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THE ROLE OF RESEARCH IN EDUCATION

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Interest in educational research has vastly increased in recent years. It is now realized that research is necessary in order to provide a basis for educational planning and to assess the effects of such planning. Examples of research concerning social aspects of education, the development of children and teaching methods are considered. For many issues in education, empirical research cannot provide the answer; but it can provide essential information for making wise judgments about educational matters.

INTRODUCTION

Educational research today, it is probably fair to say, is growing up: at any rate, it is no longer in its infancy. Perhaps it ought to be described as somewhere in its late teens, and, rather like other teenagers, it is quite characteristically giving a certain amount of trouble to its elders. This is partly because it is not yet quite sure of its identity or of its proper place in the field of educational studies as a whole.

A glance at the development of one research organisation in Britain—the National Foundation for Educational Research in England and Wales—gives some indication of the rapid growth of educational research in recent years. In 1950 the NFER was quite a small organisation, with an annual income of just around £15,000. In 1962-63 its annual income had risen to £40,000 (5) and by 1964-65 the figure was £180,000 (6). This enormous increase in the income of the National Foundation is symptomatic of the quite dramatic change which has taken place within the last few years in the attitude of government and other interested parties towards educational research.

Further evidence of the development of educational research is to be found in the fact that the Department of Education and Science recently established a fund for educational research amounting to a quarter of a million pounds and it has been busy dispensing it to universities and other organisations. Recently, too, the Universities Grants' Committee in Britain gave quite substantial sums to five universities for the encouragement of basic research in education.

This increasing amount of money being spent on educational research is surely an index of an increased interest in the subject. For while money

is not all important, the fact remains that the seriousness with which governments, local or national, take any project can be judged pretty well by the amount of finance they are prepared to put into it. What, one might ask, has brought about the sudden change of attitudes which this increasing expenditure reflects?

Basically the reason for this change in England was that the educational system had got into quite serious trouble. The government has found rather belatedly that it had put far too little money into education. Now, being virtually forced to put more money into it, it wants to know how to invest it. Repeatedly it is finding that it has not got at its command the information necessary for the money to be invested wisely. This was very clearly brought out by the Crowther Report on secondary education which came out in 1959 (3). Crowther ended by speaking about a programme of national educational development. 'For any such programme, the primary need is a public determination to will it, but when this will is forthcoming, attention will have to be directed to the inadequacy of the tools that lie to the hands of the educational planner in this country. There are the most extraordinary gaps in our knowledge of what goes on in the schools and colleges we have today, let alone in the minds of their pupils. The Ministry's statisticians are continually being asked to make bricks without straw' (3, p. 473). It then goes on to say that in other countries many developments have taken place which are of great interest to us and remarks that the only kind of information we have about them is travellers' tales, i.e., no serious study of them has been made. It continues: 'When one moves from what is to what might be, the proper field of research, the absence of information is even greater. In view of the very large sums spent on education each year, the expenditure on educational research can only be regarded as pitiable. If there is to be a consistent programme of educational development, almost the first step should be to review the provision for statistics and research' (3, p. 473).

When the Report appeared, this particular paragraph caused a lot of comment. The Ministry of Education itself was really touched to the quick by the fact that the Committee it had set up had found that the Ministry's own machinery and information were so inadequate that it was necessary to publicise the fact. There is no doubt that this had a very drastic effect on government thinking and it was not long afterwards that the Ministry decided to support research on a scale quite different from anything it had previously thought necessary. Now that more money is available, the greatest lack is that of qualified people to carry out the research. Instead of students desperate to find research jobs, there are research jobs for which there are rather too few suitable applicants. Perhaps it is better that way round.

RESEARCH AS AN AID TO EDUCATIONAL PLANNING

What should be the role of research in education? First of all, let us look at the scope for educational research in a modern state. Indeed it is only a society which has begun to change, or is in the process of changing quite rapidly, that finds itself needing this kind of activity. In a society or nation which is comparatively static there is not the same need for research in education, because teaching and the whole educational enterprise is very largely a matter of tradition and the tradition is suited to the circumstances. Once things begin to change, however, it becomes evident that the traditional ways of doing things are not entirely adequate. Questions begin to be asked about what kind of society the people living in it want to have, what kind of shape it should take, what, for example, is to be the scale of educational opportunity. And similar questions begin to be asked about the development of individuals. Is the traditional upbringing and schooling of individuals suited to make them into the sort of citizens required by the kind of society that is being evolved? Thus we can see the need for research in terms of the needs of those who are going to plan development. They need information and this information must be accurate. Recently in Britain, in the sphere of teacher education, quite a lot of information was available about the supply of teachers needed at various times in relation to the probable sizes of the age groups of children who were going to be in school. But it was found that this information was quite wrong and that its statistical basis was gravely at fault.

A recent large-scale study in education, the report on Higher Education of the Robbins Committee, is, in fact, on quite a different level from almost anything that has preceded it, simply because the Robbins Committee had at its disposal much more accurate information (1). It had to go out and get some of this information on its own account. One question that required an answer was: how many places should there be in higher education in twenty years time? To answer that question, first of all one must know something about the birth rate. If one is forecasting twenty years ahead, the birth rate around the present time is the starting-point, but one wants to be sure of the trends, if one can. One cannot, of course, be quite sure, and in this case it turned out that the available statistics on birth rate trends were not very good. Secondly, one wants to know what is the tendency for pupils to stay on at school. While it was known that children were progressively tending to stay on longer at school beyond the compulsory leaving age, nobody knew quite the extent of the trend. It had to be measured. And thirdly, if one is thinking about higher education one has to form some view of what proportion of the population in

twenty years time is likely to reach the level of achievement required for entry to higher education.

Reasonably good estimates can be made in answer to all these questions, provided the data are sufficiently reliable. They cannot be made without error, of course. It is a matter of forecasting, and whether the Robbins Committee had sound information in this respect will not be known for some time. Already, indeed, their figures are coming in for criticism. But this is the kind of information they had to have. On the basis of it they forecast that by 1980 Britain would need to double its places in higher educational institutions. Moreover, this is an estimate which assumes no lowering of educational standards.

RESEARCH RELATED TO THE STRUCTURE AND FUNCTIONING OF THE EDUCATIONAL SYSTEM

This example has been introduced to illustrate the point that this kind of research is essential for government planning in a modern society. Another kind of research that is necessary is the kind one undertakes to find out what is the effect of what one has done. Has an action that one has taken produced the kind of results one thought it would? To take an example: the English Education Act of 1944 sought to make secondary education financially free for all sections of the community, to open wide the door to the type of schooling which best suited each child. Educational opportunity has very generally become to be thought of in terms of the access that children have to a grammar school type of education and thence to a higher education and, of course, to better jobs. How far did the Education Act of 1944 succeed in significantly raising the chances of a working-class boy getting into a grammar school?

Dr Jean Floud and her associates showed that in two areas of England, at any rate, the chances of a working-class boy getting into a grammar school had notably increased after 1944-45, compared with what they were before (2). So from that point of view, the Act may be said to have worked. They showed that, taking into account measured intelligence, social class did not matter any more. This was quite a new thing in England. Given equality of performance on an intelligence test then, children from all ranks of society stand an equal chance of getting into a grammar school. And this does, in fact, mean that the social class composition of grammar schools has drastically altered in England in the last twenty years. Carrying the research a bit farther, however, it was found that there was still a very great disparity between the chances of a working-class boy and a boy from a lower middle class home getting into a grammar school.

In the case of the working-class boy the chances were about one in eight in the area studied and for a lower middle-class boy they were about one in three. This is a big difference and there are good reasons for it. These reasons have to do with the way in which measured intelligence, and I use that phrase with care, is distributed in the population and are due also, of course, to the overwhelming size of the working class compared with other classes. But this result nevertheless suggested to these researchers a number of other questions, among them questions of this kind: can it be assumed that because, with measured intelligence constant, you get equality of access, that there is *real* equality of opportunity? What does *real* equality mean? And that leads to a lot of other questions, more difficult, perhaps, to answer. It leads, for example, to questions as to how the home background and general social environment of children affects the development of their intelligence. This is now a very active area of research.

Again, this is an illustration given for a purpose, not just for its own sake. It draws attention to the fact that once one sets out on a research enquiry one may or may not be able to answer the question with which one began, but even if one is able to answer it fairly satisfactorily, one tends to find that it has raised about three or four other questions that one did not think of at first, and these have got to be followed out as well. One question leads to another. From this point of view research is a sort of self-perpetuating activity.

These examples are drawn from the social aspects of education. Today there is just as much interest in the more personal field of the development of individual children, and all sorts of customs and practices which have been traditional in homes and schools are being called into question and submitted to systematic study. Sometimes we can start with reasonable questions and try to answer them. For example, we may ask whether different methods of teaching reading should be employed for children of different levels of ability. On the other hand, one may have to face big and awkward questions. On one occasion, for example, the National Foundation for Educational Research was asked by the Minister for Education to investigate the effect on children of different kinds of rewards and punishments. This is a very awkward and general question and it was necessary to break it down into a host of much smaller, much more modest questions, about the relations between teachers and pupils in classrooms, about the general atmosphere, morale and tone of the school, about what teachers and pupils thought about different forms of reward and punishment. A very large book—of about 500 pages—was produced as a result of this work (4), but the initial question was never answered!

But the effort was not entirely wasted because we did find evidence on a number of important issues. For example, there was pretty clear evidence that there exists a group of pupils who do not respond to rewards or punishments of any kind. There is nothing much you can do about them so far as external incentives or deterrents are concerned—beating them or bribing them makes no difference! These are children showing particular kinds of psychological characteristics and it was possible to identify some of these. This was an important 'rediscovery', or verification of what many people knew from experience. Nevertheless, it makes one think how often in schools we continue using particular forms of rewards or punishments which quite obviously either produce no effect whatever, or produce effects which, like sun-tan, wear off in a few days. Such work raises fundamental questions about the whole relationship between teachers and children and the extent to which individual children differ in their responses to different adults.

It was also found that teachers and pupils thought very differently about the same procedures. For example, most teachers set enormous store by giving children a good talking to. Pupils, on the whole, thought absolutely nothing of this procedure. I believe that to this day the effectiveness of this procedure continues to be a delusion of the teaching profession. On the other hand, teachers did not value so highly sending home a report on the child, but the pupils regarded this as by far the most serious form of punishment! As regards physical punishment, again it was discovered that there are probably about 25 per cent of pupils to whom it makes no difference whatever. It seems to have a certain effectiveness with about 50 per cent. With the remaining 25 per cent it so terrifies them that it renders them incapable of work and learning.

These examples we have been looking at point up some characteristics of research as an activity. Research always arises from asking questions. Like knowledge it begins with questions and not with answers as we are sometimes prone to imagine. Furthermore, research questions have to be questions of a particular kind. They have to admit of some kind of factual answer. However, they are bound to lead to questions of other kinds, to issues of values and of belief which do not rest simply on matters of fact. For example, in the research into rewards and punishments just cited, it was very quickly discovered that this is a field in which fundamental beliefs of very different kinds are held by teachers. The researchers themselves probably also had personal views on the issues quite apart from their objective approach to them. And the further one looks into this kind of problem the more one comes up against questions of value.

This characteristic of research may be illustrated in another way. In English education since World War II the problem on which most research

time and effort has been expended is that of producing tests or examinations which will be a satisfactory guide to the kind of secondary education best suited for individual children. This research into selection for secondary education, the 11+ as it is called, has really had as its aim the discovery of ways of predicting which children are going to do best in grammar school. It was not too long before it was realised that it was probably impossible to devise any form of examination or test which could be considered sufficiently accurate. There are very important and fundamental reasons for this which are concerned with the way in which children develop and the relationship of this development to the circumstances in which they are placed. It is true that the 11+ examination in England in its best forms has probably been the most valid and reliable examination that mankind has ever invented. The fact is, however, that to many minds it is not accurate enough and it is unlikely ever to become so. It does not seem possible to reduce the error below about ten per cent and when one considers that one is dealing with a group of nearly a million children the number of misplaced children can be seen to be very considerable indeed (8).

What this sort of work leads one to realise is that the fundamental problem here is not one of selection at all. The problem is really about the way the secondary school system is structured. If one insists on trying to pick 18+ winners at 11+, one is bound to run into trouble. There is no need, of course, to structure education in the way we have done. In England now all sorts of alternatives to what is called the tripartite or bipartite system are being tried—comprehensive schools, the Leicestershire Plan, Sixth Form Colleges, etc. These are healthy signs, not because any one of these schemes represents an ideal solution, but because they constitute a recognition that the real problem of secondary education is not the devising of a magic test which will pick out at the age of 11 the children who are destined for academic success, but a problem of devising educational institutions which will bring the best out of all children. But it took a lot of time, a lot of work and quite a lot of money before this was demonstrated. Of course, having demonstrated something by means of educational research it does not follow that people will believe it or pay very much attention to it. Quite apart from research, however, there have been in this case massive social and political forces at work and the stage has now been reached where many local authorities in England have declared the abolition of the 11+.* When one looks into what they are doing, however, one may find that perhaps something like a 'palace revolution' has been going on. Something else has appeared in place of

*The present Labour Government is determined to establish a completely 'comprehensive' secondary system.

the 11+, internal streaming to wit, and the new situation in certain respects is somewhat the same as the old. But still, a new perspective on the problem has been created.

This example demonstrates that many educational questions involve issues which are not capable of being solved by empirical research at all. Another example will make this even clearer. Some very highly placed people in educational circles in England have thought that one of the answers to this problem of secondary education would be to have a special kind of Super Grammar School to which only 5 per cent would be admitted and all the rest of the children (except perhaps another 5 per cent of the very dull and handicapped) would go to common high schools. However, the accuracy with which such a selection could be made would certainly be no greater than the accuracy with which the 11+ selection is made at its best, and in fact it would probably be less. What degree of inaccuracy would be tolerable in a procedure of this kind? Here a judgment of value is involved. Moreover, one faces the question whether this would be a desirable thing to do. Is it right to take the most intelligent children from the community, separate them from their fellows, and bring them up in what some would call an intellectual hot-house? This question is not easily answered. It is one which touches fundamental beliefs and values and it requires a great deal of further analysis, both sociological and philosophical, before one will even begin to see what the choices really are. Research here again takes you a certain distance but cannot take you all the way.

RESEARCH RELATED TO EDUCATIONAL ACHIEVEMENT AND CLASSROOM ORGANISATION

The examples of educational research considered so far have been taken from the field of educational provision, including the structuring of the educational system with special reference to opportunity. One may also ask in what ways can research help us in carrying out some of our everyday tasks in teaching? If, in this context, one reviews the literature on methods of teaching reading one finds that there is only one clear conclusion and that is that the most important factor in the situation is not the method that is used, but the teacher. This, perhaps, is not surprising. Still, it is reassuring to have the central importance of the teacher brought home in this way. It is now, of course, possible to design experiments and analyse the results so that the effects of different teachers are eliminated. When this is done there does not appear to be a great deal to choose in general between different methods. Sometimes, one method seems to

work well with one group of children, sometimes another. It is probably fair to say that the good teacher will try all possible methods.

This is a homely conclusion. But it brings out an important point. To a considerable extent methods are fictions. A method is a series of procedures in which a person—the teacher—uses his or her personality, and his or her knowledge and skill with particular kinds of materials. One can classify these procedures so that one gets something one can call a method, but in fact, no two teachers using the same procedures are doing precisely the same things.

In England, at the moment, there is a good deal of controversy concerning the teaching of reading. Sir James Pitman, convinced that the reason why so many English children fail to learn to read is because of the abominably unphonetic nature of the English language, introduced an extended alphabet—'the initial teaching alphabet' (i.t.a.)—in which there is a much simpler relationship between symbols and sounds. A large-scale research is in progress to find out whether i.t.a. helps children to learn to read. It is too soon yet to be sure of the results, and of what they mean. It is already clear, however, that some children have apparently learned to read more easily by means of this special orthography. If this effect is confirmed it will still be necessary to inquire whether it is uniquely produced by the use of i.t.a. It is quite possible that what has happened may resemble the discovery that when men on long voyages had apples to eat they did not develop scurvy! Here it was not the apples that were the fundamental factor, but something in the apples, the substance called Vitamin C, which we have now identified as ascorbic acid. If simplifying the relationship between symbols and sounds is the key to an easier approach for some or even all children to reading, there may be other more efficient ways of achieving this than by using a special alphabet. None of these comments, however, detracts from the great value of the research initiated by Pitman (7).

One might have thought that the important work done early this century and which showed incontrovertibly the immense range of differences of ability among children should, logically, have put paid to mass instruction for ever. Of course, that could not happen easily in practice. Schools and teachers have nevertheless tried hard to come to terms with the very irritating fact that children are so different from one another! Nowadays we are learning more about the various stages or phases through which the mind develops, thanks very largely to the pioneer work of Piaget. We must now try to analyse far more rigorously the things we are teaching in relation to children's capacity to learn them.

Recent research on learning has also led to the innovation in educational practice called programmed learning. Its principles are simple. First,

what is to be learned is broken down into its simplest parts and arranged in such a way that each child can proceed at his or her own pace. Secondly, the material is so arranged that children will know immediately when they are right or wrong and can correct their mistakes. It is of the greatest importance in learning to know when we have made a mistake. Ideally we should know immediately, and should be given a means of correcting it. Constructing good programmes, of course, requires a lot of research but one can see here how in principle such research is going to change the classroom out of recognition in the next fifty years. But while all this kind of work will help us to determine what kinds of things children can learn at different stages, and will help them to learn it more efficiently, it does not determine the kinds of things they should be learning. That is another kind of question altogether. Research is an aid to judgment, not a substitute for it.

CONCLUSION

It should be clear from what has been said that one cannot hope to establish and develop an adequate and efficient national system of education today without the aid of research. Research is indispensable at every stage, from the large-scale problems of provision to the everyday problems of learning and teaching. Yet research by itself cannot provide us with ready-made solutions to our problems. Its function is to provide the information essential to the making of wise judgments. In Ireland the kind of research necessary to guide national policy is only beginning. If it is to be fruitful, research must be strongly supported and the teaching profession must associate itself closely with it. It has an important part to play in the studies of teachers in training and an even more important part in helping experienced teachers and administrators to adapt their procedures to the needs of children and to the needs of the country.

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