

TEACHER DEVELOPMENT AND CURRICULUM DESIGN

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Jean Rudduck has set a context of experience in the practical realities of curriculum development and dissemination, and has drawn the conclusion that curriculum research and development is most likely to improve our schools if it improves teaching by feeding and strengthening teachers' judgement and skills. Too often in the past it has been based on a conception of educational development in which the teacher is conceived as a static element. Attempts have even been made to produce teacher-proof curricula. But curriculum change is inextricably bound up with - and perhaps the best medium of - the in-service development of teachers. It changes nothing of significance unless it changes teachers' perceptions, aspirations, knowledge and skills.

It is in this context that I want to look at design problems in curriculum research and development. In particular, I want to review two traditions in curriculum theory and design. You should be warned that my own work is in the second tradition as a result of my critical reaction against the first, and you will know how to take account of that.

The first tradition is that of educational technology. It has been called 'the engineering model' (eg Atkin, 1968) (recognizing its debt to the agricultural research tradition represented by Fisher (1925, 1935, 1959)).

Key to this approach is the concept of behavioural objectives. It is about taking a means to an end. We might see an analogy in taking a journey from Trondheim to Oslo. Our destination is specified, maps are available, a route is planned.

The second tradition is one of educational experimentation. It rests upon principles of procedure rather than upon objectives. Its assumption is that knowledge and understanding both of the subject taught and of the process of teaching is not prespecifiable as a simple goal. The individual learner is concerned to build up a cognitive and affective map which is nuanced by his individuality. The analogy is with getting to know Norway rather than with travelling from one city to another. In such an exploration one follows principles but one does not derive them from a definition of one's destination.

Note that this second approach - that of the explorer - implies to some degree a heuristic or discovery-based approach to pupils' learning and an experimental approach to teachers' learning about teaching. Viewed in this way the field of curriculum research provides the basis of an experimental style of education in which teachers explore the principles of helping children to explore knowledge. Curriculum researchers should not aim to transmit some knowledge or insight they already possess: they should see curriculum research and development as the means of increasing their - the researchers' - knowledge and understanding of the subject taught and the process of teaching and learning just as it increases the understanding of teacher and of taught.

Now both these models seem to me to represent aspects of schooling. The behavioural objectives model reduces everything to skills and is entirely appropriate to the learning of basic skills: typewriting, for example. The principles of procedure model assimilates everything to knowledge and understanding, and is appropriate to the learning of disciplines of knowledge: history, for example.

Between the two models there is a continuum of responses to the problems of curriculum design. For example, Eisner (1967, 1969) in distinguishing between instructional and expressive objectives is making a distinction close to the one made here between skills and knowledge (though he has the arts in mind); but he is not adopting the experimentalist, exploratory stance to the process of teaching implied by the rejection of the word, objective. The idea of 'process objectives' is also directed towards a point on the continuum.

Similarly, there is a continuum of relative saturation of skills and understanding in the subjects learned. For example, learning a language is partly a matter of skills (behavioural objectives), partly a matter of getting to understand a cultural context (principles of procedure).

In order to discuss these models more fully, it is necessary that I expand somewhat the brief characterisation I have offered.

The educational technology, behavioural objectives model is that associated with, for example, Tyler (1949), Bloom et al (1956), Mager (1962), Gagné (1965) and Bloom, Hastings, and Madaus (1971). In Scandinavia it is, I think, also associated with Húsen:

The basic argument underlying the model is as follows. Education is concerned with producing changes in students' performance or behaviour. This formulation derives from definitions of learning used in psychology; and it reflects the behaviourist standpoint of observational psychology. The next step is to assert that the behaviours we hope to produce can be prespecified. In teaching, it is argued, we should know in rather precise terms what changes in behaviour we are attempting to produce in our students. There is a clear implication both that all students should manifest the same behaviour and that it is relatively easy to predict the behavioural results of teaching.

The process of producing behavioural objectives goes like this. We start with our educational aim, perhaps like the statements of aim in your normal plan, and, if we can think clearly enough, we should be able to list ways in which students' behaviour will change if we achieve that aim. "The student will be able to . . ." is our opening phrase. We are able to translate our aim into quite precise statements of the changes in behaviour we want to see in students, and we say before we begin to teach what these will be. There is an assumption that, having prespecified these changes, we shall know how to teach for them.

If possible, we also describe the 'entry behaviours' of students - what they are able to do before the teaching starts. A definition of entry behaviours tells us where we are; a definition of behavioural objectives tells us where we want to be. Then education - like our trip from Trondheim to Oslo - becomes merely a matter of taking a means to an end.

The action pattern is as follows:

1. Specify behavioural objectives (destination)
2. Specify or test entry behaviour (point of departure)
3. Design curriculum and teach students
4. Test whether they have achieved the behavioural objectives.

In practice, entry behaviour is generally monitored by a pre-test and achievement of behavioural objectives by a post-test, the test in both cases being derived by criterion referencing from the behavioural objectives. There are a number of snags in this procedure which cannot concern us here.

(See, for example, Stake, 1971; MacDonald-Ross, 1973; Walker and Schaffarzick 1974; Stenhouse, 1975.) We can note that, provided the teacher specifies his objectives, the above model can be worked by psychologists or psychometrists who know very little about the classroom, which is often treated as a 'black box' (with the teacher inside!).

The paradigm makes evaluation apparently quite straightforward, and indeed this ease of evaluation is one of the main attractions of the objectives model. It was shaped by the concerns of examiners rather than of teachers or curriculum developers. The first handbook of the Taxonomy of Educational Objectives (Bloom et al, 1956) is described as 'by A Committee of College and University Examiners'.

This is not the place to offer a detailed account of the objectives model. Such accounts are readily accessible. But we can review its strengths before we look at its weaknesses. First, as we have said, it fits well with a tradition of educational research founded on psychology because it suggests that, once you define its product in terms of objectives, education can be the subject of experiments similar to those conducted in the improvement of agriculture. Such experiments resemble in design those employed in psychology but they use objectives instead of hypotheses. This can be seen as defining the applied nature of the field. Second, since the objectives model provides simple and straightforward criteria for the success of education - the attainment of objectives - it makes the evaluation of education rather simple. Third, teachers are led to think analytically about what they are trying to achieve when they teach by involvement in the process of formulating or reflecting upon objectives. Other advantages are argued in the literature.

However, there are some marked disadvantages of approaching the problem of curriculum through objectives, and these rest, I think, on the oversimplification involved. Experimental design and evaluation pose subtle problems to which enthusiasts for the objectives approach appear blind. Reflecting on objectives does not greatly help the teachers to achieve them if they are suitably ambitious.

I want here simply to draw attention to four points at which I believe the objectives model to be badly founded.

1. It does not draw on, nor is it in accord with, empirical studies of the classroom. Those studies which exist suggest that for the most part this is not how students learn nor how teachers teach. Teaching and learning at their best unfold, are built up and do not aim at a goal: they build as high as they can. To the assertion that teachers do not work by aiming at a goal, Popham (1968) rejoins: "They ought to." I think he means that they would teach better if they did, but I believe him to be wrong. Experience

with payment by results in England and performance contracting in the United States as well as more moderate applications of the objectives pattern, suggest that only the weakest teachers will teach better. Objectives almost inevitably define a standard for what Dahllof (1971) has called the 'steering group' somewhere towards the bottom of the group being taught. For the better teachers they lower the level of aspiration.

2. Analysis of curriculum content into behavioural objectives is not in accord with the nature and structure of knowledge, with epistemology. Knowledge cannot be reduced to behaviours. In particular it cannot be expressed in terms of prespecified performances for it is the function of knowledge, as opposed to mere agglomerations of facts, that it does not determine behaviour but literates it. Knowledge is a basis for diversity of performances characterized by understanding. An approach through objectives attempts to standardize behaviours, ie make them more the subject of formulae, less of creative response. Objectives also tend to make knowledge, which is the right end, the means to the development of skills, which should be the means but are made the end. Because of this failure to face the idea of knowledge as the basis of enlightenment and understanding, the approach through behavioural objectives tends to trivialize the purposes of education.
3. Normally, the objectives formula sidetracks and blurs the ethical and political problems associated with the control of education, its aspirations and its individualization. Whose objectives are these to be: those of the state, of the curriculum developer, of the teacher or of the student? Should all students in the same classroom group have the same objectives? How should objectives be differentiated? If there are alternative sets of objectives within the same curriculum, how do you examine or evaluate? As it is, our classes and teaching vary from year to year and in nominally similar classes in any one year. We know little of why. We cannot predict what we shall achieve. Certainly, in our country, examinations set lower standards than good teachers hope to achieve because they set common standards for all pupils whereas much of the highest achievement is highly individual. Because we cannot predict educational events and effects reliably, public specifications of objectives in practice set low goals. And too often the very specification discourages teachers from seeing how far they can go: it imprisons the pupils within the limits of our hopes.

4. All this leads me to the assertion that the objectives model overestimates our capacity to understand the educational process. It may increase the clarity of our intention but it does little or nothing to improve its quality. Nor does it really increase our capability of realising our aspirations, for it does not adequately face the multi-variate situation of the classroom. In summary, it is not the best basis for teacher development. You might say it smartens teachers up a bit, making every day more like the day the inspector visits the classroom. But we all know the brisk and tidy deceits put on for the classroom visitor, and I think we shall find similar effects of the objectives model. The deft teacher can, if he will, achieve the publicly-appreciated objectives without undertaking the burden of educating the pupils! Many teachers working in examination classes achieve this already. They ensure passes for pupils who do not understand the subject.

For such reasons as these I have come to reject the objectives model as a curriculum researcher's response to Jean Rudduck's assertion that curriculum development must be the means of teacher development. Yet I endorse her assertion; believing that research in curriculum and teaching should serve the teacher as medical research serves the doctor. It should be the basis on which he builds his professional art.

This is, then, the cue for my alternative suggestion. I shall call this 'educational experimentalism' to signal that we are concerned with advance through experiment. The attitude behind this view is close to that of Karl Popper (1959, 1963). We assume that in any human endeavour such as education it is possible for us always to do a little better, but that there is no point at which we can claim success. Perfection is unattainable. We look therefore to a process of gradual improvement in the light of our experience rather than a leap at success in the light of our hopes.

Part of our reason for this can be seen in our analogy. If education in understanding is more like getting to know Norway than taking a train to Oslo, clearly it makes nonsense to think of 'getting there'. I shall know and understand Norway better but I shall never know her perfectly.

On this view we start from a statement of aim which involves knowledge and understanding: to understand electricity or Peer Gynt or race relations. Such an aim cannot be adequately analysed into prespecified behaviours: the teacher who is assessing the degree of success of teaching will have to be a critical judge of performances evoked from the students. In terms of assessment he will have principles of criticism - and sometimes his sense of 'quality' will break through these principles. (Pirsig, 1974)

He will guide his teaching (as opposed to his assessing) by principles of procedure, guides to the selection of content, teaching strategy (didactic), sequence and individualization. Such principles can be derived from aims directed towards understanding. Much of the logical analysis involved is the subject of philosophy of science or aesthetics or history. Outside the beaten paths of traditional subject structures similar analytic procedures can be followed. The adoption of aims construed in this way conduces to teacher development because it invites the teacher to consider the second-order problems of the content of his subject. On the other hand it does not preclude the teacher's working out his own behavioural objectives if he wishes to go about his job in this way, since it locates the generation of objectives (if objectives are used) in the classroom or school rather than in the curriculum.

I think it would be helpful if I offered some examples of principles on which to base procedures and critical appraisal of them. But I must make it clear that I am illustrating the process and logic and not arguing for the content of these specifications. I simply want to show that in arguing against the use of objectives in curriculum research and development I am not arguing for a romantic and non-analytic intuition (though that has a place too).

Raths (1971) provides twelve suggested criteria for the dissemination of 'worthwhile activities' in education. Here are some of them:

1. All other things being equal, one activity is more worthwhile than another if it permits children to make informed choices in carrying out the activity and to reflect on the consequences of their choices.
3. . . . if it asks students to engage in inquiry into ideas, applications of intellectual processes, or current problems, either personal or social.

5. . . . if completion of the activity may be accomplished successfully by children at several different levels of ability.
8. . . . if it involves students and faculty members in 'risk' taking - not a risk of life and limb, but a risk of success or failure.
10. . . . if it involves students in the application and mastery of meaningful rules, standards, or disciplines.

For a curriculum planner or researcher such criteria as these are invaluable contributions to the debate on content.

Hanley, Whittle, Moo and Walter (1970), the evaluators of Jerome Bruner's social science curriculum state principles of procedure in terms which some would call 'process objectives', that is to say statement about desiderata of a pedagogy rather than of outcome behaviours. They call them pedagogical aims.

1. To initiate and develop in youngsters a process of question-posing (the inquiry method);
2. To teach a research methodology where children can look for information to answer questions they have raised and use the framework developed in the course (eg the concept of the life cycle) and apply it to new areas;
3. To help youngsters develop the ability to use a variety of first-hand sources as evidence from which to develop hypotheses and draw conclusions.
4. To conduct classroom discussions in which youngsters learn to listen to others as well as to express their own views;
5. To legitimize the search; that is, to give sanction and support to open-ended discussions where definitive answers to many questions are not found;
6. To encourage children to reflect on their own experiences;
7. To create a new role for the teacher, in which he becomes a resource rather than an authority.

Finally, let me give an example of the derivation of a principle from an aim in our own Humanities Curriculum Project. The general teaching aim within which the project worked was: to develop an understanding of social situations and human acts and of the controversial value issues which they raise. From a definition of a controversial issue as one which divides children, parents and teachers we reached - by arguments I shall not analyse here - a method of teaching through discussion in which the teacher acted as

a neutral chairman. (Humanities Curriculum Project, 1970). Now within the discussions in schools we found a tendency to work to get agreement through compromise. This is a reasonable procedure in a decision-making committee or an action group, but in an educational group attempting to understand controversial issues the pressure to consensus is unhelpful. It both suggests that the issue is not really controversial and devalues the contribution to understanding of a thoughtful exploration of the views within the group. Thus we evolved principles for the protection of divergence in the group.

I am suggesting that a policy of curriculum research and development which works to principles and criteria and studies, rather than prescribes student outcomes offers better prospects than does the objectives model of raising our level of aspiration in the schools and of making realities closer to those aspirations. This, because it sets teachers worthwhile problems rather than providing them with 'authoritative' answers.

It is quite possible to work with this strategy and to mount an evaluation (see for instance MacDonald, 1971; Parlett and Hamilton, 1972; Scriven, 1973; Stake, 1974; Hamilton, 1976). However, I personally am more interested in the potential of such a conceptualization as a foundation for a research approach to curriculum.

The 'title' of a research of this kind might be: 'The problems and effects of teaching . . .' - controversial issues, human geography, 10th grade chemistry - or what have you. Now a 'curriculum' in its experimental setting is seen as the probe with which to explore the problems of teaching and build a curriculum theory and a pedagogy.

Such a research approach involves:

1. The documentation of problems and effects foreseen by teachers and researchers;
2. The evolution of tentative (hypothetical) procedures to meet those problems;
3. The case-study of individual schools and classrooms;
4. Testing of hypotheses about possible effects by psychological tests, surveys and interviews;
5. Study of the problems of transferring ideas from the experimental group to the system.

This implies teacher-based research or close teacher-researcher collaboration.

There is no simple formula to apply. I am urging experimentalism in curriculum in order to provide the teacher with a framework for experimentalism in teaching. The teacher should not seek to apply research results but rather to test them critically. Such sceptical inquiry is the basis of teacher development.

Agreeing with Jean Rudduck on the centrality of teacher development in the improvement of curriculum and schools, I have tried to outline the implications of this position for experimental design in curriculum and teaching, seeking to address our work on curriculum to teachers and teacher trainers rather than to policy makers and academic psychologists.

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