The Curriculum Studies Reader

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Scientific Method in Curriculum-Making

Franklin Bobbitt

Since the opening of the twentieth century, the evolution of our social order has been proceeding with great and ever-accelerating rapidity. Simple conditions have been growing complex. Small institutions have been growing large. Increased specialization has been multiplying human dependencies and the consequent need of coordinating effort. Democracy is increasing within the Nation; and growing throughout the world. All classes are aspiring to a full human opportunity. Never before have civilization and humanization advanced so swiftly.

As the world presses eagerly forward toward the accomplishment of new things, education also must advance no less swiftly. It must provide the intelligence and the aspirations necessary for the advance; and for stability and consistency in holding the gains. Education must take a pace set, not by itself, but by social progress.

The present program of public education was mainly formulated during the simpler conditions of the nineteenth century. In details it has been improved. In fundamentals it is not greatly different. A program never designed for the present day has been inherited.

Any inherited system, good for its time, when held to after its day, hampers social progress. It is not enough that the system, fundamentally unchanged in plan and purpose, be improved in details. In education this has been done in conspicuous degree. Our schools today are better than ever before. Teachers are better trained. Supervision is more adequate. Buildings and equipment are enormously improved. Effective methods are being introduced, and time is being economized. Improvements are visible on every hand. And yet to do the nineteenth-century task better than it was then done is not necessarily to do the twentieth-century task.

New duties lie before us. And these require new methods, new materials, new vision. The old education, except as it conferred the tools of knowledge, was mainly devoted to filling the memory with facts. The new age is more in need of facts than the old; and of more facts; and it must find more effective methods of teaching them. But there are now other functions. Education is now to develop a type of wisdom that can grow only out of participation in the living experiences of men, and never out of mere memorization of verbal statements of facts. It must, therefore, train thought and judgment in connection with actual life-situations, a task distinctly different from the cloisteral activities of the past. It is also to develop the goodwill, the spirit of service, the social valuations, sympathies, and attitudes of mind necessary for effective group-action where specialization has created endless interdependency. It has the function of training every citizen, man or woman, not for knowledge about citizenship, but for proficiency in citizenship;
not for knowledge about hygiene, but for proficiency in maintaining robust health; not for a mere knowledge of abstract science, but for proficiency in the use of ideas in the control of practical situations. Most of these are new tasks. In connection with each, much is now being done in all progressive school systems; but most of them yet are but partially developed. We have been developing knowledge, not function; the power to reproduce facts, rather than the powers to think and feel and will and act in vital relation to the world’s life. Now we must look to these latter things as well.

Our task in this volume is to point out some of the new duties. We are to show why education must now undertake tasks that until recently were not considered needful; why new methods, new materials, and new types of experience must be employed. We here try to develop a point of view that seems to be needed by practical school men and women as they make the educational adjustments now demanded by social conditions; and needed also by scientific workers who are seeking to define with accuracy the objectives of education. It is the feeling of the writer that in the social reconstructions of the post-war years that lie just ahead of us, education is to be called upon to bear a hitherto undreamed-of burden of responsibility; and to undertake unaccustomed labors. To present some of the theory needed for the curriculum labors of this new age has been the task herein attempted.

This is a first book in a field that until recently has been too little cultivated. For a long time, we have been developing the theory of educational method, both general and special; and we have required teachers and supervisors to be thoroughly cognizant of it. Recently, however, we have discerned that there is a theory of curriculum-formulation that is no less extensive and involved than that of method; and that it is just as much needed by teachers and supervisors. To know what to do is as important as to know how to do it. This volume, therefore, is designed for teacher-training institutions as an introductory textbook in the theory of the curriculum; and for reading circles in the training of teachers in service. It is hoped also that it may assist the general reader who is interested in noting recent educational tendencies.

The technique of curriculum-making along scientific lines has been but little developed. The controlling purposes of education have not been sufficiently particularized. We have aimed at a vague culture, an ill-defined discipline, a nebulous harmonious development of the individual, an indefinite moral character-building, an unpaticicularized social efficiency, or, often enough nothing more than escape from a life of work. Often there are no controlling purposes; the momentum of the educational machine keeps it running. So long as objectives are but vague guesses, or not even that, there can be no demand for anything but vague guesses as to means and procedure. But the era of contentment with large, undefined purposes is rapidly passing. An age of science is demanding exactness and particularity.

The technique of scientific method is at present being developed for every important aspect of education. Experimental laboratories and schools are discovering accurate methods of measuring and evaluating different types of educational processes. Bureaus of educational measurement are discovering scientific methods of analyzing results, of diagnosing specific situations, and of prescribing remedies. Scientific method is being applied to the fields of budget-making, child-accounting, systems of grading and promotion, etc.

The curriculum, however, is a primordial factor. If it is wrongly drawn up on the basis merely of guess and personal opinion, all of the science in the world applied to the factors above enumerated will not make the work efficient. The scientific task preceding all
others is the determination of the curriculum. For this we need a scientific technique. At present this is being rapidly developed in connection with various fields of training.

The central theory is simple. Human life, however varied, consists in the performance of specific activities. Education that prepares for life is one that prepares definitely and adequately for these specific activities. However numerous and diverse they may be for any social class, they can be discovered. This requires only that one go out into the world of affairs and discover the particulars of which these affairs consist. These will show the abilities, attitudes, habits, appreciations, and forms of knowledge that men need. These will be the objectives of the curriculum. They will be numerous, definite, and particularized. The curriculum will then be that series of experiences which children and youth must have by way of attaining those objectives.

The word curriculum is Latin for a race-course, or the race itself—a place of deeds, or a series of deeds. As applied to education, it is that series of things which children and youth must do and experience by way of developing abilities to do the things well that make up the affairs of adult life; and to be in all respects what adults should be.

The developmental experiences exist upon two levels. On the one hand, there is the general experience of living in the community life, without thought of the training values. In this way, through participation, one gets much of his education for participation in community life. In many things this provides most of the training; and in all essential things, much of it. But in all fields, this incidental or undirected developmental experience leaves the training imperfect. It is necessary, therefore, to supplement it with the conscious directed training of systematized education. The first level we shall call undirected training; and the second, directed training.

The curriculum may, therefore, be defined in two ways: (1) it is the entire range of experiences, both undirected and directed, concerned in unfolding the abilities of the individual; or (2) it is the series of consciously directed training experiences that the schools use for completing and perfecting the unfoldment. Our profession uses the term usually in the latter sense. But as education is coming more and more to be seen as a thing of experiences, and as the work- and play-experiences of general community life are being more and more utilized, the line of demarcation between directed and undirected training experience is rapidly disappearing. Education must be concerned with both, even though it does not direct both.

When the curriculum is defined as including both directed and undirected experiences, then its objectives are the total range of human abilities, habits, systems of knowledge, etc., that one should possess. These will be discovered by analytic survey. The curriculum-discoverer will first be an analyst of human nature and of human affairs. His task at this point is not at all concerned with "the studies"—later he will draw up appropriate studies as means, but he will not analyze the tools to be used in a piece of work as a mode of discovering the objectives of that work. His first task rather, in ascertaining the education appropriate for any special class, is to discover the total range of habits, skills, abilities, forms of thought, valuations, ambitions, etc., that its members need for the effective performance of their vocational labors; likewise, the total range needed for their civic activities; their health activities; their recreations; their language; their parental, religious, and general social activities. The program of analysis will be no narrow one. It will be wide as life itself. As it thus finds all the things that make up the mosaic of full-formed human life, it discovers the full range of educational objectives.

Notwithstanding the fact that many of these objectives are attained without conscious
effort, the curriculum-discoverer must have all of them before him for his labors. Even though the scholastic curriculum will not find it necessary to aim at all of them, it is the function of education to see that all of them are attained. Only as he looks to the entire series can he discover the ones that require conscious effort. He will be content to let as much as possible be taken care of through undirected experiences. Indeed he will strive for such conditions that a maximum amount of the training can be so taken care of.

The curriculum of the schools will aim at those objectives that are not sufficiently attained as a result of the general undirected experience. This is to recognize that the total range of specific educational objectives breaks up into two sets: one, those arrived at through one's general experiences without his taking thought as to the training; the other, those that are imperfectly or not at all attained through such general experience. The latter are revealed, and distinguished from the former, by the presence of imperfections, errors, shortcomings. Like the symptoms of disease, these point unerringly to those objectives that require the systematized labors of directed training. Deficiencies point to the ends of conscious education. As the specific objectives upon which education is to be focused are thus pointed out, we are shown where the curriculum of the directed training is to be developed.

Let us illustrate. One of the most important things in which one is to be trained is the effective use of the mother-tongue. It is possible to analyze one's language activities and find all of the things one must do in effectively and correctly using it. Each of these things then becomes an objective of the training. But it is not necessary consciously to train for each of them. Let an individual grow up in a cultivated language-atmosphere, and he will learn to do, and be sufficiently practiced in doing, most of them, without any directed training. Here and there he will make mistakes. Each mistake is a call for directed training.

The curriculum of the directed training is to be discovered in the shortcomings of individuals after they have had all that can be given by the undirected training. This principle is recognized in the recent work of many investigators as to the curriculum of grammar. One of the earliest studies was that of Professor Charters.1 Under his direction, the teachers of Kansas City undertook to discover the errors made by pupils in their oral and written language. For the oral errors the teachers carried notebooks for five days of one week and jotted down every grammatical error which they heard made by any pupil at any time during the day. For the errors in writing they examined the written work of the pupils for a period of three weeks. They discovered twenty-one types of errors in the oral speech and twenty-seven types in the written. The oral errors in the order of their frequency were as follows:

<table>
<thead>
<tr>
<th>Error Description</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>1. Confusion of past tense and past participle</td>
<td>24</td>
</tr>
<tr>
<td>2. Failure of verb to agree with its subject in number and person</td>
<td>14</td>
</tr>
<tr>
<td>3. Wrong verb</td>
<td>12</td>
</tr>
<tr>
<td>4. Double negative</td>
<td>11</td>
</tr>
<tr>
<td>5. Syntactical redundance</td>
<td>10</td>
</tr>
<tr>
<td>6. Wrong sentence form</td>
<td>5</td>
</tr>
<tr>
<td>7. Confusion of adjectives and adverbs</td>
<td>4</td>
</tr>
<tr>
<td>8. Subject of verb not in nominative case</td>
<td>4</td>
</tr>
<tr>
<td>9. Confusion of demonstrative adjective with personal pronoun</td>
<td>3</td>
</tr>
<tr>
<td>10. Predicate nominative not in nominative case</td>
<td>2</td>
</tr>
<tr>
<td>11. First personal pronoun standing first in a series</td>
<td>2</td>
</tr>
</tbody>
</table>
12. Wrong form of noun or pronoun
13. Confusion of past and present tenses
14. Object of verb or preposition not in the objective case
15. Wrong part of speech due to a similarity of sound
16. Incorrect comparison of adjectives
17. Failure of the pronoun to agree with its antecedent
18. Incorrect use of mood
19. Misplaced modifier
20. Confusion of preposition and conjunction
21. Confusion of comparatives and superlatives

Each error discovered is a symptom of grammatical ignorance, wrong habit, imperfect valuation, or careless attitude toward one's language. The nature of the deficiency points to the abilities and dispositions that are to be developed in the child by way of bringing about the use of the correct forms. Each grammatical shortcoming discovered, therefore, points to a needed objective of education. It points to a development of knowledge or attitude which the general undirected language experience has not sufficiently accomplished; and which must therefore be consciously undertaken by the schools.

Scientific method must consider both levels of the grammar curriculum. One task is to provide at the school as much as possible of a cultivated language-atmosphere in which the children can live and receive unconscious training. This is really the task of major importance, and provides the type of experience that should accomplish an ever-increasing proportion of the training. The other task is to make children conscious of their errors, to teach the grammar needed for correction or prevention, and to bring the children to put their grammatical knowledge to work in eliminating the errors. In proportion as the other type of experience is increased, this conscious training will play a diminishing role.

In the spelling field, Ayres, Jones, Cook and O'Shea, and others have been tabulating the words that children and adults use in writing letters, reports, compositions, etc. In this way they have been discovering the particularized objectives of training in spelling. But words are of unequal difficulty. Most are learned in the course of the reading and writing experience of the children without much conscious attention to the spelling. But here and there are words that are not so learned. Investigations, therefore, lay special emphasis upon the words that are misspelled. Each misspelled word reveals a directed-curriculum task. Here, as in the grammar, error is the symptom of training need; and the complete error-list points unerringly to the curriculum of conscious training.

In the vocational field, and on the technical side only, Indianapolis has provided an excellent example of method of discovering the objectives of training. Investigators, without pre-suppositions as to content of vocational curriculum, set out to discover the major occupations of the city, the processes to be performed in each, and the knowledge, habits and skills needed for effective work. They talked with expert workmen; and observed the work-processes. In their report, for each occupation, they present: (1) a list of tools and machines with which a workman must be skillful; (2) a list of the materials used in the work with which workers need to be familiar; (3) a list of items of general knowledge needed concerning jobs and processes; (4) the kinds of mathematical operations actually employed in the work; (5) the items or portions of science needed for control of processes; (6) the elements of drawing and design actually used in the work; (7) the characteristics of the English needed where language is vitally
involved in one's work, as in commercial occupations; (8) elements of hygiene needed for keeping one's self up to the physical standards demanded by the work; and (9) the needed facts of economics.

Many of the things listed in such a survey are learned through incidental experience. Others cannot be sufficiently learned in this way. It is by putting the workers to work, whether adolescent or adult, and by noting the kinds of shortcomings and mistakes that show themselves when training is absent or deficient, that we can discover the curriculum tasks for directed vocational education.

The objectives of education are not to be discovered within just any kind or quality of human affairs. Occupational, civic, sanitary, or other activity may be poorly performed and productive of only meager results. At the other end of the scale are types of activity that are as well performed as it is in human nature to perform them, and which are abundantly fruitful in good results. Education is established upon the presumption that human activities exist upon different levels of quality or efficiency; that performance of low character is not good; that it can be eliminated through training; and that only the best or at least the best attainable is good enough. Whether in agriculture, building-trades, housekeeping, commerce, civic regulation, sanitation, or any other, education presumes that the best that is practicable is what ought to be. Education is to keep its feet squarely upon the earth; but this does not require that it aim lower than the highest that is practicable.

Let us take a concrete illustration. The curriculum-discoverer wishes, for example, to draw up a course of training in agriculture. He will go out into the practical world of agriculture as the only place that can reveal the objectives of agricultural education. He will start out without prejudice as to the specific objectives. All that he needs for the work is pencil, notebook, and a discerning intelligence. He will observe the work of farmers; he will talk with them about all aspects of their work; and he will read reliable accounts which give insight into their activities. From these sources he will discover the particular things that the farmers do in carrying on each piece of work; the specific knowledge which the farmers employ in planning and performing each specific task; the kinds of judgments at which they must arrive; the types of problems they must solve; the habits and skills demanded by the tasks; the attitudes of mind, appreciations, valuations, ambitions, and desires, which motivate and exercise general control.

Facts upon all of these matters can be obtained from a survey of any agricultural region, however primitive or backward. But primitive agriculture is the thing which exists without any education. It is the thing education is to eliminate. The curriculum-discoverer, therefore, will not investigate just any agricultural situation. He will go to the farms that are most productive and most successful from every legitimate point of view. These will often be experimental or demonstration farms which represent what is practicable for the community, but which may not be typical of actual practices in that community. Where such general practices are inferior, agricultural education is to aim not at what is but at what ought to be.

When the farming practices are already upon a high plane, education has but a single function: it is to hand over these practices unchanged to the members of the new generation.

Where the practices of a region are primitive or backward, education has a double function to perform. It is not only to hand over to the new generation a proficiency that is equal to that of their fathers, but it is also to lift the proficiency of the sons to a height much beyond that of their fathers. Within such a region, therefore, agricultural
education has the additional function of serving as the fundamental social agency of agricultural progress.

What we have said concerning agriculture is generally applicable throughout the occupational world. For discovering the objectives for a training course in bricklaying one will analyze not the activities of bricklayers in general, but those where bricklaying has been carried to its highest practicable level of efficiency—as this efficiency is judged on the basis of all legitimate standards. Education will aim, not at average bricklayers, but at the best types of bricklayers.

When stated in broad outline, the general principle is obvious. In practical application, it presents difficulties. Men do not agree as to the characteristics of the most desirable types of work. The employers of the bricklayers will be inclined to use maximum productiveness as the criterion of superior work; and unquestioning obedience to orders and contentment with any kind of hours, wages, and working conditions as proper mental attitudes. The employees will judge otherwise as to some of the factors. The employers will invite the curriculum-discoverer to investigate situations where productiveness in proportion to costs is greatest; the employees, where the total welfare of the worker is considered alongside of the factor of productiveness. Both sides will agree that education should aim at the best and that scientific investigations as to objectives should seek to discover the characteristics of only the best. They disagree as to what is the best, and therefore where the investigations are to be made.

The general principle of finding the scholastic curriculum in the shortcomings of children and men is quite obvious and entirely familiar to teachers in its application to the curriculum of spelling, grammar, and other subjects that result in objective performance, such as pronunciation, drawing, music, computation, etc. It is not so clear in connection with the highly complex subjects of history, literature, geography, etc. What are the social shortcomings that are to be eliminated through a study of these social subjects? Our ideas are yet so vague, in most cases, that we can scarcely be said to have objectives. The first task of the scientific curriculum-maker is the discovery of those social deficiencies that result from a lack of historical, literary, and geographical experiences. Each deficiency found is a call for directed training; it points to an objective that is to be set up for conscious training. The nature of the objectives will point to the curriculum materials to be selected for these subjects. A major obstacle is lack of agreement as to what constitutes social deficiency. There is however no justification for scholastic training of any kind except as a gap exists between the training of general experience and the training that ought to be accomplished.

Society agrees sufficiently well as to many social shortcomings. Education needs to assemble them in as accurate and particularized a form as possible. They can then be used as the social symptoms which point to the objectives of history, literature, geography, economics, and other social studies. Society will disagree as to many suggested deficiencies. A program can be scientific, however, without being complete. The thousand spelling words presented by Mr. Ayres is a good list notwithstanding the fact that it presents not more than a quarter of the words needed. It is a secure beginning that can be completed by further studies. In the same way in our social training, we shall do very well if we can set up a quarter of the desirable objectives. That would be a great advance over none at all, as at present; and would provide the nucleus, the technique, and the vision of possibilities necessary for gradually rounding out the list.

The principle involves us in similar difficulties in its application to civic, moral, vocational, sanitational, recreational, and parental education. It is equally valid, however, in
connection with each of these. Only as we agree upon what ought to be in each of these difficult fields, can we know at what the training should aim. Only as we list the errors and shortcomings of human performance in each of the fields can we know what to include and to emphasize in the directed curriculum of the schools.

Note

The Rise of Scientific Curriculum-Making and Its Aftermath

Herbert M. Kliebard

When Boyd Bode published *Modern Educational Theories* in 1927, he took on what had already become the entrenched establishment of the curriculum world. With his trenchant criticism of Franklin Bobbitt in the chapter, "Curriculum Construction and Consensus of Opinion" and of W. W. Charters in the succeeding chapter, "Curriculum Making and the Method of Job Analysis," Bode was attacking not only the work of two men who had established themselves as the prototypes of the curriculum specialist, but the very foundations on which curriculum as a field of specialization had been based. Bode probably did not suspect, however, that the notion of careful pre-specification of educational objectives (with variations in terminology and technique) and the notion of activity analysis as the means toward their "discovery" (also with variations in terminology and technique) would become the foundations on which, almost half a century later, many books would be written, Ph.D.s awarded, careers established, and millions of dollars expended. Certainly Bode never dreamed that legislation embodying these principles would be enacted across the United States and that the very ideas he was attacking would become semi-official doctrine in federal and state agencies as well as in many educational institutions.

The Scientific Curriculum Making of Bobbitt and Charters

Bobbitt and Charters lived in auspicious times. Mental discipline as a theoretical basis for the curriculum was almost dead by the early twentieth century. The bright flame of American Herbartianism, which had for a time captured the imagination of the educational world, was flickering. An educational ideology true to the times was needed, and nothing was more appropriate than scientific curriculum making. This doctrine, with its promise of precision and objectivity, had an immediate appeal. Certainly there was no reason why scientific principles applied to education would not meet with the same success as science applied to business in the form of scientific management. The general notion of applied science, as well as the particular model of scientific arrangement, is in fact evident throughout the work of Bobbitt and Charters.

Of the two, Bobbitt was perhaps the first to strike this rich vein. As a young instructor in educational administration at the University of Chicago, he effectively drew the parallel between business techniques and education in a lengthy article in the *Twelfth Yearbook of the National Society for the Study of Education* (Bobbitt 1913). But Bobbitt, unlike other educators who turned to scientific management, was not content merely to
apply certain management techniques to education, such as maximum utilization of the school plant; he provided the professional educators in the twentieth century with the concepts and metaphors—indeed, the very language—that were needed to create an aura of technical expertise without which the hegemony of professional educators could not be established. Science was not simply a tool with which to carve out exactitude in educational affairs generally and in the curriculum in particular; it was a means by which one could confer professional status and exclude the uninitiated. Even the term “curriculum specialist” implied a particular set of technical skills unavailable to the untrained. While the notion of science implies a certain aura of exclusiveness, Bobbitt was probably not explicitly aware of such a political use of his technical language. In his two major works, *The Curriculum* (1918) and *How to Make a Curriculum* (1924), as well as in numerous articles on the techniques of curriculum making, he seems simply to have believed that science had the key that idle speculation and even philosophy failed to provide.

Like Bobbitt, W. W. Charters was already a major leader in education by the time Bode’s work was published. Charters had written *Methods of Teaching* in 1909 and *Teaching the Common Branches* in 1913, both popular books; but with *Curriculum Construction* in 1923, he established himself in the forefront of curriculum thinking. (In the preface to this book, Charters gives particular thanks to his “former colleague, B. H. Bode” for “his criticism of theoretical principles.”) Like Bobbitt also, Charters approached the problems of curriculum from the perspective of functional efficiency. Through the method of activity analysis (or job analysis, as it was also called), Charters was able to apply professional expertise to the development of curricula in many diverse fields, including secretarial studies, library studies, pharmacy, and especially teacher education (with *The Commonwealth Teacher-Training Study* in 1929). Activity analysis was so universally applicable a technique of curriculum development that Charters was even able to use it to develop a curriculum for being a woman. As with other occupations, one simply had to analyze the particular activities that defined the role and then place these in relationship to the ideals that would control these activities. The training involved in performing the activities well would then become the curriculum (Charters 1921, 1925). Out of the work and thought of Bobbitt and Charters, as well as their contemporaries and disciples, arose a new rationale and a modus operandi for the curriculum field that were to prevail to the present day. So dominant did scientific curriculum making become that Bode’s *Modern Educational Theories* stands as one of the few direct assaults on some of its principal tenets and certainly the most important.

Preparing for Adulthood

One of the most basic tenets of scientific curriculum making is a principle enunciated early in Bobbitt’s *How to Make a Curriculum*: “Education is primarily for adult life, not for child life. Its fundamental responsibility is to prepare for the fifty years of adulthood, not for the twenty years of childhood and youth” (1924, p. 8). Education, in other words, consists in preparing to become an adult. There is probably no more crucial notion in the entire theory. Without it, there would be no point, for example, in such careful analysis of adult activities and their ultimate transformation into minute and explicit curricular objectives. Moreover, much curriculum policy, such as the strong emphasis on curriculum differentiation with its basis in predicting the probable destination of children as to their adult lives, rests squarely on education as preparation. If education is
for what lies ahead, then it becomes of utmost importance to state with reasonable accuracy what that future holds. Bode’s criticism is most telling in making the distinction between a prediction by, for example, an astronomer as to the curve of a comet and an educator constructing a future ideal in schooling. Curriculum making, in other words, is a form of utopian thinking, not of crystal-ball gazing. But Dewey, whom Bode cites favorably in this context, had gone even further in attacking the notion of preparation. In “My Pedagogic Creed,” Dewey took pains to define education as “a process of living and not a preparation for future living” (1929, p. 292), and he undertook specifically in Democracy and Education to point up other deficiencies in the idea. To think of children as merely getting ready for a remote and obscure world, Dewey thought, is to remove them as social members of the community. “They are looked upon as candidates,” he said; “they are placed on the waiting list” (1916, p. 63). Furthermore, since children are not directed and stimulated by what is so remote in time, the educator must introduce, on a large scale, extrinsic rewards and punishments. Bode’s criticism of education as preparation rests largely on the assumption that it would lead to a social status quo rather than social improvement. While Dewey would no doubt agree, his criticism is more far-reaching and devastating. He considered not only its social significance but its impact on the child and the pedagogical process itself.

A curious sidelight to the importance of education as preparation in scientific curriculum making is Bobbitt’s own developing ambivalence toward the idea. In setting forth his curriculum theory in the epic Twenty-Sixth Yearbook of the National Society for the Study of Education, Bobbitt says, “Education is not primarily to prepare for life at some future time. Quite the reverse; it purports to hold high the current living. . . . In a very true sense, life cannot be ‘prepared for.’ It can only be lived” (1926, p. 43). Later, when asked to write his summary theory of curriculum, Bobbitt declared, “While there are general guiding principles that enable parents and teachers to foresee in advance the long general course that is normally run, yet they cannot foresee or foreknow the specific and concrete details of the course that is to be actualized” (1934, p. 4). In these passages, he sounds more like Kilpatrick than himself. But if Bobbitt was ambivalent, even self-contradictory, on the subject of education as preparation, his disciples and present intellectual heirs are not. If anything is ingrained in curriculum thinking today, it is the notion that it is the job of curriculum planners to anticipate the exact skills, knowledge, and—to use today’s most fashionable term—“competencies” that will stand one in good stead at an imagined point in the future. These predictions about what one will need in the future become the bases of curriculum planning.

Specificity of Objectives

A concomitant of the emphasis on preparation is the insistence that the end products of the curriculum be stated with great particularity. Vague Delphic prophecies simply won’t do. “‘Ability to care for one’s health’ . . .” declared Bobbitt, “is too general to be useful. It must be reduced to particularity: ability to manage the ventilation of one’s sleeping room, ability to protect one’s self against micro-organisms, ability to care for the teeth, and so on” (1924, p. 32). If science is to be identified with exactitude, then scientific curriculum making must demonstrate its elevated status through the precision with which objectives are stated. It is at this point that Bode’s criticism is both astute and telling. He points out, for example, that under the guise of scientific objectivity,
Bobbitt inserts a submerged ideology. Scientific objectivity, it turns out, becomes a way of preserving the tried and true values of the society as well as making explicit the prevailing practical skills of the contemporary world.

Bode, of course, would not object to a philosophy of education governing curriculum; his objection is that the values of the scientific curriculum makers are disguised and covert. Furthermore, even a cursory examination of Bobbitt’s most famous list of objectives would indicate wide latitude in the degree of specificity with which the objectives are stated. Alongside “the ability to keep one’s emotional serenity, in the face of circumstances however trying” (1924, p. 25), “an attitude and desire of obedience to the immutable and eternal laws which appear to exist in the nature of things,” and “confidence in the beneficence of these laws” (1924, p. 26), we find “ability to read and interpret facts expressed by commonly used types of graphs, diagrams, and statistical tables” (1924, p. 12), as well as “ability to care properly for the feet” (1924, p. 14). Although the injunction to be specific and explicit is unqualified, there seems to be some difficulty in carrying it out simply as a practical matter. In considering the efficient functioning of the human body, for example, we have no guidance as to whether to begin with the leg, the foot, the toe, or the toenail. The same problem would arise if we were dealing with the ability to swing a hammer or the ability to solve quadratic equations. The scientific curriculum makers’ allegiance to specificity was allied to Thorndike’s conception of the mind as consisting of multitudinous separate and individual functions (1901, p. 249), whereas Bode seems committed to a much broader conception of thought processes as well as a more optimistic view of transfer of training.

Making a Choice

If the practical problem of specificity were somehow resolved, perhaps by extending the list of objectives into the thousands or the hundreds of thousands, another issue would become even more apparent: how would we decide, objectively of course, which objectives to keep and which to leave out? As Bode indicates, one of Bobbitt’s solutions was to throw the matter open to a vote or at least to a panel. In his famous Los Angeles study, Bobbitt asserted that his list of objectives “represent[ed] the practically unanimous judgment of some twenty-seven hundred well-trained and experienced adults” (1924, p. 10), a claim about which Bode is clearly skeptical. As Bode points out, the twelve hundred Los Angeles teachers, who were charged with reviewing the list drawn up by the fifteen hundred graduate students at the University of Chicago, were in a dilemma. All of the objectives listed unquestionably represented desirable traits and skills, from “keeping razor in order” (Bobbitt 1922, p. 21) to “ability to tell interesting stories interestingly—and many of them” (p. 26).

The wide agreement, Bode suspects, was probably achieved by a combination of specificity when practical and clearly desirable skills were involved and vagueness or ambiguity when value issues were broached. Inspection of Bobbitt’s list of objectives indicates that Bode is essentially correct, thereby accounting in part for the obvious discrepancies in the level of specificity with which the objectives are stated as well as the near unanimity of agreement among twenty-seven hundred adult human beings. State legislators, educators, and the general public frequently find themselves in the same position today when they are asked to give their assent to such educational goals as “self-realization” and “mental health.” One can hardly be against them.
A Standard for Living

Although Bode’s criticism of the method of consensus is certainly convincing, he considers only indirectly another of Bobbitt’s ways of dealing with the seemingly limitless scope of a curriculum defined by the full range of human activity. While the task of the “curriculum discoverer” did involve, according to Bobbitt, a full catalog of the activities of mankind, Bobbitt was careful to indicate that much of what has to be learned is acquired by “undirected experience.” “The curriculum of the directed training,” Bobbitt insisted, “is to be discovered in the shortcomings of individuals after they have had all that can be given by the undirected training” (1918, p. 45, original emphasis). Bobbitt’s understanding of “shortcomings,” actually, is quite similar to the contemporary notion of “needs.” A standard is set, a norm; and the curriculum consists of the ways of treating deviations from the standard. Thus the curriculum seems cut down to manageable proportions without resort to the method of consensus. (It is a deceptively simple solution.) The fundamental issue, however, is not whether the list of objectives is derived from this or that method: more basic is the question of whether objectives ought to be prespecified at all. One might argue, therefore, that Bode, in skillfully demolishing the method of consensus, did not quite strike the jugular vein of scientific curriculum making. The central question is whether the curriculum should be a blueprint for what people should be like, not how the blueprint is drawn.

But even if one were to concede prespecification of objectives in such areas as arithmetic, grammar, and spelling, how far could one go in justifying the “social shortcomings” of which Bobbitt speaks (1918, p. 50)? As many of Bobbitt’s objectives imply, there was literally no activity of mankind—social, intellectual, or practical—that was not potentially, at least, a curricular objective. Bode correctly identified Herbert Spencer as having anticipated the trend toward specificity in stating objectives, but of at least equal importance is Spencer’s role in identifying the scope of the school curriculum with life itself. Spencer, like Bobbitt and Charters, considered the best curriculum to be the one that demonstrated the highest utility. Spencer, it should be remembered, asked the question, “What knowledge is of most worth?” not merely, “What shall the schools teach?” In a subtle way, then, he was reconstructing a basic curriculum question. To the scientific curriculum makers, the two questions were essentially the same; thus by posing their question in this way, scientific curriculum makers were determining the kind of answer that could be given. The answer to the scientific curriculum maker is likely to be phrased in terms of high survival value and functional utility rather than in terms of intellectual virtues. In this sense, the curriculum became the ultimate survival kit for the modern world. For example, in the state of Oregon today, certain districts have instituted requirements for high school graduation of such “survival” skills as listing birth-control methods in order of effectiveness, or demonstrating ability to officiate at two different sports and perform two basic dance steps (Newsweek, January 25, 1975, p. 69). Any sense of a distinctive function for the schools is lost.

Limitations of the School

Two serious but often unexamined questions are raised by such a conception of the school curriculum. The first relates to the extent to which the school as one institution of society can as a purely practical matter devote itself to the full range of human
activity that man engages in. A second question, perhaps even more fundamental than the first, is whether all activity can be reduced to particular components.

From the days of the *Cardinal Principles* report to the present, the conventional way to begin the process of curriculum development has been to agree on a set of broad goals which in fact represents a categorization of human activity generally. The next step, of course, is to "operationalize" these goals by translating them into numerous minute and specific objectives—in effect, creating a catalog of human activity. Surely if Charters were able to identify the activities that constitute being a secretary or a librarian, it was only a step further to identify all the other activities of mankind. In this way the most urgent of these activities may be identified (e.g., earning a living) and the most pressing social problems addressed (e.g., drug addiction).

The missing ingredient in all this is some attention to the nature of the school. If there is one serious omission in Bode's analysis, it is the failure to recognize the limitations of the institution of schooling. The knowledge that is of the most worth may not be the kind of knowledge that can be transmitted in a school context. The place of the school in the social structure, the makeup of its inhabitants, and the characteristic activities that take place within its boundaries must be considered along with the power of schooling as we know it to produce fundamental and direct changes in human attitudes and behavior. Hence if curriculum makers do not temper the question of what is most important to know with the question of what schools can accomplish, their claims for programs designed to reduce crime, improve human relations, prevent drunken driving, ensure economic independence, or remove sexual inhibitions are unreliable.

Analyzing Human Activity

Furthermore, while it may be true that a limited number of human activities may be anticipated and therefore practiced in advance, the extension of the method of job analysis from the limited realm of routine and replicative behavior into the full universe of human activity represents perhaps the most fundamental fallacy in the whole scientific curriculum-making movement. The source of this assumption, as is the case with other elements of scientific curriculum making, is the example of industry. Just as the global and complex process of building an automobile can be broken down into a series of minute and simple operations, so presumably can the activities of a mother or a teacher. But we do not learn language, for example, by anticipating all of the sentences we will utter in our adult lives and then rehearsing them as part of our preparation to become adults. Instead, we learn or assimilate or perhaps even inherit the governing principles of language that permit us to create or invent sentences that we have never before heard expressed. Similarly, in mathematics we do not scientifically catalog all of the mathematical operations we will perform as adults as a direct rehearsal for the performance of those mathematical operations.

Here Bode’s criticism of job analysis as the universal technique of curriculum making is particularly cogent. The analogy between definite operations which imply simply replicative activity and activities that involve, let us say, judgment, simply will not hold. As he puts it, friendliness, courtesy, and honesty “are not reducible to ‘definite operations’” (Bode 1927, p. 109). The process of educating a teacher to conduct himself or herself wisely and judiciously in the classroom is not, as current programs of teacher training so often imply, a process of first anticipating the particular situations that will arise in particular a the exa unknow guide to

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arise in the classroom and then directing the teachers to conduct themselves in a particular way relative to these specific situations. Rather, teacher education can involve the examination, analysis, and adaptation of some broad principles which at some unknown point in the future and in some unanticipated circumstances may provide a guide to keen judgment and wise action.

Scientific Curriculum Making in Teacher Education

Bode’s astute criticism of the scientific curriculum makers notwithstanding, it should be clear to anyone familiar with the current state of the art in the curriculum world that the scientific curriculum movement, with few adaptations and modifications, has been triumphant. It is true that behaviorism has provided a few refinements of language in stating objectives, and certain so-called academic subjects such as mathematics and science have perhaps more respectability than in the days of Bobbitt and Charters. But the key ingredients and analogies remain the same. While this modern version of scientific curriculum making is well established in virtually all sectors of the curriculum world, it exists, not surprisingly, in its most virulent form in the area of teacher education. The vogue movements which go under the names of competency-based teacher education (CBTE) and performance-based teacher education (PBTE) are prime examples of what has evolved from the basic principles enunciated by Bobbitt and Charters. Charters himself helped direct a major study begun in 1925 which had all the earmarks of the PBTE (or CBTE) ideology.

The Commonwealth Teacher-Training Study

As is the case with the current programs, the Commonwealth Teacher-Training Study was to be based on scientific research into the teaching process as opposed to mere speculation and tradition. As a first step, Charters and Warps “ascertained the traits that characterize excellent teachers” (1929, p. 4). Adapting the consensus approach, the investigators used two methods: analyzing the professional literature and interviewing “expert judges.” Working from a list of eighty-three traits, ranging alphabetically from Accuracy through Foresight and Magnetism all the way to Wittiness (pp. 56–61), “translators” were given the task of interpreting statements made in writing or in the interviews. Thus, “knows how to meet people” could become translated into the traits, “adaptability” or “approachability.” Reliability among the translators was determined by applying the Spearman prophecy formula. Finally, after some of the original traits of teachers were telescoped, scientifically determined lists were prepared indicating that senior high school teachers should be characterized by twenty-six traits including Good Taste and Propriety, junior high school teachers by Conventionality (morality) and Open-mindedness, and so on.

Next, in an adaptation of the job analysis technique, the investigators collected a master list of 1,001 teacher activities. Perhaps one of these activities is worth quoting in its entirety:

788. Securing cordial relations with superintendent
Maintaining cordial relations with superintendent. This involves being loyal to and respecting
Thus, after three years of research by trained investigators and a grant of $42,000 from the Commonwealth Fund, was a blow dealt to fuzzy thinking in teacher education and a major stride taken in the direction of a scientifically determined teacher-education curriculum.

The Contemporary Aftermath

One of the most persistent and puzzling questions in this, the aftermath of the scientific curriculum-making movement, is why we retain, even revere, the techniques and assumptions we have inherited from Bobbitt and Charters, at the same time as we reject, implicitly at least, the actual outcomes of their research. Few people read Bobbitt’s famous study, *Curriculum-Making in Los Angeles*, or his magnum opus, *How to Make a Curriculum*, or have even heard of Charters and Waples’s *Commonwealth Teacher-Training Study*. If they did read these works, the most likely reaction would be one of amusement. And yet we pursue with sober dedication the techniques on which these works are based. Admittedly, performance-based teacher education may just be a slogan system resting only on a foundation of high-sounding rhetoric and pious promises and covered with a gloss of false novelty; but if it means anything, it surely implies that one can identify the particular components of teaching activity that make for good teachers and that these characteristics (Charters would call them traits) or behaviors (Charters would call them activities) can form the basis of a program of teacher training. Research takes the form of identifying the particular components of teaching that will ensure success. While there seems to be some caution in stating the characteristics and behaviors with the same degree of conviction as Bobbitt and Charters did, an abiding faith in the efficacy of the approach remains. The persistence of this faith in the face of a record of over a half century of failure is a mystery that probably even Bode could not fathom.

Is Teaching a Technology?

At the heart of some of our most fundamental problems in the field of curriculum and of teacher education as well is the question of whether teaching is a technology by which carefully fashioned products in the form of learning or behavior are made. These products would have to be designed with the exactitude and specificity that Bobbitt and Charters called for. Teaching would be the application of standardized means by which predictable results would be achieved, and curriculum development the specification of the end-products and the rules for their efficient manufacture. Teacher education, in turn, would be the process by which persons are transformed into efficient manufacturers. The research evidence that presumably would support such an analogy between the teaching and the manufacturing process, however, has been disappointing to the proponents. For example, a recent thorough examination of the research basis for per-
formance-based teacher education led to the conclusion that eleven process variables previously identified as "promising"—such as "clarity," "variability," and "enthusiasm"—were indeed notably unpromising, leading the authors to conclude that "an empirical basis for performance-based teacher education does not exist" (Heath and Nielson 1974, p. 475). Moreover, pessimism about the ultimate success of the approach was not based simply on flaws in statistical analysis or research design. The more fundamental problem was the framework in which such research was cast—a framework which, by the way, has held sway since the days of Bobbitt, Charters, and the scientific curriculum-making movement.

Bode as Prophet

The point of all this is not simply that Bobbitt, Charters, and their likeminded contemporaries were mistaken in their faith in a given approach; the age in which they lived was one where optimism about the power of science to solve a multitude of human and social problems was near its peak. If they were naive or mistaken, one can hardly blame them. What is almost unforgivable, however, is that the half century since the zenith of their influence has produced little more by way of sophistication and refinement. With few exceptions, Bode's criticism of 1927 would carry as much force today were it directed against the present-day heirs of scientific curriculum making.

Particularly disappointing are the precipitous efforts to convert highly tentative and limited research findings into immediate prescriptions. This may be a function of the large constituency of teachers and school administrators who want immediate and concrete answers to such global questions as What is a good teacher? and What is a good curriculum? Part of the problem, undoubtedly, with the era of the scientific curriculum makers and with ours is the failure to recognize the complexity of the phenomena with which we deal. There is the same confusion between science and desert empiricism, the same naïveté about the nature of the teaching process, the same neglect of conceptual analysis. To be critical of scientific curriculum making, as Bode was, is not to be critical of science or even the importance of scientific inquiry into educational processes: it is to be critical of a simplistic and vulgar scientism. Its persistence is a source of embarrassment.

References


10

Educational Objectives—Help or Hindrance?¹

Elliot W. Eisner

If one were to rank the various beliefs or assumptions in the field of curriculum that are thought most secure, the belief in the need for clarity and specificity in stating educational objectives would surely rank among the highest. Educational objectives, it is argued, need to be clearly specified for at least three reasons: first, because they provide the goals toward which the curriculum is aimed; second, because once clearly stated they facilitate the selection and organization of content; third, because when specified in both behavioral and content terms they make it possible to evaluate the outcomes of the curriculum.

It is difficult to argue with a rational approach to curriculum development—who would choose irrationality? And, if one is to build curriculum in a rational way, the clarity of premise, end or starting point, would appear paramount. But I want to argue in this paper that educational objectives clearly and specifically stated can hamper as well as help the ends of instruction and that an unexamined belief in curriculum as in other domains of human activity can easily become dogma which in fact may hinder the very functions the concept was originally designed to serve.

When and where did beliefs concerning the importance of educational objectives in curriculum development emerge? Who has formulated and argued their importance? What effect has this belief had upon curriculum construction? If we examine the past briefly for data necessary for answering these questions, it appears that the belief in the usefulness of clear and specific educational objectives emerged around the turn of the century with the birth of the scientific movement in education.

Before this movement gained strength, faculty psychologists viewed the brain as consisting of a variety of intellectual faculties. These faculties, they held, could be strengthened if exercised in appropriate ways with particular subject matters. Once strengthened, the faculties could be used in any area of human activity to which they were applicable. Thus, if the important faculties could be identified and if methods of strengthening them developed, the school could concentrate on this task and expect general intellectual excellence as a result.

This general theoretical view of mind had been accepted for several decades by the time Thorndike, Judd, and later Watson began, through their work, to chip away the foundations upon which it rested. Thorndike’s work especially demonstrated the specificity of transfer. He argued theoretically that transfer of learning occurred if and only if elements in one situation were identical with elements in the other. His empirical work supported his theoretical views, and the enormous stature he enjoyed in education as well as in psychology influenced educators to approach curriculum devel-
opment in ways consonant with his views. One of those who was caught up in the scientific movement in education was Franklin Bobbitt, often thought of as the father of curriculum theory. In 1918 Bobbitt published a signal work titled simply, The Curriculum. In it he argued that educational theory is not so difficult to construct as commonly held and that curriculum theory is logically derivable from educational theory. Bobbitt wrote in 1918:

The central theory is simple. Human life, however varied, consists in its performance of specific activities. Education that prepares for life is one that prepares definitely and adequately for these specific activities. However numerous and diverse they may be for any social class, they can be discovered. This requires that one go out into the world of affairs and discover the particulars of which these affairs consist. These will show the abilities, habits, appreciations, and forms of knowledge that men need. These will be the objectives of the curriculum. They will be numerous, definite, and particularized. The curriculum will then be that series of experiences which childhood and youth must have by way of attaining those objectives.

In The Curriculum, Bobbitt approached curriculum development scientifically and theoretically; study life carefully to identify needed skills, divide these skills into specific units, organize these units into experiences, and provide these experiences to children. Six years later, in his second book, How To Make a Curriculum, Bobbitt operationalized his theoretical assertions and demonstrated how curriculum components—especially educational objectives—were to be formulated. In this book Bobbitt listed nine areas in which educational objectives are to be specified. In these nine areas he listed 160 major educational objectives which run the gamut from “Ability to use language in all ways required for proper and effective participation in community life” to “Ability to entertain one's friends, and to respond to entertainment by one's friends.”

Bobbitt was not alone in his belief in the importance of formulating objectives clearly and specifically. Pendleton, for example, listed 1,581 social objectives for English, Guiler listed more than 300 for arithmetic in grades 1–6, and Billings prescribed 888 generalizations which were important for the social studies.

If Thorndike was right, if transfer was limited, it seemed reasonable to encourage the teacher to teach for particular outcomes and to construct curriculums only after specific objectives had been identified.

In retrospect it is not difficult to understand why this movement in curriculum collapsed under its own weight by the early 1930’s. Teachers could not manage fifty highly specified objects, let alone hundreds. And, in addition, the new view of the child, not as a complex machine but as a growing organism who ought to participate in planning his own educational program, did not mesh well with the theoretical views held earlier.

But, as we all know, the Progressive movement too began its decline in the forties, and by the middle fifties, as a formal organization at least, it was dead.

By the late forties and during the fifties, curriculum specialists again began to remind us of the importance of specific educational objectives and began to lay down guidelines for their formulation. Rationales for constructing curriculums developed by Ralph Tyler and Virgil Herrick again placed great importance on the specificity of objectives. George Barton identified philosophic domains which could be used to select objectives. Benjamin Bloom and his colleagues operationalized theoretical assertions by building a taxonomy of educational objectives in the cognitive domain; and in 1964, Krathwohl, Bloom, and Masia did the same for the affective domain. Many able people for many years have spent a great deal of time and effort in identifying methods and providing the state with information that is useful to education generally.
providing prescriptions for the formulation of educational objectives, so much so that
the statement "Educational objectives should be stated in behavioral terms" has been
elevated—or lowered—to almost slogan status in curriculum circles. Yet, despite these
efforts, teachers seem not to take educational objectives seriously—at least as they are
prescribed from above. And when teachers plan curriculum guides, their efforts first
to identify over-all educational aims, then specify school objectives, then identify edu-
cational objectives for specific subject matters, appear to be more like exercises to be
gone through than serious efforts to build tools for curriculum planning. If educational
objectives were really useful tools, teachers, I submit, would use them. If they do not,
perhaps it is not because there is something wrong with the teachers but because there
might be something wrong with the theory.

As I view the situation, there are several limitations to theory in curriculum regarding
the functions educational objectives are to perform. These limitations I would like
to identify.

Educational objectives are typically derived from curriculum theory, which assumes
that it is possible to predict with a fair degree of accuracy what the outcomes of instruc-
tion will be. In a general way this is possible. If you set about to teach a student algebra,
there is no reason to assume he will learn to construct sonnets instead. Yet, the out-
comes of instruction are far more numerous and complex for educational objectives
to encompass. The amount, type, and quality of learning that occurs in a classroom,
especially when there is interaction among students, are only in small part predictable.
The changes in pace, tempo, and goals that experienced teachers employ when neces-
sary and appropriate for maintaining classroom organization are dynamic rather than
mechanistic in character. Elementary school teachers, for example, are often sensitive
to the changing interests of the children they teach, and frequently attempt to capitalize
on these interests, "milking them" as it were for what is educationally valuable.12 The
teacher uses the moment in a situation that is better described as kaleidoscopic than
stable. In the very process of teaching and discussing, unexpected opportunities emerge
for making a valuable point, for demonstrating an interesting idea, and for teaching a
significant concept. The first point I wish to make, therefore, is that the dynamic and
complex process of instruction yields outcomes far too numerous to be specified in
behavioral and content terms in advance.

A second limitation of theory concerning educational objectives is its failure to rec-
ognize the constraints various subject matters place upon objectives. The point here
is brief. In some subject areas, such as mathematics, languages, and the sciences, it is
possible to specify with great precision the particular operation or behavior the student is
to perform after instruction. In other subject areas, especially the arts, such speci-
fication is frequently not possible, and when possible may not be desirable. In a class
in mathematics or spelling, uniformity in response is desirable, at least insofar as it
indicates that students are able to perform a particular operation adequately, that is, in
accordance with accepted procedures. Effective instruction in such areas enables stu-
dents to function with minimum error in these fields. In the arts and in subject matters
where, for example, novel or creative responses are desired, the particular behaviors to
be developed cannot easily be identified. Here curriculum and instruction should yield
behaviors and products which are unpredictable. The end achieved ought to be some-
ting of a surprise to both teacher and pupil. While it could be argued that one might
formulate an educational objective which specified novelty, originality, or creativeness
as the desired outcome, the particular referents for these terms cannot be specified in
advance; one must judge after the fact whether the product produced or the behavior displayed belongs in the "novel" class. This is a much different procedure than is determining whether or not a particular word has been spelled correctly or a specific performance, that is, jumping a 3-foot hurdle, has been attained. Thus, the second point is that theory concerning educational objectives has not taken into account the particular relationship that holds between the subject matter being taught and the degree to which educational objectives can be predicted and specified. This, I suppose, is in part due to the fact that few curriculum specialists have high degrees of intimacy with a wide variety of subject matters and thus are unable to alter their general theoretical views to suit the demands that particular subject matters make.

The third point I wish to make deals with the belief that objectives stated in behavioral and content terms can be used as criteria by which to measure the outcomes of curriculum and instruction. Educational objectives provide, it is argued, the standard against which achievement is to be measured. Both taxonomies are built upon this assumption since their primary function is to demonstrate how objectives can be used to frame test items appropriate for evaluation. The assumption that objectives can be used as standards by which to measure achievement fails, I think, to distinguish adequately between the application of a standard and the making of a judgment. Not all—or perhaps not even most—outcomes of curriculum and instruction are amenable to measurement. The application of a standard requires that some arbitrary and socially defined quantity be designated by which other qualities can be compared. By virtue of socially defined rules of grammar, syntax, and logic, for example, it is possible to quantitatively compare and measure error in a discursive or mathematical statement. Some fields of activity, especially those which are qualitative in character, have no comparable rules and hence are less amenable to quantitative assessment. It is here that evaluation must be made, not primarily by applying a socially defined standard, but by making a human qualitative judgment. One can specify, for example, that a student shall be expected to know how to extract a square root correctly and in an unambiguous way, through the application of a standard, determine whether this end has been achieved. But it is only in a metaphorical sense that one can measure the extent to which a student has been able to produce an aesthetic object or an expressive narrative. Here standards are unapplicable; here judgment is required. The making of a judgment in distinction to the application of a standard implies that valued qualities are not merely socially defined and arbitrary in character. The judgment by which a critic determines the value of a poem, novel, or play is not achieved merely by applying standards already known to the particular product being judged; it requires that the critic—or teacher—view the product with respect to the unique properties it displays and then, in relation to his experience and sensibilities, judge its value in terms which are incapable of being reduced to quantity or rule.

This point was aptly discussed by John Dewey in his chapter on "Perception and Criticism" in *Art as Experience.* Dewey was concerned with the problem of identifying the means and ends of criticism and has this to say about its proper function:

> The function of criticism is the reeducation of perception of works of art; it is an auxiliary process, a difficult process, of learning to see and hear. The conception that its business is to appraise, to judge in the legal and moral sense, arrests the perception of those who are influenced by the criticism that assumes this task.

Of the distinction that Dewey makes between the application of a standard and the making of a critical judgment, he writes:
There are three characteristics of a standard. It is a particular physical thing existing under specifiable conditions; it is not a value. The yard is a yard-stick, and the meter is a bar deposited in Paris. In the second place, standards are measures of things, of lengths, weights, capacities. The things measured are not values, although it is of great social value to be able to measure them, since the properties of things in the way of size, volume, weight, are important for commercial exchange. Finally, as standards of measure, standards define things with respect to quantity. To be able to measure quantities is a great aid to further judgments, but it is not a mode of judgment. The standard, being an external and public thing, is applied physically. The yard-stick is physically laid down upon things to determine their length.\textsuperscript{11}

And I would add that what is most educationally valuable is the development of that mode of curiosity, inventiveness, and insight that is capable of being described only in metaphorical or poetic terms. Indeed, the image of the educated man that has been held in highest esteem for the longest period of time in Western civilization is one which is not amenable to standard measurement. Thus, the third point I wish to make is that curriculum theory which views educational objectives as standards by which to measure educational achievement overlooks those modes of achievement incapable of measurement.

The final point I wish to make deals with the function of educational objectives in curriculum construction.

The rational approach to curriculum development not only emphasizes the importance of specificity in the formulation of educational objectives but also implies when not stated explicitly that educational objectives be stated prior to the formulation of curriculum activities. At first view, this seems to be a reasonable way to proceed with curriculum construction: one should know where he is headed before embarking on a trip. Yet, while the procedure of first identifying objectives before proceeding to identify activities is logically defensible, it is not necessarily the most psychologically efficient way to proceed. One can, and teachers often do, identify activities that seem useful, appropriate, or rich in educational opportunities, and from a consideration of what can be done in class, identify the objectives or possible consequences of using these activities. MacDonald argues this point cogently when he writes:

Let us look, for example, at the problem of objectives. Objectives are viewed as directives in the rational approach. They are identified prior to the instruction or action and used to provide a basis for a screen for appropriate activities. There is another view, however, which has both scholarly and experiential referents. This view would state that our objectives are only known to us in any complete sense after the completion of our act of instruction. No matter what we thought we were attempting to do, we can only know what we wanted to accomplish after the fact. Objectives by this rationale are heuristic devices which provide initiating consequences which become altered in the flow of instruction. In the final analysis, it could be argued, the teacher in actuality asks a fundamentally different question from “What am I trying to accomplish?” The teacher asks “What am I going to do?” and out of the doing comes accomplishment.\textsuperscript{16}

Theory in curriculum has not adequately distinguished between logical adequacy in determining the relationship of means to ends when examining the curriculum as a product and the psychological processes that may usefully be employed in building curriculums. The method of forming creative insights in curriculum development, as in the sciences and arts, is as yet not logically prescribable. The ways in which curriculums can be usefully and efficiently developed constitute an empirical problem; imposing logical requirements upon the process because they are desirable for assessing the product is,
to my mind, an error. Thus, the final point I wish to make is that educational objectives need not precede the selection and organization of content. The means through which imaginative curriculums can be built is as open-ended as the means through which scientific and artistic inventions occur. Curriculum theory needs to allow for a variety of processes to be employed in the construction of curriculums.

I have argued in this paper that curriculum theory as it pertains to educational objectives has had four significant limitations. First, it has not sufficiently emphasized the extent to which the prediction of educational outcomes cannot be made with accuracy. Second, it has not discussed the ways in which the subject matter affects precision in stating educational objectives. Third, it has confused the use of educational objectives as a standard for measurement when in some areas it can be used only as a criterion for judgment. Fourth, it has not distinguished between the logical requirement of relating means to ends in the curriculum as a product and the psychological conditions useful for constructing curriculums.

If the arguments I have formulated about the limitations of curriculum theory concerning educational objectives have merit, one might ask: What are their educational consequences? First, it seems to me that they suggest that in large measure the construction of curriculums and the judgment of its consequences are artful tasks. The methods of curriculum development are, in principle if not in practice, no different from the making of art—be it the art of painting or the art of science. The identification of the factors in the potentially useful educational activity and the organization or construction of sequence in curriculum are in principle amenable to an infinite number of combinations. The variable teacher, student, class group, require artful blending for the educationally valuable to result.

Second, I am impressed with Dewey’s view of the functions of criticism—to heighten one’s perception of the art object—and believe it has implications for curriculum theory. If the child is viewed as an art product and the teacher as a critic, one task of the teacher would be to reveal the qualities of the child to himself and to others. In addition, the teacher as critic would appraise the changes occurring in the child. But because the teacher’s task includes more than criticism, he would also be responsible, in part, for the improvement of the work of art. In short, in both the construction of educational means (the curriculum) and the appraisal of its consequences, the teacher would become an artist, for criticism itself when carried to its height is an art. This, it seems to me, is a dimension to which curriculum theory will someday have to speak.

Notes

1. This is a slightly expanded version of a paper presented at the fifth annual meeting of the American Educational Research Association, Chicago, February, 1966.
3. Ibid., p. 42.
5. Ibid., pp. 11–29.
6. For a good example of this view of the child and curriculum development, see *The Changing Curriculum, Tenth Yearbook*, Department of Supervisors and Directors of Instruction, National Education Association and Society for Curriculum Study (New York: Appleton–Century Crofts Co., 1937).
12. For an excellent paper describing educational objectives as they are viewed and used by elementary school teachers, see Philip W. Jackson and Elizabeth Belford, "Educational Objectives and the Joys of Teaching," *School Review*, LXXIII (1965), 267-291.