Educational Research and the Solution of Practical Problems

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What is the relationship between the practical decisions made every day by school people and the more careful methodology dignified by the name, "research"? This question is analyzed by Stephen M. Corey, executive officer, Horace Mann-Lincoln Institute of School Experimentation, Teachers College, Columbia University, New York City.

A GREAT DEAL of educational research is conducted by investigators who feel no personal responsibility for the application of their findings to the solution of practical problems. Someone becomes intrigued with an hypothesis which may or may not have important theoretical implications. He proceeds to test the hypothesis, generalize from his data, and publish a report. The assumption is that the people who are faced daily with practical educational problems will study the results of this research and, as a consequence, make better decisions.

Because this has been the common point of view regarding the use of educational research, people who must constantly deal with practical problems have themselves not been disposed to use a research approach to the solution of their problems. They tend to think of educational research as the business of experts and hence beyond their talents. They consider themselves as qualified to consume research, but not to engage in it.

This article attempts to show the relationship between the way many of us school people go about making practical decisions and the more careful methodology dignified by the name "research." The term is usually reserved to describe only those attempts at problem solving or hypothesis testing which result in findings in which great confidence can be placed. The point will be made later in this article that there is only a relative difference between this "research" and the methodology we usually employ to cope with our day by day instructional or administrative problems. In other words, our casual and subjective methods of making practical decisions differ from "research" in *degree* of precision and eventually in the *degree* of confidence we can have in the actions we take. Any practicing educator or group of educators can progress, by degrees, from their customary method of problem solving which eventuates in actions in which relatively little confidence should be placed, to a methodology resulting in actions in which a higher degree of confidence can be placed. The assumption is that we all want greater confidence in the consequences of our decisions.

Faculty Members Conduct a Casual Inquiry

Let's sit in for a moment on a

meeting of seven members of a high school social science department. They are together for the first time at the beginning of the year, and the conversation goes something like this:

——: I think we ought to do something about the fact that pupils in this high school lack dependability. There were four members of my American History class last year who cheated on the final examination.

——: I agree. They don't have their assignments in on time either. When the assignments do come in, they are sloppy and irresponsible. Half of them lie when they give reasons for absence or handing papers in late.

——: Yes, and you should see some of the notes I picked up last spring that my pupils were writing to one another. A lot of them were just filthy.

The conversation went on in this vein for some time. Three or four members of the department were responsible for most of the talk. There seemed to be general agreement that the boys and girls were lacking in dependability and in other character traits that the members of the department felt were important.

Let's pick up the conversation again.

——: I'm sure that if we gave more emphasis in American History to the biography of great Americans who were honest and dependable and trustworthy, these boys and girls would see how important these traits are.

——: I think so too. Take Lincoln, for example. If we could show how dependable Lincoln was, and the price he paid to be honest—like the time he walked a long distance to correct a mistake he had made in the store—these kids would learn some good lessons.

——: We ought to emphasize other biographies too. Take Washington. He was known for telling the truth. If we were to emphasize the biography of great Americans and the children were to see how important these good character traits are, they would act differently.

These comments—and there were more like them—implied that several members of the department were willing to hypothesize that if there were more emphasis on the teaching of biography in American History, the boys and girls would improve their characters. Of course, no one used the word "hypothesize."

The conversation went on:

——: I think we're in agreement about this emphasis upon biography. Is there anything specific we can do about it?

——: Well, let's just put more stress on biography. Let's see if we can find some biographical novels or use some motion pictures that will emphasize the dependability and honesty of great Americans.

——: I think I'll try that. Every chance I get I'll talk about some of the intimate biographical episodes in the lives of Washington or Jefferson or Lincoln or Theodore Roosevelt or Woodrow Wilson to try to make the importance of dependability and honesty more vital.

——: Let's be sure to spend some time next spring taking a look at what we've done to see whether or not this emphasis on biography has had any effect.

These final remarks represented the conclusions the members of this department reached regarding a test of their "hypothesis" that emphasis upon the biography of famous Americans would improve the character of the boys and girls. Someone suggested that another look be taken at the situation in the spring to see what the consequences of this emphasis might be.

Let's assume that biography was stressed by the teachers in various degrees throughout a year, and now there is a final departmental meeting. In this meeting many things have been taken care of, such as the quality of the examinations used and the distribution of grades, and then someone says:

——: We've talked several times this year about our emphasis upon the biographical method. Does any one have any opinion as to whether or not this has had an effect upon the dependability or honesty of the boys and girls?

——: I'm not sure, but a lot of them did seem to be interested whenever attention was paid to biography.

——: I don't know whether it has made any difference or not. My pupils seemed interested, too, but I didn't notice any difference really in their dependability when it came to handing in papers or to preparation for examinations.

This conversation went on for a while, and there seemed to be agreement that the method had worked fairly well. The conversation was summed up by the chairman of the department:

——: Well, let's try it again. I think there's everything to gain and nothing to lose. Maybe we can get the librarian to buy more good historical novels that emphasize the fine characteristics of outstanding Americans.

Analysis of the Inquiry

These discussions by the members of this social science department are illustrative of the way many educational decisions are made and actions taken. In the course of what they did these teachers paid at least some attention to all of the questions that must be considered if the problem solving is to be dignified by the name "research." The quality of their consideration of these questions, however, was of a subjective, impressionistic, non-evidential nature, as we will try to show.

Definition of the Problem

No *specific* problem was identified. Members of the faculty talked about a big problem area. They were worried because the boys and girls did not come up to standards that the teachers expected in connection with dependability, conscientiousness, honesty, or general moral behavior. There was no attempt to delimit this broad problem area. Many subjective impressions were expressed about cheating and similar matters, but no one suggested that facts be procured to see how much cheating took place and under what circumstances. Nobody seemed to be interested in establishing a bench mark that would make it possible to find out whether or not improvement in character occurred as a result of emphasis upon the biographical method.

Hypothesizing

The word "hypothesizing" is being used to describe a prediction that if

something is done certain consequences would follow. In this case, the "something to be done" involved giving more emphasis to the biographical method. The predicted consequences were general improvement in the character and dependability and honesty of the boys and girls. The hypothesis was in a vague and general form. No consideration was given to alternative actions that might represent even better ways of improving character. No one seemed to be familiar with attempts that had been made elsewhere to teach social studies so as to improve character.

Design of the Test

You will recall that somebody said, "Well, let's put more emphasis upon biographies this year." This in a sense was the group's conception of an "experimental design" to test its hypothesis. It was a casual, unrigorous, offhand sort of design. There was little discussion of what the various teachers meant by "emphasis upon the biographical method," or the amount of emphasis that each would give to this method or the various ways in which emphasis upon the biographical method might be effected. There was no attempt to control this treatment in respect to reading or lecturing or looking at motion pictures. There was no agreement on the biographies that would be used.

Evidence

At the autumn meeting, when the decision was reached to emphasize the biographical method, someone said, "Let's be sure to take another look at this matter next spring to see what has happened." This statement implied a low degree of awareness of the importance of objective evidence if the consequences of an experiment are to be examined to find out whether or not the actions taken led to the consequences anticipated. No one suggested that any methods be employed to find out rather objectively whether or not honesty or dependability or general morality had been changed. Dependence was placed entirely upon casual recollection and subjective opinion.

Generalizing

At the spring meeting a few minutes were devoted to taking a backward look at what had been done, and what the consequences seemed to be. Some teachers had one opinion, and some teachers another. There seemed to be agreement that the plan had worked rather well. This generalization led to the decision that, with a few modifications, the same emphasis on biographies should be tried again next year.

The "methodology" these social studies teachers employed as they went about coping with a problem that concerned most of them was not unique. They did what most operating groups of teachers or other kinds of school people do when they attack practical, concrete problems.

A More Scientific Approach to a Problem Area

To provide some contrast, let's take a look at another group of high school social science teachers who were faced with a similar problem.[1] They, however, went about tackling it in a way that was

[1] See: Banks, Tressa, Farley, Edgar S., Powers, Oscar, Vandermeer, Floyd, Waldorf, Robert, and Corey, Stephen M. "We Tested Some Beliefs about the Biographical Method," *The School Review*, March, 1951, p. 157-163.

more sophisticated in respect to research methodology.

The Problem

These teachers, too, were concerned in general with the character of their pupils. There was quite a bit of talk about dishonesty and lack of dependability, and about other aspects of morality.

Several members of the group, however, realized that they were talking about a problem area and not a problem sufficiently specific to do something about. After a great deal of discussion, they agreed to use, as a criterion of character, peer judgments within the various class groups. The traits they would concentrate on would be determination, honesty, stick-to-itiveness, leadership, and hard work. These characteristics were mentioned most frequently by pupils when they listed the outstandingly desirable characteristics of those Americans who, they believed, had made significant contributions to the history of their country.

This "definition" still left the problem a broad one. Some additional precision resulted when the group decided to find out something about the present status of the "character" situation by getting sociometric judgments from the youngsters which would establish a "reputation" bench mark.

This group's attempts to get some evidence about its problem and to define it somewhat more precisely is in considerable contrast to what was done by the first group of social studies teachers. This second group took several steps in the direction of the kind of methodology which characterizes educational "research."

Hypothesizing

These teachers, too, were more rigorous in their hypothesizing. Without going into any detail as to the derivation of their predictions regarding the consequences of a "biographical" emphasis, these three hypotheses were agreed upon:

- A substantial, positive relationship will exist between scores measuring information pupils have learned about famous Americans and the extent to which these same persons are admired.
- The degree of admiration for famous American historical personages will be appreciably increased as a consequence of one semester of instruction in American history.
- A measurable degree of relationship will exist between the degree to which these historical persons are admired and the reputation the pupils have among their peers for behaving in a manner consistent with the traits explaining this admiration.

Again these "hypotheses" leave much to be desired if scrutinized from the point of view of the professional educational researcher. They do, however, represent substantial improvement over the casual and careless and unimaginative hypothesizing of the first group of social studies teachers.

Design

These teachers talked for quite a while about the best way for them to test their hunch that emphasis upon the biography of famous Americans would have a beneficial effect upon the character—as defined—of their pupils. In general the design they agreed upon involved, first, trying to find out how

much boys and girls knew about famous Americans, the extent to which these Americans were admired, and the reputations of the youngsters, *at the beginning of the year.* They then agreed to introduce to all American history classes certain readings that stressed the character of famous Americans. They also selected a limited number of motion pictures that all boys and girls would see. Each member of the staff agreed, too, to incorporate in his teaching, and whenever he could, episodes and incidents from the lives of famous Americans. The plan then was to repeat the sociometric, information and "admiration" tests at the end of the year and compare "before and after" scores. This would enable the teachers to find out how much the boys and girls had learned, the extent to which their admiration for famous Americans had changed, and the extent to which their reputation among their peers for the traits agreed upon had been affected.

Again this design was far from precise. There was no real agreement among the teachers regarding the time that would be spent emphasizing biography or the teaching methodology that would be employed. No attempts were made to get evidence on a control group. But, be these limitations as evident as they may be, the difference between this design and the design of the first group of social studies teachers represents substantial movement from subjective, casual, non-scientific inquiry toward careful, thoughtful, and "research" methodology.

Evidence

One major indication of the methodological sophistication of the second group of social studies teachers was their attempt, all along the line, to get evidence—to get facts. First, they procured some rather reliable and objective evidence as to the status of the boys and girls in respect to a number of factors at the beginning of the year. These attempts at evidence collecting were repeated again in June. There was much less dependence upon casual, subjective recall. It is true that the instruments used to get evidence were of limited reliability. Apart from considering the "face" validity of these instruments, little was done to determine the extent to which they really measured what the teachers wanted to measure. But even with these limitations, the realization that facts were essential to the definition and solution of their problem was a long step forward.

Generalizing

At a final departmental meeting at the end of the year, when the data were in, these teachers took a look at them. They got help from someone who understood statistics and could counsel them in the interpretations. They reached these conclusions:

- The possession by our pupils of information about historical characters has little relationship to their admiration of these characters.
- One semester of our instruction in American History with emphasis on biographies does not measurably increase the extent to which boys and girls admire famous Americans.
- There is no relationship between the extent to which our boys and girls admire famous Americans and the reputations they have among their peers in

respect to the traits that explain their admirations.

These conclusions were rather devastating. Admittedly they were based upon measuring instruments and a design that left much to be desired. But, as these teachers said, these conclusions were based upon better evidence and a better design than had previously been available to them. Consequently, considerable confidence was placed in the conclusions.

Research Is Not an Absolute

Now let's get back to the major argument of this article. Educational research or research of any sort is not an absolute. The research quality of an investigation is relative. Excellent research involves a method of inquiry that warrants a high degree of confidence in the results of the investigation. As research departs in quality from that which warrants high confidence in results it can depart along any one or more dimensions. These dimensions are all inter-related, but problem solving at any level of methodological sophistication involves problem definition, hypothesizing, a design to test the hypotheses, procuring of evidence, and generalizing from this evidence. If the quality of definition, hypothesizing, designing, evidence getting and generalizing is high, the research is of excellent quality. This is another way of stating that its consequences justify a great deal of confidence.

One difficulty with most of the writing and talking about educational research is the implication that it does represent an "absolute" in methodology. The fact that all attempts at problem solving fall at various points on a continuum ranging from casual, impressionistic, and untested inquiry to high quality research is rarely, if ever, emphasized. This is regrettable because it has led teachers and other school people to value research, but at the same time to view it as having little bearing upon the methods they employ to solve their own problems. The fact is, of course, that confidence is warranted in the decisions made by teachers and other school people in the degree to which these decisions are based on problem solving methods that are closely analogous to those used by the professional educational investigator, and no one has a corner on these methods. They can best be learned by practicing them. To refrain from trying because of lack of skill precludes improvement, and improvement is what counts.

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