

KEYNOTE ADDRESS

EDUCATIONAL MATERIALS: THEIR DEVELOPMENT, SUPPLY, USE AND MANAGEMENT

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It is an honour to be asked to make some introductory remarks at a Conference like this - an honour and a problem. For the most striking feature of the Commonwealth is its diversity. In such company, if a speaker limits himself to ideals and noble generalizations he may safely win universal assent; but let him for a moment leave that serene stratosphere of platitude and his remarks will strike one listener or another as sensible or absurd, helpful or irrelevant, interesting or obvious, according to his national context. Given our actual diversity, then, (whatever our common aims) you must not be surprised if I confine myself essentially to reflections on the school scene in Britain.

However to start in the stratosphere of our common concern, I take it that we would not be attending a conference about "educational materials - their development, supply, use and management" if we meant schools to stay as they are. We have in mind those new-style curriculum materials which embody a significant change whether in syllabus content or in classroom methods or both; and we doubtless share a certain frustration that such materials, often of the highest quality, are frequently ignored by teachers, or if adopted are applied in ways that parody their originators' intentions. In making any attempt to unravel this problem, we shall need to start by teasing out the word "change". For our present purposes I think we should establish three levels of change.

In the first, small, continuous adjustments are made to an established convention - usually by minor addenda to familiar textbooks and standing syllabuses - a sort of Sunday tinkering to an old, familiar motor-car. After some years, however, this may no longer be enough. Expert opinion comes to require something more radical than modifying the textbooks. The resulting wholesale re-alignment constitutes a second brand of curriculum change, of which there were many examples in the '60s, such as "modern" mathematics, new science syllabuses, oral rather than written fluency in languages, "human" rather than "physical" geography, and so on. This amounts to trading in the old car for a brand new model. A third variety of curriculum change, although embodying whatever subject content the experts currently approve, has concerned itself less with what children learn than with how they learn it. Generally, the shift has been towards heuristic, active, individual and small group learning, away from received authority, passivity and class teaching; and this implies a real alteration in the traditional relationship between teacher, student and material - the eternal triangle of the learning situation. At this stage we have begun to look at transportation by the private car with a jaundiced eye and to contemplate other ways of travelling.

The stress throughout the '50s and '60s was upon the development of whole new curriculum courses - a level two change. Teams of scholars and writers were gathered by the great foundations or by governments to compose, say, PSSC in America, or Nuffield French in Britain, or IMU Mathematics in Sweden. The full roll-call would occupy many pages. But for all the skilled effort and massive

expenditure, the result in general has been disappointing. Here, from America - the precursor in massive new-style curriculum development - are two comments on the results, extreme reactions perhaps, but recognizable in other contexts. Thus Peter Shrag writes about Boston:

Boston - and other cities - like to talk innovation. Innovation has become fashionable and profitable... Around the urban school system are magnificent necklaces of special programs, head starts, pilot schools enrichment classes; but the body of education and the results produced remain almost unchanged. In Boston, while having enough trial programs and experiments to fill a book, the life of the average child in the average classroom is virtually unaffected. The teachers, the curriculum, the school committee are the same. The books are the same. The attitudes are the same. (1)

Some of the new materials were indeed adopted quite widely; yet somehow the essential change in spirit they were supposed to induce did not occur. Again, in America, Paul Brandwein evaluated the new science curricula:

It is curious to note how the educational community changes its words but not its deeds; thus "learning by doing" is replaced by "learning through discovery"; "the discovery method" or "the problem-solving method" by "inquiry". Yet observations will show that in the majority of high schools, teachers of science lecture 80 per cent of the class time, and that the laboratory time is given over to "doing experiments" with equipment laid out in advance, hence the results are postulated in advance. Yet teachers and administrators will assure the observer that the new curriculums (PSSC, CHEMS, BSCS and the like), are being used and "inquiry" is the mode of instruction. (2)

Similarly, teachers of modern languages in Sweden (where the direct method has been established for 25 years) believed, in pursuance of official policy, they were providing their charges ample opportunity to practise speaking the language. Yet a detailed and extensive stop-watch study revealed that they did so for less than eight per cent of teaching time. (3) I do not think we should assume that "plus ça change plus c'est la même chose" applies only in those subjects or only in non-Commonwealth countries.

For we can now clearly see that merely developing the new-style curricular materials and stopping at that, was rather like making keys which, alas, would not turn the lock. That lock was made up of intricate and interlocking elements evolved to match traditional ideas of teaching - a coherent system extending from school architecture to classroom relationships - and including educational equipment and materials. Any radical change in the learning materials had contingent effects on the working of the whole system. Whereas making new keys, even golden keys, has proved relatively easy, reconstructing the wards of the lock to match is a very difficult task indeed. It is this inter-relationship of key and lock - in the terminology of this conference the inter-relationship between the "development" of materials and their "use", "management" and "supply" - that I propose to examine in these introductory remarks.

The current reaction to the disappointment - not to say confusion - surrounding curriculum reform has been to insist that teachers should have a dominant share in developing materials. In one sense this has always been the British view. In America it was university professors who led the way in composing the great new science curricula or epic productions like "Man, a Course of Study"; in contrast in Britain, first at Nuffield and then at the Schools Council, project teams have been almost entirely composed of teachers.

However, a swift count of Schools Council projects last year reveals that less than one per cent of its projects are based on a school or a group of schools or a teachers' centre. The overwhelming majority centre on some university or college of education. In such seductive surroundings the scholar in every teacher blossoms, and the members of project teams seem often to assume academic ways and lose touch with classroom realities. The need, we now begin to think, is to base curriculum renewal not on seconded teachers or ex-teachers, but on teachers still active in the classroom. The case for such an emphasis is eloquently and admirably represented in lead papers to this conference.

It is an attractive case, cogently argued. However, in the lawyers' belief that truth, like light, derives from the conflict of opposites, I propose here to act the devil's advocate. Whether we use a full-time team or rely on part-time contribution by teachers depends chiefly, I would contend, on what level of change we propose. At level one - that is, for minor improvement to an established curriculum - reliance on teacher contribution works admirably. After all, such modification occurs whenever a teacher gives a lesson. But if we move into levels two and three - the wholesale re-casting of a syllabus, or the attempt to cover a syllabus less by class teaching than by some other method - then curriculum development becomes a very time-absorbing exercise indeed.

To put down for the benefit of other teachers what one has cheerfully expounded in the classroom these many years sounds simple enough, but in practice writing proves an exacting discipline. It reveals to oneself - and worse, to one's colleagues - all the gaps and inconsequences that talk to children allows. And if we go beyond lesson notes for the use of teachers and attempt to write materials for the direct use of children themselves, then how formidable the task! Thus, the Nuffield Foundation's "Resources for Learning Project" conducted, among many other experiments, some which dealt with introducing "more independent style of learning" by schoolchildren - in our categorization a level three (new modes of transportation) sort of change. In one experiment we assembled a team of gifted teachers to produce materials for the use of 13-year-olds in five major school subjects. At the end of two years' work we found that writing, editing or collecting suitable materials took, on average, fully 22 man-hours for each hour of pupil material. (4)

Unfortunately, all of us know of practising teachers who somehow manage on top of everything else to compose extensive new curriculum materials. At about this time of the year, after a good holiday, we have all had visions of being counted in that heroic company. By the middle of the winter term with nothing done, we need as consolation the economic doctrine of "opportunity costs". This assures us that hours spent on curriculum development (whether alone or worse, far worse, in committee) are necessarily bought at a reduction in other opportunities - the time spent in pastoral care, or setting and properly correcting children's written work, or helping in extra-curricular activities, or in proper attention to a garden, sweetheart or wife, or whatever else it is that keeps a teacher sane, year in, year out. I suspect research would show that a large majority of those practising teachers who manage also to be really active in curriculum development either stay single or soon become single again. Alternatively, if they refuse to let their personal lives take the strain they quickly get translated into college lecturers, administrators, project team members in national (and international) organizations and the like. There, like exhausted racehorses, they are put to crop lusher pastures, some hopefully to stud, others gratefully to grass. In short, we should be cautious about how much curriculum development we urge upon practising teachers, for they have many more important things to do.

And I think a word should be said about those who suffer local curriculum development. Sometimes the sufferers are other teachers who start by cheerfully joining some participatory committee and then find themselves morally bound to use materials projected essentially by that demonically active Joe-down-the-road, a far

more effective inquisitor into the proper use of "our" course than ever a distant central project team can be of "theirs". And pupils can be victims too. It is their sad lot in life to submit to whatever course is assigned to them. Every course, is, for them equally "external", equally imposed. In consequence they may thrill only briefly to the news that this course was composed by teachers meeting in their very own building, or at a centre only one mile away instead of some hundreds of miles distant.

I would argue that in the development of those curriculum materials designed to introduce substantial, level two or three changes, full-time project members are essential. Only so can we ensure coherence, quality and a regular flow of production. However, if I were Dictator, I should insist on the members of a full-time project team, at the start of their labours, swearing a Self-denying Ordinance. They would solemnly promise not even to attempt perfection or completeness. I mean by this that they should avoid that nauseating jargon (still in Bloom despite the withering of programmed learning) of behavioural objectives, massive evaluative feedback and the like... all that inflated scientology which makes one feel at times that the new style curriculum materials have come not from the end of a pen but from the tip of a screwdriver. Alas, such exactness, such omniscience, has served less to convince than to alienate teachers. As E. M. Forster wrote about the villagers in their dealings with Mrs Miniver: "They listen to her saying the right things and are dumb. They watch her doing the right things in the right way and are paralysed". (5) As with paralysis by perfection, so project teams must also avoid giving cramp by completeness. Whenever possible in a course, ends should be left loose, and teachers urged to make their own additions. Similarly local modifications, especially those which allow reference to the local environment, should be specifically encouraged at all suitable points in the structure of a course. It is through such local modifications - by these fragmentary additions to a central core rather than by comprehensive going-it-alone - that busy practising teachers can make realistic and valid contributions to the development of materials.

Any such limited exercise of part-time participation has a function less to do with the "development" than with the "use" of materials. Local curriculum development has proved a critically important addition to the customary forms of in-service training.

A project team, set to develop new materials, is invariably selected from outstanding teachers in the discipline concerned (often reinforced by inspectors or university specialists). They may easily assume knowledge and skills in the teacher, and intelligence, good order and responsiveness in children, sadly at variance with our average experience. Even supposing they guard against this by including many "ordinary" schools in their experimental sample, the feedback and revision cycle ensure that those who write and those who try out development materials grow steadily and bit by bit into a full understanding of them. At last the day comes when the materials are published and the "average" teacher receives them in their finished form - refined, complete, external and 'cold'. The originators are then surprised by a spate of trivial objections, naive questions, and absurd misunderstanding. It is the same sort of amazement a teacher often experiences when he neatly expounds some concept, clear to him from years of grappling with it, only to find children who are fogged and befuddled. He then attributes their incomprehension to a variety of causes - they're inattentive or idle or stupid - but more often the cause is sheer lack of time for the learners to view the unfamiliar concept from a variety of angles, to connect it up with their particular stores of previous knowledge and experience, to re-phrase it into more familiar terms, to imagine its application in varying situations... in a word, to "play" with it, until they can properly absorb and internalize it.

The methods used to facilitate this slow process of internalization are those familiar in every classroom - explanation by the teacher, visible demonstration,

repetition, individual exercises, attempts at practical application, discussion of difficulties among the learners, the exchange of ideas, and so on. And it is precisely some such range of activities, spread over time, that teachers themselves require when, like beginners, they have to learn a new curriculum or adopt new methods. The most carefully prepared materials, the fullest of teachers' guides, constitute no more than a sort of basic "textbook" which has then to be set into the normal complex of learning activities if the "class" of teachers is to understand it properly.

We need to register, then, that "higher-order" curriculum change has to be matched by "higher-order" in-service training. Yet as late as 1971, in Britain, of every £100 spent on training teachers, £94 was spent on initial training and £6 on in-service training. That distribution perfectly represented a static situation in which what a teacher learns at the start of his career is reckoned to last, with small modifications, to its end. It will not do at all if we intend to introduce significant change quite quickly. To that end an alteration to official syllabuses, a new edition of a standard textbook and "one-shot" brief holiday courses will no longer suffice. Unless a ministry intends an appropriate transformation of its pattern of in-service training, I am sure it is far better that it should not play around with the development of such materials as portend a wholesale revision of curriculum content or a radical shift in classroom methods and relationships.

I propose now to turn from problems arising from the "development" and "use" of materials to certain issues of "management". By "management" I have in mind the implications of using new-style curriculum materials - those involving our levels two and three of change - both within a school and also throughout an educational system.

When a school is established we must know what sort of classroom activities to provide for. If we have several conflicting intentions, the requirements of whatever is most important or general will predominate. In consequence, the details of a school's structure tend to fit together into a coherent system supporting and accentuating its central assumptions. A visitor from another planet, neither blinded by custom nor confused by avarice, would at once perceive that the present arrangements in our schools are based on the assumption that children will get most of their learning from the spoken words of a teacher. Witness the succession of isolated and insulated rooms, individual desks lined up arena-style, period by period timetabling, streaming and setting into classes, prescriptive syllabuses for all to follow, slight use of learning materials (all equipment and books amounting to some four per cent of the educational budget), a discipline suited to passive listening, and so on.

If we introduce materials which alter this fundamental class-teaching premise, we shall find that the supporting learning system will change in numerous inter-dependent details. We can catch a glimpse of the process even from variation within our familiar teaching-based system. For example, because generally throughout the Commonwealth we have preferred practical experiment to verbal instruction as the central way of learning science, we have arrived at a room lay-out quite unlike that of a classroom: work is done not individually but in pairs or small groups; these the teacher helps in turn more often than he addresses them as a class en masse; double or even triple periods become essential; much more than normal has to be spent on the resources children use, which, being valuable, have to have proper storage in a room kept under lock and key. All this because in science we have decided that although we continue sometimes to use verbal class teaching, it should not be the dominant mode of learning. In Europe they do not share this opinion, and most science periods continue to be conducted in classroom circumstances we think sufficient only for other subjects.

Or take a very different case: consider the needs of a master taking sixth-formers in one of the Arts subjects. Class-teaching is not his intent: he expects, when they all meet together, lively discussion and, at other times, individual reading and independent research. What is the result? He urges that more should be spent on library books; the timetable should include unsupervised periods for private study and double periods in which discussions can really get going; the group must be smaller - not more than a dozen for choice - and could they meet around a table rather than sitting at desks? Some teachers will think it appropriate that forenames should be exchanged - a symbol of an alteration of the style of discipline and relationships. In Europe they do not think a change from predominantly verbal instruction is necessary. Therefore their older pupils continue to be taught in classroom circumstances we think suitable only for the younger ones.

Of course, even where (for the bulk of children, in most academic subjects) we employ conventional class-teaching, there are some opportunities for a more personal and independent sort of learning - in homework, and, more occasionally and extensively, in projects and group work, though these, being peripheral and unfamiliar, generally require awkward and exhausting extemporization by the teacher. But if we try to make project work or group work or independent learning our central mode and to make class-teaching peripheral, casting the teacher in a very different role, then the necessary alterations in numerous details of school life pose formidable challenges in management.

This is very clearly demonstrated by what has happened in so many primary schools. The so-called "integrated day" and "open classroom" are not just modifications of class-teaching but require wholly different styles of learning and relationships. At the secondary stage, however, where the organization is larger, more complicated and specialized, we have tried to introduce significant and often conflicting changes in the styles of learning we use in this school subject or that as though each classroom was firmly insulated from any other. It is an illusion convenient to innovators and evaluators. At last, the more complex reality is being officially investigated. The Schools Council SAFARI project, for example, takes four of the larger new curriculum developments and specifically focuses not upon their effects on learning in the classroom but their impact on apparently uninvolved people - other teachers in a school, headteachers, Local Education Authority officers, inspectors, parents... in a word, on all those who are part and parcel of that integrated system we call a school. If we want major curriculum changes to work properly and to last, then we shall need to become much more sensitive to their implications for management well outside the classrooms which ostensibly provide their sole arena.

Among the elements that evolve to make up a total system of learning are certain expectations about the responsibilities and the rights of the people involved - and here we touch upon sensitive matters of policy, of the management of the whole educational enterprise. As we have seen, in the class-teaching system the essential vehicle of instruction is the teacher's words. These are delivered largely extempore, in the freest conceivable manner. Similarly a teacher is free to dispose what happens in any given time - he decides whether to lecture, or have a test, or read around the class, or go through individual corrections, or tell the boys they have been working so well they can have the rest of the period off while he finishes the daily crossword. Then again, he can decide (within the broad limits of the outline syllabus for the year) in what order he will take the topics comprising the syllabus, and which of them he will deal with most thoroughly. Suppose we now make materials generally available which incorporate a major change: can the ancient liberties be justified: should they be in detail retained? The Schools Council in Britain fiercely asserts that such liberties brook no compromise. The document establishing the Council declared its intention to uphold "the principle that each school should have the fullest measure of responsibility for its own work, with its own curriculum and teaching methods, based on the needs of its own pupils and evolved by its own staff".

As politics this may be excusable, but carried over into practice I have begun to wonder whether it is dangerous and self-indulgent. The variations between schools and teachers in the past were contained within a broad consensus about syllabus content and method. What happens when that consensus is abandoned and radically new courses appear, much more detailed and prescriptive than before? "New Maths" (in numerous varieties) is worlds apart from the old; French as now she must be spoke is a very different exercise to French as once she was wrote. The National Survey showed that one child in seven moves each year in Britain. Even under the old dispensation the boy who moved from one school to another might find that in physics school A did Heat in year 3 and Light in year 4 whereas school B reversed the order, so that he was scorched with heat and never saw the light at all. But how infinitely worse it is nowadays when school A does traditional physics and School B is committed to Nuffield science, radically different not only in content but in approach as well. The old courses had at least achieved through time a certain similarity: the new courses have not. The proliferation of novelties in Britain, when combined with insistence on the sovereign right of every school to choose freely among them, means that children pay a heavy tax in confusion each time their parents dare to move. Specifically, where we choose to teach a subject sequentially and not as a collection of separate and distinct courses, a more orderly way of change than this free-for-all is long overdue.

In much the same way, in times of radical change I do not think the individual teacher's right to decide whether or not he or she will attend an in-service training course can be sustained. Given that a particular change is an improvement, it is the children who are deprived if their teacher fails to volunteer; and whether the change is an improvement or not, it is the children who will be confused if, in a period of increasing mobility, some teachers in some schools have adopted new ways, and others, elsewhere, have not. Unfortunately, precisely those most likely to require re-training are the ones least likely to volunteer. Again, at the secondary stage especially, the teacher is usually part of a department, a team. Although a particular individual may become an instructed convert to an innovation, he cannot introduce it to his class unless his colleagues do the same to theirs; unless they and the headmaster agree to make the contingent adjustments within the school; unless they, the headmaster and any other authorities concerned agree to allocate the necessary resources. At all levels of the school system, but at the post-primary levels especially, a change cannot be made in isolation. It follows that the re-training of isolated individuals (however desirable as providing personal education or improved qualifications or personal promotion) is an uncertain means of bringing about a change in a school for the benefit of children. To that end, the whole group of teachers concerned needs to be retrained simultaneously.

This fact has two uncomfortable implications. First, it implies adequate provision of in-service training for all teachers as a normal part of their working lives. We can no longer stay within the limits of whatever resources in personnel and premises we can scrape together in holiday periods; nor with providing for only a portion of those who, even in such circumstances, insist on volunteering. Second, it implies compulsory re-training for all the teachers in a school who comprise the responsible group involved in a change.

Compulsion is a word we all dislike, and liberty sounds sweet to the ear: but liberty alas is divisible; often it is a question not only of liberty for whom but liberty against whom. Generally in the Commonwealth, certainly in Britain, we happen to be particularly sensitive to the rights of the citizen as a producer; in many European countries they are sensitive to the rights of the citizen as a consumer. Thus, we consider the power of the state in Europe alarming; they the power, for example in Britain, of the unions and professional associations. Certainly - as for example in this matter of attendance at in-service training - the teacher's rights are much better protected in most Commonwealth countries than, say, in France or Sweden; but are the parent's, and are the child's? It is such thorny matters of

freedom and compulsion, of rights and liberties, that we shall constantly be brought to consider during the detailed discussions in this conference.

Let me now sum up the burden of these introductory remarks. The lesson of the '50s and '60s in curriculum development, it seems to me, is that around whatever mode of transmission we centre the learning process a whole system develops. In most disciplines, and for good reasons, our central mode (whatever the periodic variants) has been the spoken word of the teacher. The very word "teacher" conjures up someone talking to a class. If we now propose substantially to alter our mode of transmission, making independent learning from materials or individual research or group work with other children the dominant mode (whatever the variants) then the whole system must alter appropriately in many contingent particulars. The reluctance to appreciate the extent of the physical and psychological transformations needed to sustain a major change lies at the root of our repeated failures.

I began this speech with some American examples of unbalanced and therefore unsuccessful change; we may conclude with one from Russia. About fifty years ago, in the halcyon days of the Revolution, the American Dalton Plan was officially introduced to encourage a more individualized style of learning in Russian schools. Here is how its arrival struck the young writer of "The Diary of a Communist Schoolboy". (6)

September 27th. The Dalton Plan is being introduced at our school. It's a system under which the teachers do nothing and the pupils have to find out everything for themselves. At least, that's what it looks like to me. There will be no more classes, and the pupils will merely be given "tasks". These will be handed out a month in advance, and may be prepared either at home or in school, and when your "task" is finished you get examined at the lab...

October 1st. The Dalton Plan has begun. All the desks have been crammed into one room, which will be the lecture hall. Instead of desks we'll have long benches and tables. Vanka Petukov and I loafed all day about these labs, and I felt silly. Even the teachers don't seem very clear how to go about this Dalton business. As usual, Nikopetozh turned out to be the most sensible among them. He simply walked in and gave the usual class, except that we have benches instead of desks.

October 3rd. The Dalton thing is a wash-out. No one can understand a thing, not even the teachers. The teachers discuss it every evening amongst themselves. The only novelty so far is that we have to sit on benches and have no place to put our books... The boys say that this plan was invented by some Lord Dalton, of bourgeois stock. Now I wonder what the devil we need this bourgeois plan for?

Some of you may have noted that in talking about the title of this conference I have mentioned the "development" of materials, their "use", their "management" but never a word about "supply". However, in urging the need for appropriate adjustments throughout the system whenever any new materials are let loose, I have in effect referred incessantly to adequate "supply" as the essential basis for effective change. Whatever fringe of experiment we support, whatever local modification and personal additions we encourage, whenever we seriously intend a major change in the schools we should set about it in a far more orderly fashion than has been customary. Because that implies an extensive commitment throughout the system, and since "supply" is limited, I believe such changes (as distinct from strictly limited experiments) should be effected a very few at a time, not - as has been too often the case - in a confused welter, in every discipline, for every age-group. And so I think we must consider whether in the matter of new materials we have been too amiably

self-indulgent - quick to develop, slow to apply; lavish with funds for experiments, stingy with funds for widespread adoption; arousing expectations and disappointing them. Perhaps the time has come to alter our ways, to assess what can and what cannot be fully and seriously implemented, so that in introducing a change through some new materials, "development", "use" and "management" match one another, and the whole enterprise is firmly based on adequate "supply". It is with this intricate totality that those who called this conference have set us to deal. So now - to business!

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Note: Mention is made of this Address and of Mr Taylor in the section dealing with Conference Arrangements.