I look at schools in the neighborhood, I am more pessimistic. Education is in great ferment throughout the world. There are new ideas, attempts to reach children who were not reached before, attempts to improve the curriculum, the methods of teaching, and the methods of teacher preparation. It's encouraging to look at 40 countries and see what country X is doing or what country Y is doing—even though some other countries are still back in the Middle Ages.

EL: When you see what is happening in other countries, how do you feel about American education?

Bloom: We have 50 states and countless school districts. The schools are very exciting and interesting in particular places, and

at particular times in our country, but of course other schools are doing much less well.

EL: If all teachers in the United States taught for mastery, would we see a dramatic increase in student achievement?

Bloom: We get overly fascinated with achievement in itself. I hope we will begin to understand that performance on an achievement test is simply evidence that the child can cope with his/her learning environment. We should look upon achievement as one piece of evidence that children are learning well.

On the other hand, children's self-concept, attitude toward school, and attitude toward learning are much influenced by their achievement. We must keep searching for ways to ensure that every child learns well. If we do, many of the problems we see in our society that are related to school achievement will be diminished. We can't solve all the problems of the world, but we can produce a generation of children who are interested in learning, who feel adequate about their learning, and who have better emotional health.

[2] Benjamin S. Bloom. *Better Learning in the Schools: A Primer for Parents, Teachers, and Other Educators.* New York: McGraw-Hill Book Company, forthcoming in 1980.

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