of a community, not as teachers, but much in the same way as other adult persons living in that community. It is assumed that the teacher will function as a mature, thoughtful person in interaction with many, many, members of the community; that he will have friends; that he will entertain; that he will travel now and then, and in many other ways contribute to a richer kind of living for himself and his family.

This list of the functions of a teacher in today's world should not be misconstrued. Each of these is not something which can be considered in isolation. Each has some relationship to the others and all must be conceived in a manner that will promote learning. This learning is to have its focus upon values, thinking and competency. It is further understood that no function will be discharged without a profound respect for the personalities of children, for the promotion of self respect, and for the extension of a free mind in a world that is tending toward conformity. All of these functions, moreover, need to be conceived as protecting the welfare of society and the dignity of the individual.

ERNEST A. HAGGARD

LEARNING:
A Process of Change

Improved understanding of the learning process can help our educational leaders plan changes that will meet the present crisis and "result in a better education for our youth."

LEARNING is the heart of the educational enterprise. This fact is entirely obvious—but even so it is sometimes forgotten. Learning is more important than attractive school buildings, administrative policies and programs, integrated curricula, or even a happy and enthusiastic teaching staff. The school may provide facilities, but after all, it is the pupils who must do the learning. Unless they learn, the plant, program and personnel of the educational system have failed, and amount only to "sounding brass, or a tinkling cymbal."

To say that the essential purpose of the school is to maximize learning does not belittle its many other functions. Many educators take the position that it is more important for the school to help develop stable, mature and well-adjusted citizens rather than "grinds" who sparkle with facts. This issue can arise, however, only if we define learning in terms of the "three R's," as some are wont to do. But from what we know about these matters, each in-
individual's personality structure, his social effectiveness, his ability to behave responsibly and maturely, and even his neurotic conflicts, are largely learned—almost as much as are his ability to spell or repeat parts of the multiplication table. Each adult is moulded by the society in which he has lived, and the school, as an agent of society, relies on learning in its efforts to shape our future citizens as well as to pass on any necessary knowledges, skills and cultural values.

Granting that learning is central to the educative process, it is nonetheless difficult (if not impossible) to say just what learning is. The best we can do is to rely on definitions which indicate whether learning has occurred, and to speculate on the conditions under which learning occurs best. There is remarkable agreement upon the definition of learning as being reflected in a change in behavior as the result of experience. There is much less agreement among psychologists and educators today on the nature of the learning process, on the conditions under which it occurs, or on the means of maximizing learning according to the school's objectives.

In a very real sense, it does us little good just to say that learning results from experience. But we do need to know the conditions under which learning occurs, and the best means for maximizing desirable learnings. This is especially true today. The crisis which now faces American education requires that we take time to think seriously about some of the premises upon which our school systems have operated, and to inquire whether they can measure up to the task of educating our youth.

Two Views of Learning

The points I wish to discuss next can be grouped under two questions: first, "If we wish to produce behavior change (i.e. learning), what should we try to change?" and second, "How should we try to bring about such behavior changes—directly or indirectly?"

These two questions are obviously related. In fact, they are really two aspects of one more general question—which boils down to our view of the nature of man, of his behavior, and of how it changes. If the question is stated in these terms, it becomes clear that divergent schools of thought exist in these matters, with the result that divergent recommendations are being made for the proper conduct of our educational enterprise. It will be sufficient here to contrast two major points of view, and their likely consequences when they are put into action in an educational setting.

Stimulus-Response Theory

If for no other reason than sheer priority, one point of view has dominated educational practice in America during the present century. Let us consider just two of the central assumptions of this view, namely that the learner is (or should be) passive, and that his behavior and any changes in it can be controlled by outside forces. Today, most educators would deny these assumptions, and probably would
doubt whether anyone ever took them seriously. Since these assertions seem to be unrealistic, let us go back and examine briefly the origins of the above propositions before discussing their impact on classroom practice.

About fifty years ago, when the educational psychologists were eager to study learning and related processes "scientifically," they had before them a clear picture of what science, scientists, and the scientific method were like. Their model was the world of the physical scientists, and the educational psychologists tried to be like them, to use similar methods, and to develop similar theories or laws. They also seem to have thought of man in much the same terms that the physical scientists then pictured their world (e.g., that all matter is inert, unless acted upon by an outside force, or that reaction follows action, etc.). And, as one might expect, the psychologists, on the basis of similar assumptions and methods, developed laws similar to the ones then held by the physical scientists. 1

More specifically, what form did the psychologists' "laws of learning" take? Although a variety of such laws were proposed, there are two which still receive credence in some quarters. One is the Law of Effect, which states that an act which is followed by a pleasant or rewarding consequence will be learned, whereas an act which is followed by an unpleasant or punishing consequence will be unlearned. The other proposition is the Law of Frequency, which states that the more often an act is repeated, the better it will be learned.

In the case of the Law of Effect, it almost seems as if the learner can be likened to a piece of litmus paper—if alkali is applied it turns blue but if acid is applied it turns red. Similarly in the case of the Law of Frequency, it almost seems as if the learner can be likened to a piece of metal—the more it is pounded the more "impression" is made on it. These analogies would sound ridiculous, were it not for the fact that many of the students in our teacher education institutions are still taught that these "laws" should be taken at face value and so applied in the classroom.

Both of these "laws of learning" have been disproved innumerable times in careful research and in everyday experience. Why, then, do they continue to be taught and used? The reason for their persistence lies partly in their simplicity, and partly in the fact that they fit neatly into a more general Stimulus-Response theory of behavior and learning. According to this theory it is assumed that the subject (the learner) is passive, and his behavior and behavior change (learning) can be controlled by manipulating external forces (stimuli). (Now, it must be admitted that most Stimulus-Response theorists today would not quite admit such assumptions—although some come remarkably close

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1 There are several other parallels between classical physics and this type of psychological theory. Another example is the once popular assumption that all matter is made up of various discrete (marble-like) particles. In psychology these "particles" took the form of simple learned responses, and the most complex of human behaviors were said to be made up of elementary conditioned responses wired together by neural connections. The field theories in physics and similar organizing principles in psychology have, needless to say, replaced these earlier views.
The important thing is that they and their followers think and act as though this and related assumptions were true.)

How is learning thought of in terms of this theory? Very simply: if stimuli cause responses, learning involves building up new stimulus-response connections. The only trick is to get the desired response to follow or be associated with a particular stimulus. From this point on, the experimenter (or in practice, the teacher) has the say-so in determining which stimuli are presented and which responses are to be associated with them—hence can control which learnings will take place.

The application of the Stimulus-Response theory to classroom learning sounds deceptively easy. The essential requirements are that the teacher presents the materials to be learned, and then sees to it that the pupils make the desired responses to it. In other words, if a teacher were to follow the Stimulus-Response theory to the letter, he would have the pupils sit quietly at their desks, he would determine what is to be learned, and he would then “present” it (probably by the lecture method). He would also make full use of the Law of Effect (by use of frequent rewards such as praise, gold stars and special privileges, and frequent punishments such as threats or deprivations) and the Law of Frequency (by use of ample drill—out of desperation when normal learning bogs down).

In terms of the questions raised earlier, the teacher who applies this theory tries to change directly the behavior patterns of the pupils. Note that nothing has been said about such things as the pupil’s personality, prejudices or value systems, whether he is interested in learning, or how he might feel about the teacher or who sits next to him. Indeed, strictly speaking, nothing need be said about such matters, if one is interested only in changing responses to stimuli by using this theory of learning.

A good deal of space has been given here to the Stimulus-Response theory of learning—more than it deserves in terms of its intrinsic merit. This was done, however, because of the great impact this theory has had on educational practice in American schools. Before concluding this section, some note should be taken of the major shortcomings of this point of view on both theoretical and practical grounds. These are:

First, the basic implicit working assumptions of this theory are untenable. To suppose that the learner is or can be passive is ridiculous, as any parent or teacher of children well knows. It is likewise unthinkable that man’s behavior is determined by external forces alone. Much of what a person does or learns is determined by inner forces, such as how he views the situation he is in, and his motivations, expectations and purposes at the time.

Second, this theory does not help us to answer certain important questions. It is true that research based on this theory does help us to answer the question, “When stimulus x is presented, to what extent will response y occur?” But the more important question is, “In the absence of stimulus x, will response y occur?” We need to know how children come to internalize the necessary knowledges, skills...
and value systems so that they can manage their lives in the absence of parents, teachers, policemen and psychiatrists. In the final analysis, we require of our citizens that they learn to behave intelligently, maturely and responsibly on their own.

Third, this theory, when put into practice, is appallingly ineffective. This fact is best seen by watching children outside of school, and seeing just how much they effortlessly learn and remember. This fact is also apparent if we look back on our own "school learning" (especially if we went to a school which practiced this theory) and try to recall the academic materials that we presumably learned in the 4th, 7th or 10th grades, or sophomore year in college, or even the foreign language that we "learned" for the doctorate. In view of how easily people are able to learn and remember things outside of school, one is struck with how little of academic learning is retained for use by most adults.

Motivational Theory

A Motivational theory of behavior and learning differs in many respects from the Stimulus-Response theory. Some of the major assumptions of a Motivational theory are that, although the individual is responsive to environmental stimuli, his behavior (including learning) is determined in large measure by other factors, such as his prior experiences, how he perceives the situation, and his current interests and motivations. Rather than thinking primarily of the external stimuli and responses to them, attention is focused on the individual-in-the-environment context, with emphasis on how his relations to his environment change with time.

In describing the "individual," we may, for our purposes here, speak briefly of both the perceptual and the motivational aspects of his behavior. On the perceptual side, it is assumed that the individual learns to view his world in characteristic ways which determine in part what he sees and its meaning to him, which in turn influence how he will relate to and deal with what he sees. The individual's "ways of seeing" act like flexible sieves through which the environment must pass. Also, these change with time, so that any given stimulus does not always stay the same; as the individual comes to see it differently, it ceases to be the same stimulus—even though its physical properties have not changed. Thus, suppose a child first sees his teacher as being an awesome, all-knowing authority figure, and later sees her as a warm, helpful friend. Although the teacher actually may have changed little if at all during the time, she has changed a great deal as far as the pupil is concerned. It is important to note in such cases that the child's seeing his teacher differently will influence what and how well he will learn other things in her class.

Of more direct interest, however, is the individual's "motivational structure" which develops as he is educated to be a member of society. Here, "motivation" is used to denote the forces which lie behind behavior and "structure" refers to the individual's organized, characteristic and relatively stable set of motivations. Each person's motivational structure develops with time, and it is shaped in large
part by his total education, in the broadest sense of the word. Thus, the infant is motivated primarily by his biological needs, but by the time he has become an adult, his behavior is also directed toward gaining social acceptance, fun, status, money, power, knowledge or prestige—as much as in just trying to keep body and soul together. The individual's motivational structure is important also because it influences how he sees his world, or more simply, he tends to see what he wants or needs or is able to see.

If, according to this theory, the motivational structure plays such an important role in determining behavior and learning, how does it change or develop? First of all, we can assume that each person comes to every situation (school included) "equipped" with some sort of motivational structure. If he is interested in what the situation has to offer, and if parts of the environment are congruent with (or "fit") his motivational structure, both aspects interact and both are changed. The environment is changed because the person acts and, if learning occurs, the person's motivational structure is modified as a result of his changed way of relating to his environment.

"Learning" occurs when the situation requires new adjustments on the part of the person, so that his motivational structure has become modified somewhat in order to carry out the appropriate action. In such cases, the new learnings become "grafted into," and hence change, the previous motivational structure. It is clear that, in terms of this theory, learning occurs when a person actively relates to a new situation and makes new adjustments to it. This involves a change in his motivational structure—and when it changes, it follows that his behavior will change also.

Thus, both the Stimulus-Response and Motivational theories are interested in "explaining" behavior changes, but they go about it differently. There is also another difference, which relates to "predicting" behavior and behavior changes. The Stimulus-Response theory would predict that the person will do what he has learned to do in terms of the stimulus situation; a Motivational theory would predict that the person's present motivational structure, as modified by previous learnings, will determine his behavior. This difference is obvious in all those cases where the person has learned "what to do"—and then does something else.

What implications does a Motivational theory have for educational practice? Before answering this question, it would help if we recalled a frequent observation of teachers, namely that "The students who are interested in what I teach are no problem (unless it's trying to keep ahead of them)—it is the rest of the class that is making my hair turn gray." A teacher would be fortunate indeed if all of his pupils were eager to learn. But how should he try to teach those who are disinterested?

Let us begin with a teacher who has just one pupil. On the basis of a Motivational theory, he should first find out the child's present motivational structure (and especially his central and enduring interests or motivations), and then he should present
the material-to-be-learned so that it “fits” the child’s motivations. He should, for example, work in terms of the child’s desire for a feeling of competence and of his striving toward some goal important to him, rather than just the getting of a high grade on a test. The former motivations are more durable; furthermore, if the child’s only wish is to get good grades, the primary thing he may learn is how to get them more easily by cramming or cheating on examinations rather than by really mastering the material. The importance of using a central motivation to facilitate learning was illustrated with illiterates in the Army during the last war—the men learned to read in a phenomenally short time when the instructors presented the matter in terms of their being able to read the “letters from home.”

Usually, however, the teacher has twenty or thirty pupils to deal with. What then? By and large, the same principles would apply, with some compromises, because the motivational structures of each child will differ, at least to some degree. This obviously makes the teacher’s task difficult, and requires him to make use of motivations which are more or less common to the group as well as those which characterize various individuals. This is only saying what we all know—that the successful teacher is able to interest his whole class, and he also appeals to the special interests of each child.

But regardless of the validity of the theoretical bases of a Motivational theory of learning, or the promise of increased practical results that come from following it, there are certain conditions which may tend to interfere with its widespread application. For one thing, the current crisis in American Education, which involves very great social and population pressures for the expansion of our present School System—along with economic restrictions and the lack of available facilities—make this point of view sound like a luxury which cannot be afforded the average child, at least not right now. This theory cannot be put into practice if teachers are forced to present the subject matter in a rule-of-thumb manner to overcrowded classrooms—but can we afford this?

Another hindrance to the application of this theory lies in the many large gaps in our present knowledge of children and how they develop. For example, we know relatively little of the mental development of children (apart from their performance on academic tests), of how they see, their world and what questions they ask about it, of what subject matters, knowledges and skills excite them at what ages, and so on, and so on. We consequently know too little of how various subject matters should best be presented, in what form, at what pace, and at what age levels, in order to provide materials which “fit” the interests and abilities of the children in school—and not just conform to some outmoded or arbitrary curriculum.

To illustrate only a few of these points, let us look briefly at the “problem” of teaching mathematics. Why is it so many of our children find it difficult? Why do so many otherwise intelligent students, even in college, say that they “just can’t do mathematics or statistics” when every
day of their lives they use the number system and think in terms which are essentially mathematical? Why is it that the children of a number of other cultures do not have such difficulties in this area? Part of the answer to these questions may lie in our having asked, "What mathematics should we teach fifth grade children?" rather than "What type of mathematical questions does the typical child in the fifth grade begin to ask?"—and then gear our teaching accordingly. One series of studies which investigated the development of mathematical concepts in children found that the concepts developed, their type and order, are almost the reverse of those "taught" in most of our schools! We need to know more of what children are like in order to be able to teach them more effectively. But although there is a great deal that we do not know about child development and the learning process, we should not take refuge in our past and present ignorances, and hence continue to perpetuate the educational errors of a generation or two ago. Enough has been learned during this period that can be used to improve the current educational practices in our public schools.

A Process of Change

The fundamental consideration discussed in this paper has to do with learning as a process of change. We have examined briefly two rather different views of the learning process and some of their implications for educational practice, especially as they apply to classroom teaching and learning. It is clear that our educational leaders have some choice in determining how they will plan for the educational experiences of our children, and that what is achieved in this respect will be partly a result of their planning. The issue which faces those who will make and carry out our educational policy and programming centers around the kind of changes they wish to bring about, on both the individual and the societal levels.

There is no question but that the school is becoming an increasingly important agent for the shaping of our future citizens. Under our past and present procedures, however, the educational enterprise has too often been ineffective in what is required of it—or worse, has resulted in children's becoming disinterested in learning or using the classroom as a battleground, with the teacher on one side and themselves on the other. There is absolutely no justification for the waste that is involved when such conditions exist.

On the societal level these issues take a somewhat different form. Here, the role of the school is to help train our youth to become mature adults who can and will act intelligently and responsibly in a highly complex and unstable world. Our society can ill afford to waste a large proportion of the talent or other human resources inherent in our population by holding on to ineffective educational procedures. The pressures involved in the inevitable expansion of our educational system to teach larger numbers of pupils may lead some to think that we only need more of what we already have. But, actually, the present crisis also holds the opportunity for our educational leaders to plan those changes in our school system which will result in a better education for our youth.