NEEDED RESEARCH IN METHOD.¹

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The field of method, like that of the *principles of education* and of *educational psychology*, is not clearly defined. What should be the basis of method is still an open question. Is it to be found in a unique psychology of the learning process or is it to be determined by the logic of subject-matter? Or, again, as Doctor Snedden suggested some three years ago, is it to be sought in a compromise between the two? (*Educational Review*, Vol. 35, pp. 237-238). These questions are subtle, may be too subtle to be answered; and yet method cannot win a distinct and worthy place in educational thought unless they are solved. A brief critical survey of the literature of the subject may offer some suggestions.

Books on method may be roughly divided into four classes. The first, and by far the largest class, consists of those works which, either in fact or in name, deal with *general method*. These treatises often discuss the broader problems of education, such as the aim and organization of schools; but the great body of them emphasize the psychology of the learning process. To all intents and purposes, they are psychologies, or at least partial ones, with illustrations from educational procedure. The second class is made up of those works which give a brief summary of the principles underlying the teaching process and then apply them to all or most of the studies in a given curriculum. The third class is constituted of works on *special method*, which usually go by such titles as *Special Method in History*, *The Teaching of English*, *The Teaching of Mathematics*, etc. The fourth class is coming from the psychological laboratory and consists of experimental studies of such topics as the *Psychology and Pedagogy of Reading*,

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The Psychology and Pedagogy of Writing, The Psychology of Skill, and the like.

The fundamental idea underlying the works in the first class is that a teacher who knows general psychology can be trusted to apply it in all specific situations arising in the classroom. This idea was clearly formulated by Comenius in *The Great Didactic*, was worked out by Herbart and his followers, and still is one of the most popular points of view in method to-day. For example, Dewey states exactly this thought when he says, "The teacher who is an intelligent student both of individual mental operations and the effects of school conditions upon those operations, can largely be trusted to develop for himself methods of instruction in their narrow and more technical sense—those best adapted to achieve results in particular subjects, such as reading, geography, or algebra." (*How We Think*, p. 46). Bagley, in the preface to *The Educative Process*, points out that his work "covers the field commonly included under the terms, 'General Method,' 'Method of the Recitation,' 'Theory and Practice,' etc.; but it deals with principles rather than with the details of device and 'method'." The writer, so he goes on to say, "is convinced that clear and definite notions of the functions of education and of the laws which govern the educative process will do much toward eliminating the waste of time and energy that is involved in the work of the school." In a word, the faith of *general method* is that there are general principles which can be widely applied in school practice. If a teacher know these, he can make whatever little modification a given situation may demand.

In spite of the fact that there is a most important truth in this position, nevertheless, there are two quite serious weaknesses. In the first place, general principles do not play the part in practice that some think they do. It may take a good general chemist a long time to become a good agricultural chemist. It may take a good general psychologist, or even a good student of education, a long time to become a good teacher. The ideal candidate for a position as railroad engineer is the man who knows general physics, the physics of the railroad engine, and who has the skill from experience to handle the engine. So with the teacher. The ideal teacher

is the one who knows the functions of education, the laws of the educative process in general, the laws of the educative process as manifested in the particular subject taught, and who has besides the skill that comes from teaching. *General method* has ignored or underestimated the fact that general psychology is quite a different thing from the psychology of a given subject of instruction. Induction in history and induction in physics are both induction to be sure, but they are so only in the rough. In the fine, they are very different processes. The second weakness lies in the fact that, in spite of their warnings against it, writers of general method have given us adult psychology rather than child psychology. Things apperceived by a mature mind may not be apperceived by a child's mind. In theory, this last statement is a platitude; but in the schoolroom it is one of the most difficult problems a teacher ever faces. If any one wishes to test these two weaknesses, let him prepare some lessons, say inductive ones, and try them out on a sixth grade class.

Ignoring the second class of books and passing to the *special method* group, we meet with writers who put the emphasis upon the subject-matter taught rather than upon the methods in their stricter sense. Many of these books are excellent and most helpful to the teacher; and yet they have one limitation. They put nearly the whole burden of their work upon the sources and organization of the subject-matter itself, and almost none upon the way the subject-matter organizes itself in the child's mind. This was the second weakness of the first class.

The fourth class represents an almost wholly different view. Here the emphasis is placed on the child's mind as it works through some given element of the curriculum. Men in this field believe it quite futile to talk in an *à priori* fashion about the way the mind acts. For them the significant question is: How does a given mind act in a given situation? W. F. Book's *Psychology of Skill* is an excellent example of this class. This monograph is an experimental study of habit-formation as exemplified in typewriting. Not only are the specific habits studied, but also the more general aspects of mental life connected with the learning process, such as the merging of

smaller habits into larger ones, the effect of fatigue, general health, mental inertia and "warming up," points where interest tended to flag, kinds of practice that counted most for efficiency, etc. The meaning of such work for method is at once apparent. The crucial points in a particular learning process are shown up, and the suggestions offered the teacher are vital and definite, not vague and general. In a word, the psychology deduced grows out of the operation; it is not thrust upon it.

Such work as this might well serve as a model for research work in method. All the factors involved in the case are considered: general psychology, the particular psychology of the subject taught, and the child who is being instructed. The true province of method would seem to lie right here: it is the scientific study of the child's (not the adult's) mind as it acquires a given experience involved in a given piece of subject-matter. There is no way except this to get adult faculty psychology out of method. Under such a view as this, all method becomes essentially special. General method is not ignored, it is elaborated and modified and corrected. Method then becomes a branch of educational psychology; that branch which aims to psychologize definite subject-matter from the child's view point. The logic of the subject is not ignored, nor is the child merely entertained. The effort is to determine just how much of the logic of the subject can be given to the child and just what methods are best to give it to him. One modern writer has defined method in this same manner when he says, "Essentially, a study of teaching is reflection upon the way that subject-matter grows and organizes itself. It differs from psychology in that, while psychology treats of the child in terms of the processes of experience, such as memory, imagination, etc., methods of teaching deal with the ways in which the child gets control of subject-matter. For pedagogical purposes they both deal with the same great problems and are closely interrelated, being two aspects of the same thing, but differing in the point of view from which each is studied." (*Charters' Methods of Teaching*, p. 97).

This conception of method demands that educational psy-

chology do not trail along behind general psychology, but stand on its own feet as an independent science. Within this science method would have a definite and worthy field. It would include what is now called *general method* and a great deal more. In a word, this view of method posits the fact that every subject offers a unique and valuable psychology and pedagogy. Enough has already been done to show that this position offers excellent opportunities. Meumann's *Experimental Pedagogy*, Lay's *Experimental Didactics*, Huey's *Psychology and Pedagogy of Reading*, Thompson's *Psychology and Pedagogy of Writing*, Book's *Psychology of Skill*, Cornman's *Spelling in the Elementary Schools*, Browne's *Psychology of the Simple Arithmetical Processes*—these and others like them have given most encouraging results. It is true that nearly all the work so far has been done in the habit group of studies. Gilbert's *An Experiment on Methods of Teaching Zoology* seems to be the only piece of work outside of this group. The next step will consist in the extension of the investigations already begun and the application of the same methods to the other subjects of the curriculum.

History work, for example, offers some fine problems for this kind of research. An illustration may be taken from the *Report to the American Historical Association by the Committee of Eight on The Study of History in the Elementary Schools*. In discussing the sixth grade course, the committee says that "it must be remembered that the fundamental aim is not to store the child's mind with many detailed facts of general history, but to make certain impressions which shall exercise a guiding influence over the child's intellectual growth, to furnish him with a frame work into which his later reading or study shall place what he acquires." With reference to the content of the course, the report says, "those features of ancient and mediaeval life have been illustrated which explain either important elements of our civilization or which show how the movement for discovery and colonization originated." Regarding method, the makers of the course affirm, "Pupils in this grade are not prepared to study scientific history in its logical and orderly development. But they are prepared to receive more or less definite impressions that

may be conveyed to them by means of pictures, descriptions, and illustrative stories, arranged in chronological order."

To a mature mind, this course seems almost ideal, both in its general statements and in its outline of details. But suppose it is placed in the classroom even in the hands of an excellent teacher. Will not a number of the most significant questions arise? Can a sixth grade boy or girl acquire any impressions, vague or otherwise, of the march of progress or of world movements? If so, what kind of impressions? Does chronological sequence have any meaning to a child of twelve? Will pictures, descriptions and illustrative stories remain simply pictures, descriptions and illustrative stories, or will they be symbolical of meaning? Granted that they may be the latter, how best make them so? Can a child, from a panorama of imagery, draw an emotional generalization? Or, must the teacher fall back on real scientific induction? If so, how give a student a sense of the *probable* which always goes with such generalization in history? It is apparent at once that the whole course is permeated with adult conceptions and points of view. General method and general psychology can do no more than block out the way in the rough. The teacher's *real* problem then begins: how use induction and deduction, analysis and synthesis, lecture and topic, question and text-book? Induction, for example, does not settle the problem of method: a bigger problem is, how use induction? In avowing his faith in his method by which all things were to be taught to all men, Comenius said, "Thus do the perplexities of one age afford amusement to the next." After 300 years of general method, we still find that it is not amusement to apply its principles. It is high time that we were taking another tack.

It is such problems as these that the student of method faces in the future. The expert educational psychologist alone cannot solve them. Neither can the expert empirical teacher. It will be that rare combination of two, just that combination which Münsterberg, in his *Psychology and the Teacher*, thinks impossible, since the teacher who psychologizes will be likely to lose his sympathy, and hence his art. The newer view of method maintains that it is not

sympathy for the pupil's personality that is needed, but sympathy engendered by insight and directed to a pupil in a particular critical situation. The faith of this newer view of method is that men and women will come forward who can follow appreciatively the child's mind as it works through a given piece of subject-matter and detect in this process the critical points and devise means of meeting them. If this kind of research be not done and be not recorded, then the science of teaching is a misnomer and good school work will have to await the day when there arises a generation of born teaching geniuses.

Last summer the writer spent an hour with an expert manager of a sawmill. This manager related that two years before he had installed in his plant a complex system of belt saws, and had at once met with all sorts of difficulties in setting, filing, and adjusting them. Finally, he was forced to call in a scientific machinist, who, in one day, put them in perfect order. When the machinist was leaving, the manager said to him, "I will give you five hundred dollars if you will explain to me how to fix these saws so that I may do it myself in the future." The machinist replied that he had, after ten years of experience, written a little book which explained the whole process in detail. The manager then described how he had purchased one of these books and set to work to learn the art, and how he had, after a few weeks, mastered the whole task completely. He concluded his story by saying that this little book contained absolutely every thing that was needed. Now, it may be an idle dream, but does not the science of teaching need just such books as this: books on the teaching of writing, reading, spelling, arithmetic, history, and so on? If this ideal does not appear fantastic, then does it not become the duty of students of method to give it a thorough-going testing by working with concrete facts as found in school practice? Few sciences have ever made much progress through purely dialectical methods. Hypothesis forming has been only half the work, testing has been the other half. The so-called science of teaching has an abundance of hypotheses: the other half of the work remains to be done; namely, making these hypotheses face realities.