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PROBLEMS IN CURRICULUM RESEARCH:

A WORKING PAPER

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Although the paper aspires to give a balanced coverage, it inevitably reflects the bias of the authors.

I. Definitions of Curriculum

There is a problem in defining curriculum. The following definitions may illustrate this:

1. "Basically the curriculum is what happens to children in school as a result of what teachers do. It includes all of the experiences of children for which the school should accept responsibility. It is the program used by the school as a means of accomplishing its purpose."

Curriculum Improvement, Albert I. Oliver, Dodd, Mead & Co. Inc. 1965. pp. 3 - 16 in Short & Marconnit. p.7.

2. "The term curriculum is simply a name for the organised pattern of the school's educational program. A complete description of the curriculum has at least three components: (1) what is studied - the 'content' or 'subject matter' of instruction - (2) how the study and teaching are done - the 'method' of instruction - and (3) when the various subjects are presented - the order of instruction."

"Curriculum" in Philosophy of Education by Philip H. Phenix, pp. 57 - 75. Holt, Rinehart and Winston, 1958 in Short & Marconnit, p.9.

3. "In view of the shortcomings of the currently popular definition, it is here stipulated that curriculum is a structured series of intended learning outcomes. Curriculum prescribes (or at least anticipates) the results of instruction."

"Definitions and models in curriculum theory" by Mauritz Johnson, Jr. Educational Theory, 17. (April 1967) pp. 127 - 140 in Short & Marconnit, p 44.

4. "We shall take the term 'curriculum' to be a label for a programme or course of activities which is explicitly organised as the means whereby pupils may attain the desired objectives, whatever these may be."

Hirst and Peters. The Logic of Education. 1970. p.60.

"At this level general statements of aims have to be translated into statements of specific objectives to which curriculum activities can be explicitly directed." (Ibid 60 - 61).

5. "A curriculum then is a specification intended to communicate the essential principles and features of an educational proposal in such a form that it is open to critical scrutiny and capable of effective translation into practice.

Accordingly, a curriculum should, directly or indirectly, provide a basis for planning, evaluating, and justifying a course. Specifically, it should offer:

A. In planning

- i. principles for the selection of content, what is to be taught and learned.
- ii. principles for the development of method, how it is to be taught and learned.
- iii. principles for the planning of sequence.

- iv. principles on which to diagnose the strengths and weaknesses of individual students and differentiate the general principles i, ii, and iii above to meet individual cases.

B. In evaluation

- v. principles on which to evaluate the progress of students.
- vi. principles on which to evaluate the progress of teachers.
- vii. guidance as to the feasibility of the curriculum in varying school contexts, pupil contexts, environments, and peer-group situations.
- viii. information about the variability of effects in differing contexts and on different pupils and an understanding of the causes of the variation.

C. Justification

- ix. a formulation of the intention of the curriculum which is accessible to critical scrutiny and philosophical justification."

L. Stenhouse.

II. Experimental Design

Change in curriculum has in the past been a matter of exhortation or edict. Only recently can one talk about "experimental design" in the curriculum field. And models of design are still tentative and primitive.

Two principal models exist, an output model and an input model, of which the former is more common.

The Output Model

This is sometimes called "the engineering model."

The logic is as follows. Since education is essentially concerned with learning and learning is change in behaviour, it should be ultimately possible to analyse any educational aim in such a way as to specify what student behaviours would count as having achieved that aim. Such intended student behaviours are generally called "behavioural objectives" or "intended learning outcomes" (i.l.o.'s.). Given an aim translated into i.l.o.'s. it is possible to design content and methods expected prima facie to produce the required i.l.o.'s and then, by testing in schools, to adjust content and method empirically to obtain maximum output.

The advantages of the output approach are that it defines evaluation (attainment of i.l.o.'s) in terms which make quantitative instruments potentially valid, it offers precision, it suggests the possibility of comparing curricula rather readily against a matrix or schedule of objectives such as Bloom's Taxonomies.

Systems theory approaches to curriculum are usually based on this model. Product accountability which lies behind educational contracting is also based on objectives, as was payment by results in the 19th century school (the school was awarded grants of government money on the basis of the performance of its pupils as tested by inspectors.)

The Input Model

The input model is founded on a different logic from the output model. Given an aim couched in terms of knowledge and understanding (and perhaps also advanced and complex skills), it is possible to devise a teaching process and teaching materials which are consistent with that aim. In this case the aim is analysed into learning process or input, rather than into i.l.o.'s or output.

This procedure allows a gradual exploration of the logic and structure of a subject area, both during a curriculum project and by teachers developing a projects work.

Instead of i.l.o.'s the input model deals with effects which are hypothesised from case studies of practical situations. It aims to produce a curricular specification which describes a range of possible learning outcomes and relates them to their causes. The style of its formulation is: "If you follow these procedures with these materials with this type of pupil, in this school setting, the effects will tend to be X."

The problem with the input model is its complexity. Among its strengths are that it is amenable to the hypothico-deductive method and hence gives greater promise of a cumulative science of curriculum, it avoids the philosophically dubious position that all knowledge can be expressed as learned behaviours, it allows of students' having divergent objectives within the same curriculum, and it attempts to face the complexity of the classroom.

Probably both these models - and others - need to be explored, and curriculum workers must learn to choose a model that fits their case.

Policy makers may often exert a pressure towards the output model because product accountability is more easily enforced and measured than process accountability.

III. Relations to Teachers

Crucial for curriculum research projects depending on central teams of curriculum developers is the relationship between the central team and teachers.

Many early American curriculum projects aspired to be "teacher-proof". On the whole this has not proved to be a productive line, and it remains only in self-instructional programmes (where the student is, as it were, the teacher).

In relation to teachers working in the early stages of a project, a research team can assume a variety of postures. It can cast the teachers in the role of testers, trying out and commenting on materials produced by

subject experts. It can ask the teachers to be experimental colleagues and support them by defining problems and sharpening hypotheses. Or it can regard the teachers as developers and co-ordinate and report their efforts.

The contrast of styles may be sharpened by the opposition of extreme positions, one in which the team are seen as experts and the teachers as learners, the other in which the teachers are seen as experts and the team as learners, by virtue of their observation of teachers' practice, equipped for their task by their scientific and experimental skills.

It is probably fair to say that in Britain, though perhaps to a slightly lesser extent in America, the investment in curriculum innovation is more and more seen to need justification in terms of teacher development.

IV. Production of Materials

Curriculum materials are now very varied. They include educational apparatus (eg. Cuisenaire rods), scientific apparatus, artefacts (eg. reproductions of prehistoric tools), educational games, broadsheets, cards, films, slides, overhead projector transparencies, teaching machine programmes - and, of course, books.

Many innovative types of material involve production problems. Even to move from books to cards or unbound sheets makes for great difficulties. Publishers and printers are geared to old ways.

When materials are anthologised as in readers, or compilations of various sorts, substantial problems of copyright may arise.

There is probably a general tendency for curriculum projects to be somewhat over-ambitious in their plans to produce materials. This results in working under too much pressure to achieve the highest quality, gradual loss of energy with consequent weakening of standards, or failure to complete the programme originally projected.

Although teaching materials are usually seen as resources for the student, they are also a major line of communication to the teacher. The teacher's understanding of a curriculum may often be mainly a matter of his impression of the materials.

Teachers' handbooks are also an important communication to the teacher. These may attempt to communicate principles or specific procedures, may be speculative or prescriptive. Sometimes they appear to be used to correct false (un-intended) impressions conveyed by student materials.

V. Evaluation and Revision of Materials

It is usually a dictum of curriculum projects that the materials they produce differ from those of commercial publishers in that they are tested and revised in a range of classrooms. Close scrutiny of the work of projects suggests that the revision which takes place between trial materials and published materials is not always as great as one would expect.

There seems a range of problems in evaluation of materials.

Projects are commonly expected to work rather rapidly and to accept publishers' deadlines. It would seem that they sometimes lack the time and resources to make as extensive revisions as they would wish.

When materials are created by the project team, they have an intellectual investment in them. It requires great self-discipline to accept teacher criticisms, especially when it can be argued that teachers have misconstrued the intentions of the project.

Feed-back by means of questionnaires from schools is sometimes difficult to process rapidly enough for it to have its full effects in materials revision.

Teachers often find it difficult to look at materials objectively. Instead of seeing the materials as on trial, they see themselves on trial. They may report success defensively, even when materials fail. They may also report success to protect the central team or failure to attack them, according to the relationship which has been established.

Teachers are hard-worked, and it is usually difficult to get them to undertake the labour involved in detailed feed-back.

The most effective way of getting feed-back on materials is to work in a very limited number of schools - probably five or six - and maintain close personal contact.

Thus there appears to be a dilemma. The larger the number of schools, the more credible is the formal claim to have tested materials systematically, but the more difficult it is to make that testing effective. The smaller the number of schools, the more effective is the testing, but the claim to systematic testing going beyond that of the teacher writing for a publisher becomes less secure.

In view of all these factors, it is probably best to foster a critical attitude on the part of teachers in the attempt to prevent materials acquiring too great an authority.

VI. Teaching Methods

"Revising a textbook, preparing a new syllabus, or administering new and different examinations will make some significant changes, but only if the people who are concerned grasp and accept the changes. They must come to have greater understanding of the area in which they work, of the methods which are most appropriate for imparting information and inspiring participation. They must develop skills and techniques of communicating, evaluating, and understanding which they may not have had before."

Frymier, Jack R. and Hawn, Horace, C. Curriculum Improvement for Better Schools, Worthington, Ohio: Charles A. Jones Publishing Co, 1970. p.24.

This implies that curriculum change usually involves changing the attitudes and behaviour of the teacher in the classroom. But it also means that the curriculum workers who devise new materials and new content specifications need themselves to learn the implications of their work for teacher behaviour (didactics) in practice.

Sometimes workers have attempted to deduce didactics from the logic of

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their aims and the structure of their materials without sufficiently verifying their findings in practical classroom settings.

In order to base didactics on research, it is necessary for the curriculum team to include a person conversant with research in teaching (eg. interaction analysis, logical analysis, micro-teaching techniques, etc.). It is also necessary to take highly skilled practising teachers into the experiment as experimental colleagues with a full grasp of the problems to be faced and a readiness to record themselves on audio-tape or video-tape and to allow observers in their classrooms.

VII. Training and Diffusion

At the conclusion of a curriculum experiment in which a group of curriculum workers has collaborated with a limited number of experimental schools, the curriculum is likely to be diffused in the system.

In a decentralized system, this will take place through individual schools or school boards or local authorities exercising an option. In a centralized system the curriculum may be adopted and prescribed. Although this may seem a simpler procedure, in fact official adoption does not by any means ensure that the curriculum will be realized in practice. It is easier to decree than to effect. And blanket adoption of a new curriculum by a centralized system produces a huge training problem.

Thus, in whatever kind of system, a new curriculum must be supported by a training scheme. To produce a training scheme is to attempt to develop a short-term procedure which will adequately introduce teachers to the insights and skills developed by teachers in the experimental schools over a year or several years. The design of training conferences is thus a very difficult problem.

It is probable that conferences should be supplemented by a well-designed self-training programme through which teachers can follow up their initial introduction to the new curricula.

In Britain there has been a movement to set up teachers' centres, meeting places and curriculum workshops at which teachers can give each other mutual support in training themselves to meet the demands imposed by new curricula.

If teachers are to make an independent response in this way, it is important that training courses should minimize the authority of the trainers and make teachers feel capable of developing their work independently within the principles which animate the new curriculum.

VIII General Evaluation

Decisions are called for at all stages in the development of a new curriculum and when that curriculum is finally embodied in an educational proposal, further decisions have to be made about whether to act upon it and how to respond to it. Such decisions may be based on instinct, hearsay, past experience, or divine revelation. Evaluation, however, assumes that they will be, or ought to be, influenced by information concerning their likely consequences. Evaluation is a set of practises by means of which decision data is conceived, obtained, and made available

to those who have to take curricular action. (Evaluation audiences may, of course, include groups, such as parents or employers, who are not prime actors but whose interests could be affected by the proposal.)

Evaluation is thus, unlike conventional educational research, primarily utilitarian, audience-referenced, and time-conscious.

Evaluation personnel are rarely constrained by narrowly stipulative terms of reference, particularly when they can offer specialised expertise and experience. Sponsors generally acknowledge the need for evaluation to be seen to be independent. However, the custom of appointing evaluators some time after developers may lead to a situation where the evaluator's role has been pre-determined, his major options foreclosed. This is more than likely when curriculum development models in the Tylerian tradition are adopted.

The evaluator who has freedom of action faces acute problems. He has to decide which decision-makers he will serve, what information will be of most value, when it is needed, and how it can be obtained.

Evaluators have in practice responded to these questions rather less diversely than the possibilities might suggest. Most have chosen, or been obliged, to help the developers in the process of programme revision by employing psychometric tests of intended pupil learning. In a very practical sense the options are not open. The technology of evaluation is under-developed. Inevitably there is a tendency to use existing instruments to define evaluation problems.

The proliferation in recent years of a theoretical literature of evaluation reflects not only a surge of interest in the field but an increasing discontent with the limitations of established practice. At present, evaluation is normally concurrent with the trial phase of new curricula and concerned with effects achieved in partially controlled conditions. Even when carried out at the diffusion stage of a programme it constitutes itself a form of control which constrains natural behaviour on the part of the schools.

As critics of the reform movement increasingly point to the gap between experimental success and what subsequently happens in classrooms, new roles are being proposed for evaluation in an effort to close this gap.

Future evaluation designs seem likely to move from a producer to a consumer orientation. This could involve:

- a) prospecting the working context in which the programme will operate, and elucidating principles of guidance for consumer decision-making.
- b) paying less attention to the merits of the programme, more to identifying its weaknesses and strengths as an innovation.
- c) assessing programme effects at different points of impact: pupil effects (with a greater emphasis on side-effects), teacher effects, institutional effects, system effects.
- d) developing new instruments to gauge institutional suitability and to trace variations in programme implementation.

Evaluation is meant to 'guide the next step'. It cannot do so effectively unless curriculum development designs build in 'evaluation pauses', particularly between trial and diffusion. Hindsight is no substitute for foresight.

IX. Implementation

The problems of implementation are likely to vary from country to country and need to be considered in the context of particular systems and traditions.

In Britain, there is no definitive term for the 'taking' of a curriculum innovation 'into' a school or 'into' the educational system. Instead, there is a cluster of words of overlapping and often arbitrarily assigned shades of meaning: implementation; adoption; installation; incorporation; development. The first two are the most common. To some writers, 'implementation' denotes the mainly preparatory - decision-making and organisational - stage of the curriculum implant, and 'adoption' denotes the genuineness (or identity) and healthiness of the growth.

Basically, implementation is difficult to the extent that the innovation is at odds with the tradition, and is costly in terms of training requirements, financial outlay, and teacher strain.

Implementation at the trial stage of an innovation may have a differently weighted set of problems from implementation at the diffusion stage. One might expect differences in motivation (the cachet of being involved in pioneer work) and in finance (a sense of elitism may more readily elicit special funds - and special attempts at meeting organisational requirements). A curriculum innovation which uses authority and expertise as a basis for communication with teachers is likely to achieve, fairly easily, satisfactory conditions for experiment, but will have little experience from which to anticipate the problems of implementation at the diffusion stage when authority is necessarily diluted by the numbers of involved schools and the distance of the 'experts'.

Implementation, whether at trial or diffusion stage, has to meet problems of communication, organisation, and support. Questions needing to be considered would include these:

a) is the innovation or curriculum project understood?

Expectations and perceptions of an innovation will inevitably vary, but it is important that adequate information reaches decision-makers and that responsibilities for the transmission of information are defined and recognised. In particular, the Head or Principal of the School needs to understand the aims and values of the work, to foresee its implications, and be aware of and prepared to meet its organisational requirements.

b) is it organisationally viable within the school?

Have teacher-selection, time-tabling allowance, student groupings, physical settings, been given due thought? Many recently developed projects use materials in a way that demands co-operative planning among teachers: are materials and resources conveniently available?

c) is there adequate support for the innovating teachers from within the school, within the community and within the system?

Established ways are 'comfortable, easy, and anxiety free'. Where support is strong, innovating teachers are more likely to withstand the early strains of innovation. Support, if it is appropriate, is a function of understanding and can partly be expressed through organisational backing. Beyond this, innovating teachers may need time for familiarisation with new content and materials, for discussion among themselves, and, in many cases, for attending introductory and follow-up meetings and courses.

Another aspect which relates both to organisation and support is the importance of the innovation to heads, the innovating teachers, other teachers, students, and parents. The head's strategy for implementation may be partly determined by anticipated resistances (one of his functions will be to manage tensions); he may have to reward or compensate teachers for the burdens and risks of involvement in innovation; he may need to draw on already established and high-status teachers; or he may signal the importance of the innovation by bidding for its public examination so that it can be valued for its qualification potential.

If one thinks beyond implementation of an innovation in school to implementation in the system, then the reference groups whose interests and influence need to be considered would include examining boards, professional associations, the inspectorate and the employers. At this stage, implementation becomes institutionalisation.