DOCUMENT RESUME

ED 107 654 SP 009 281

TITLE	Handbook on Curriculum Development.
INSTITUTION	Organisation for Economic Cooperation and Development, Paris (France). Centre for Educational Research and Innovation.
PUB DATE	75
NOTE	181p.
AVAILABLE FROM	OECD Publications Center, Suite 1207, 1750 Pennsylvania Avenue, N.W., Washington, D.C. 20006 ($7.00)
EDRS PRICE	MF-$0.76 HC-$9.51 PLUS POSTAGE
DESCRIPTORS	*Curriculum Development; *Curriculum Problems; Educational Administration; *Educational Innovation; Educational Research; *Educational Trends; *Foreign Countries; Projects

ABSTRACT

This study examines current problems surrounding curriculum development in the classroom. Part one describes the state of the art in terms of definition, theory and practices, methods, types, and unresolved questions. Part two contains descriptions of the following 12 selected innovative projects: (a) "Learning Objectives for Vocational Schools: Austria," (b) "Conceptual Skills Programme: Canada," (c) "Indian Studies File: Canada," (d) "Biology at Lower Secondary Level: France," (e) "Physical Education and Sport: France," (f) "Elementary Maths "alef": Germany," (g) "Religious Socialisation of Swedish Children: Sweden," (h) "Geography 14-18: United Kingdom," (i) "Humanities Project: United Kingdom," (j) "Science 5-13: United Kingdom," (k) "Aesthetic Education Programme: United States," and (l) "Modern Language Project: United States. Discussion of the projects is based on origin, purpose, focus, methodology, teacher role, nature and extent of innovation, linkages between projects and schools, and outcomes. Part three contains the following three reports concerned with administrative and social settings of curriculum development: (a) "An Austrian Case Study," (b) "Curriculum in Relation to Society: A Finnish View," and (c) "Reflections on Curriculum Change: An American View." Part four presents conclusions and makes recommendations for changes in classroom curriculum development. (JS)

Centre for Educational Research and Innovation (CERI)

HANDBOOK ON CURRICULUM DEVELOPMENT

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
1975

The Organisation for Economic Co-operation and Development (OECD), which was set up under a Convention signed in Paris on 14th December, 1960, provides that the OECD shall promote policies designed:

- *to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;*
- *to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development;*
- *to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.*

The Members of OECD are Australia, Austria, Belgium, Canada, Denmark, Finland, France, the Federal Republic of Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States

The Centre for Educational Research and Innovation was created in June 1968 by the Council of the Organisation for Economic Co-operation and Development for an initial period of three years, with the help of grants from the Ford Foundation and the Royal Dutch Shell Group of Companies. In May 1971, the Council decided that the Centre should continue its work for a period of five years as from 1st January, 1972.

The main objectives of the Centre are as follows:

- *to promote and support the development of research activities in education and undertake such research activities where appropriate;*
- *to promote and support pilot experiments with a view to introducing and testing innovations in the educational system;*
- *to promote the development of co-operation between Member countries in the field of educational research and innovation.*

The Centre functions within the Organisation for Economic Co-operation and Development in accordance with the decisions of the Council of the Organisation, under the authority of the Secretary-General. It is supervised by a Governing Board composed of one national expert in its field of competence from each of the countries participating in its programme of work.

* * *

TABLE OF CONTENTS

PREFACE

After several decades of rapid educational growth, to a considerable extent propelled by the hope that education could help to change society, a period of questioning about the value of headlong changes is setting in. The question is whether we have not too readily assumed that teachers, children and parents could adjust to a continuing process of change which involves values and attitudes, not to mention the capacity to cope with wave after wave of new ways of doing things in the classroom.

One lesson that can clearly be drawn is that changes in the curriculum are a long-term process, calling for careful preparation, experimentation, gradual application supported by teacher training, and the involvement of parents and children in the process of deciding what changes can and should be attempted. In other words, changes in the curriculum need a more careful, better organized and participatory approach.

The dilemma that arises is that such a process tends to lend itself to a growing role for experts - for curriculum developers, research workers, evaluators and the like. Yet curriculum development - what goes on between the teacher and the child in the classroom - is par excellence a process involving the rights of the teacher, of parents, of the children and young adults themselves, of organised social groups which wish the education of their children to reflect chosen values and attitudes, and of course the public authorities. In other words, it is a complex and sensitive process of reconciling educational needs and values per se with those of the community. It cannot and should not be a "technocratic" process. How then can we reconcile the need for expertise with the need for open, democratic decision-making in this field?

The Handbook on Curriculum Development attempts to set out the current features in OECD countries for dealing with these matters. It should be seen in the context of other CERI activities which are complementary, notably the study of Creativity of the School which will be published at the end of 1975, and the study of School-Based Curriculum Development which is just starting. All these activities are directed to one central issue: in a world in which education has become a vast institutionalised activity in which a more organised process of change is to some extent necessary, how can we still defend the notion that education is a creative process for individuals, an unfolding of the potentialities of children, a struggle for autonomy and personal expression of adolescents and young adults?

J.R. Gass
Director
Centre for Educational Research
and Innovation

BACKGROUND

It is interesting to note that during the 1960s a number of OECD Member countries had decided to use curriculum development as a tool for educational change without any clear idea of what curriculum development involved or how it might best be directed and guided. By the mid-1960s an international movement had begun to emerge, through conferences, the formation of professional groups and an exchange of experience amongst project workers, administrators and others. How far the curriculum development movement has succeeded in bringing about changes in teaching and learning is still uncertain and requires more detailed investigation than a study of this nature can provide.

The term curriculum development is used in different ways in Member countries. This very point is taken up at some length in Chapter I, but it is necessary to state here that we refer to a wide range of activities which infer a planned change in the learning situation and not simply the production of materials. We do not underestimate in any way the complexity of the curriculum process which is not easy to isolate from other social forces operating both within and upon the school.

How the various forces which influence curriculum decisions operate merits a fuller study than we have attempted in the Handbook. What we have shown is that the relationships between curriculum change, educational reform and broader movements of social change are much closer and more subtle than is sometimes realised. Curriculum developers are not free to introduce changes when the schools are seen as key institutions in society. However, as we point out in Chapters I and II, the curriculum reform movement is not just a result of changes in other social institutions. It has become a significant educational and social force in its own right in several countries.

The Handbook uses multinational examples to crystallise and consolidate information on some of the crucial curriculum changes planned within national systems. These changes, as our work demonstrates, cover a wide and diverse range of ideas, institutions and techniques. Thus, by a Handbook we do not mean a simplified manual for practitioners, but a critical analysis of contemporary curriculum thinking and practice which contribute towards the formation of new policies and strategies. We think this process of rethinking and policy planning might be facilitated by the proposals that emerge from our study. However, it must be remembered that curriculum development takes place in and is proposed for very diverse situations in Member countries. Accordingly, it would be unwise at this stage to attempt to develop "norms".

AIMS AND PURPOSES OF HANDBOOK

The reasons for such a Handbook are manifold, but it is worth referring to some of them at this stage. A number of Member countries concerned with establishing policies for curriculum development had expressed interest in more detailed information concerning the successes, difficulties and problems associated with it. At a CERI Seminar held at the University of Illinois in September 1971 the problem of the organisation of curriculum development in various Member countries was discussed in some detail. (1) Discussions both during and after this conference suggested that CERI should carry out a more systematic analysis and appraisal of curriculum development which would be of ultimate value to policy makers, practitioners and those working in research and teacher education.

Certain strategies based on the experiences of some countries had begun to emerge and it was the aim of the Handbook to elucidate them.

The strategies which have been most widely developed in the countries we have studied are :

A) Investment in curriculum project teams.

B) Integration of planned curriculum change with broader policies for educational and social change.

We have shown that curriculum development in any one country cannot simply be reduced to one or other of these strategies. Moreover, as is demonstrated in each of the chapters, the strategies take different forms in different countries and situations. For example, the project approach may be an independent venture supported by private foundations, as is often the case in the United Kingdom, or as in France, an integral part of the national programme of educational development.

In addition to examining the way in which these two strategies take effect, we have not overlooked the wide variety of change processes in curriculum reform for which the term strategy would not be applicable. These changes, while often limited in range, lacking co-ordination and not always ongoing and continuous, are nevertheless important and may indeed be the most appropriate forms of progress in certain situations; for example, the revision of textbooks and teaching materials.

The Handbook should not be seen as a descriptive account of curriculum activity in Member countries, but an attempt to place problems of curriculum development seen from an international standpoint in a contemporary perspective. The Handbook thus has four major aims:

a) To describe selected examples of curriculum change in Member countries;

b) To assess the contribution of curriculum development during the last decade;

c) To point out the complexity of factors influencing curriculum development;

d) To highlight unresolved problems and issues.

---

1) See Maclure, Stuart, Styles of Curriculum Development, OECD/CERI, Paris 1972, 69 pp.

The Handbook is a team effort in which an attempt has been made through discussion and exchange of manuscripts to modify perspectives and judgements. Membership of this team is such as to deliberately involve the largest cross-section of OECD countries possible in order that different approaches and viewpoints can be represented. The team consists of the following members:

ATKIN, Dr. J. Myron	Dean, College of Education Education Building University of Illinois at Urbana/Champaign Urbana, Illinois 61801, UNITED STATES.
BAUERSFELD, Dr. Heinrich	Professor D. J.-W.-Goethe-Universität 6 Frankfurt am Main Senckenberganlage 9-11, GERMANY.
BECHER, Mr. R.A.	Assistant Director The Nuffield Foundation Nuffield Lodge Regents Park London, NW1 4RS, UNITED KINGDOM.
BELBENOIT, M. Georges	Inspecteur Général de l'Instruction Publique Lycée de Montgeron, FRANCE.
CONNELLY, Dr. F. Michael	Chairman Department of Curriculum The Ontario Institute for Studies in Education 252 Bloor Street West Toronto 5, Ontario, CANADA.
DITTMANN, Dr. Freya	Post Doctoral Scholar Stiftung Volkswagenwerk The Ontario Institute for Studies in Education 252 Bloor Street West Toronto 5, Ontario, CANADA.
GARRY, Dr. Ralph	Professor Department of Curriculum The Ontario Institute for Studies in Education 252 Bloor Street West Toronto 5, Ontario, CANADA.

MACLURE, Mr. Stuart	Editor The Times Educational Supplement Times Newspapers Limited Printing House Square London, E. C. 4, UNITED KINGDOM.
POSCH, Dr. Peter	Professor Hochschule für Welthandel Institut für Allgemeine Pädagogik Vienna 1180 Türkenschanzstrasse 18, AUSTRIA.
SKILBECK, Prof. Malcolm	Director of the Educational Centre New University of Ulster Coleraine County Londonderry, NORTHERN IRELAND.
TAKALA, Prof. Annika	Professor of Education University of Joensuu 80100 Joensuu 10, FINLAND.

The Handbook contains four Chapters:

Chapter I is a review of the state of the art of curriculum development in a selected number of Member countries. It illustrates the most important approaches to curriculum change and identifies some of the outstanding problems which Member countries are experiencing.

Chapter II takes a number of curriculum development projects in order to demonstrate the range of approaches used by national project teams to modify the curriculum.

Chapter III identifies some of the major frame factors affecting curriculum development, in particular administrative structures and the influence exercised by various social groups. These factors are discussed respectively from the national standpoints of Austria, Finland and the United States.

Chapter IV summarises the conclusions that emerge from the study.

Material for each chapter has been provided by different members of the team, but primary responsibility for the writing of each chapter is as follows :

Chapter I	R.A. Becher, S. Maclure
Chapter II	F. Connelly, F. Dittmann, R. Garry
Chapter III	P. Posch, A. Takala, M. Atkin
Chapter IV	M. Skilbeck, Secretariat.

George Belbenoit has assisted the Secretariat throughout with notes and comments which have been incorporated into the text. Professor Malcolm Skilbeck assisted the Secretariat in the final editorial work.

Chapter I

THE STATE OF THE ART OF CURRICULUM DEVELOPMENT

A Study of a Sample of OECD Member Countries

WHAT IS CURRICULUM?

The purpose of this chapter is to look at the state of the art of curriculum development in a number of OECD countries and to identify some of the outstanding issues which arise.

At the outset we have to establish what is meant by curriculum. Here we immediately encounter difficulties of translation as well as of understanding. Many European countries have no word which exactly corresponds to what the Anglo-Saxons understand by curriculum. This can lead to discussion at cross-purposes in which people standing on different sides of a language divide talk past each other, and misunderstandings about basic terms can be perpetuated.

The lack of a common vocabulary is not simply a question of words, however. Behind it lie important differences of emphasis about education itself and different traditional beliefs about the functions of the school. It is these differences of emphasis which explain the linguistic confusion, and it is therefore important that they should be clarified before any useful discussion of curriculum development can begin, and kept in mind throughout any attempt to look at these matters on an international scale.

The tendency in the English-speaking world has been to widen the meaning of the Latin derivative "curriculum". Thus it has been defined as "what happens in school as a result of what teachers do". On this definition it "includes all of the experiences of children for which the school should accept responsibility. It is the programme used by the school as a means of accomplishing its purpose." (1)

This reflects a broad approach to education generally - indeed, it makes the term curriculum all but co-extensive with schooling. It flows from a concern with the total consequences of the school's activities and expresses the curriculum developer's desire to take account of all the factors which may militate against or contribute to the achievement of his educational aims. Over a period of time there has been a growing awareness of the importance of the child's "incidental

1) See Oliver, Albert I., Curriculum Improvement, Dodd Mead and Co., 1965, pp. 3-16.

learning" and the need to adjust concepts of the curriculum to the experience which children actually receive in school. Hence, paradoxically, what are known as extra-curricular activities come to be regarded as an intrinsic part of any adequate curriculum.

This all-embracing view of curriculum can also be connected with a tradition of education in which much importance has been attached to the educational influence of the school as a community and to the significance of "character building" and moral training through physical activities and social responsibilities organised by the school. This has led some educators to rate such activities and responsibilities as of equal importance to the intellectual pursuits to which the students are directed. Thus "instruction" in school "subjects" is seen as being only a part - not necessarily the most important part - of the school curriculum which must be concerned with the whole moral, intellectual, emotional and social development of the pupil.

In contrast, the French have traditionally regarded "instruction" as being the important function of the school, reserving the word "éducation" for the larger, more nebulous, business of upbringing in which the family, the Church and the community at large play roles of varying importance. The French tradition maintains that a sound and thorough "instruction" is a self-sufficient form of education, and moreover, the only one the school is entitled to be concerned with (because of the basic principle of "laïcité" which is enshrined in the French educational jargon. Its place is taken by "enseignement", which itself begins to have overtones of "éducation".

The difference can be crystallised - oversimply - in a comparison between Platonic and Aristotelian philosophies. The French approach to the curriculum may be said to have followed Plato in regarding the banishment of ignorance as the main objective. If, on Platonic reasoning, no man does wrong knowingly, it is from ignorance that "evil" stems, and the schools can best encourage "virtue" by concentrating on knowledge and skill. It is largely in this tradition that certain European countries lay down, in more or less detail, syllabus, content and methods which teachers are expected to follow. In common international parlance it is not unusual for these published documents to be described as "the school curriculum".

Anglo-Saxon attitudes, however, have been formed around an Aristotelian concern for the moral purposes of education whose object, Aristotle claimed, is "to cause us to like and dislike what we ought to". On this basis it is not enough to concentrate on the intellectual content, because, through weakness of will, knowledge does not always lead to virtue. Other forms of moral training are as or more important. In extreme form this led to the English public school in the post-Arnold era which valued character above learning, an attitude which was also mirrored in nineteenth-century Oxford and Cambridge. The idea of a centrally-designed "läroplan" is less likely to be considered essential in countries where the individual teacher, as a moral guide and exemplar as much as an initiator into disciplinary techniques, must be expected to take the main initiative in determining the nature and shape of the curriculum within which his pupils are educated.

The only purpose of setting down these different interpretations of the term, and relating them to some of the historical and philosophical differences which underly them, is to show that what is at issue are not words and verbal niceties but educational priorities. The differences are admittedly differences of emphasis; the distinctions need

to be blurred (1) as soon as they are made. But the fact remains that different concepts of curriculum are ways of expressing different dominant notions about the purposes of education and the role of the schools, and as such must influence any nation's approach to planned changes.

There is, however, another preliminary distinction which has to be drawn. It is customary to talk of the school curriculum in a global sense - "the primary school curriculum", "the secondary school curriculum". It is equally customary to use the term also in a more particular sense - "the science curriculum", "the mathematics curriculum" Most of the differences of definition and approach referred to above ar differences about the global curriculum, the "curriculum as a whole", which most people assume to be somehow greater than the sum of its constituent parts. The countries whose education systems and curriculum development processes are discussed here differ widely in their planning approach to "the curriculum as a whole". It is by no means true that those countries where a broad definition of curriculum prevails are necessarily those which adopt a holistic approach to curriculum development. Such an approach seems to have more to do with centralised administrative systems and the pursuit of social and political objectives through the education system than with theoretical concepts of curriculum.

All this having been said, we are left with a specific difficulty: there is no definition which is acceptable in all the countries under discussion. When the English and the Americans use the term curriculum, they mean what the French mean by "programmes et méthodes" - the prescribed content of study - and in addition the educational process (the activities in school): which together add up to what has already been described as "what happens in school as the result of what teachers do". These are real and important differences of meaning which cannot be reconciled. In practice, all we can do is to agree to differ on terminology while striving to reach a common understanding about the underlying issues.

Dr. Sixten Marklund, the distinguished Swedish educational administrator has sought to crystallise the differences between the Anglo-Saxon and the Continental usage with the following table:

English Curriculum

1. National School Laws, regulations
2. Compulsory schooling
3. Structure of diversification
4. Lines, streams, grades, relations between primary and secondary, etc.
5. Guidance, special education
6. Subjects, major content
7. Specific content, courses, individualisation...
8. Methods of teaching and learning
9. Text-books, learning aids, school equipment
10. Testing and evaluation
11. Co-operation: school-industry-business
12. Co-operation: school-home
13. Co-operation: students-teachers...

Goals, aims, objectives — Swedish Curriculum: The Läroplan

Educational R and D

1) For example, the French have also traditionally believed that "a teacher teaches what he is, as much as what he says"; the English have erected a powerful system of examinations to give special recognition to the importance of the cognitive content of secondary schooling.

This has some merit: it points out to the English reader that his own 'broad' definition can all too easily omit aspects of the curriculum which [illegible] rtant as determining "what happens in school as a result of wh[illegible] s do". It may also help Scandinavian readers to go along with th[illegible]oach adopted in these pages if it is accepted that much of what we rei[illegible] to as "curriculum development" would be more recognisable to them as "educational research and development".

CURRICULUM DEVELOPMENT

If we have settled for a broad definition of the curriculum, it follows that curriculum development too must be broadly rather than narrowly defined, as the generic term for many different kinds of activity relating to planned change in the curriculum. That is to say, it covers the process of analysing and refining goals, aims and objectives, together with the translation of these into the content of courses by formal or informal methods. Moreover, because the curriculum extends to "all the experience of children for which the school should accept responsibility", curriculum development is concerned with what actually happens between teachers and children, as well as what is supposed to happen.

Historically, there are two main kinds of curriculum development. First, there is the "traditional" pattern. (1) Development tasks are shared between the public authorities, teachers, examining bodies and universities which establish the curricular outlines; the commercial publishers and free-lance writers who produce the teaching materials; and the teacher-education institutions which exercise long-term influence over teacher attitudes. Some of these tasks may go by default or the development element (in terms of the three conditions listed above) may be minimal. In other circumstances free-lance text book writers and their publishers may receive feedback through personal contacts and through the operation of the educational publishing market and some development may take place.

A key role in the traditional pattern of curriculum development is taken by the inspectors, advisers and consultants who, in one guise or another, are present in most systems, encouraging and disseminating innovation and playing an important part in the in-service training of teachers. It is important to stress the value of the curriculum development which takes place in this way; the introduction of more systematic experimental methods is likely to make many of these advisory and supporting services more important rather than less.

Second, there is what we shall call "heuristic" curriculum development. This refers to the development techniques which originated

1) Other terms suggested for these two main approaches to curriculum development are open or administrative (for traditional) and formal or systematised (for heuristic). The labels are less important than the distinction they are intended to convey. Our choice of heuristic was intended to introduce the idea of experimental, trial and error, procedures, and a use of traditional was not intended to carry any pejorative connotation (indeed it was intended to show that curriculum is not something which was invented by upstart technocrats).

in the United States in the late 1950s and which, initially, drew heavily on the research and development models borrowed from the engineering and defence industries. The original impetus came in the sciences and was part of a larger reaction among leading American educators against life-adjustment education and in favour of more rigorous discipline-centred instruction. Certain patterns and procedures were established - the project method, with each project financed for a specific term of years; an emphasis on the "discovery approach" to learning; and the field-testing of learning materials in trial schools.

The engineering model and the systems approach have been supplemented by other styles and modes of systematic development (which are described later in this chapter). Competing theories have come to take their place alongside the now classic formulations of the early 1960s, and some of the weaknesses and limitations of the early projects have become better understood. But what has persisted has been the idea that "development" implies something more ordered and organised than the traditional processes of curriculum change, and in particular that planned innovation requires more pilot studies, field-testing and evaluation than the traditional pattern has provided through the market or through the feed-back processes generated by national inspectors or local advisers.

We would have liked at this stage to introduce three defining criteria for curriculum development:

a) It must be institutionalised, at least to some extent.

b) It must be a process of change intended to lead to improvement and must include an element of feedback and evaluation.

c) It must be capable of being described in relation to the actual practice of school and classroom.

The variety of activities covered by this study, however, extend to many forms of traditional development which do not satisfy these conditions - and to impose them on a survey of the present state of the art would be unduly restricting.

FROM THEORY TO PRACTICE

Making curriculum development work - achieving, in terms of pupil and teacher activities, the objectives which the curriculum developers set themselves - involves bridging the divide between broad and narrow definitions of curriculum and recognising that there is a great deal more to it than simply taking thought or applying R and D technique. The curriculum as it may be laid down in a narrower definition is what Lawrence Stenhouse (1) has described as being like a "child's colouring book"; the teacher makes of it something different from - larger or smaller than - what the curriculum developer has in mind, because his concept of the curriculum reflects the tradition within which he has grown up as a professional teacher, as well as his response to the formal or informal curricular guidelines of the educational system within which he works.

1) This section draws on an article entitled "Defining the Curriculum Problem", Lawrence Stenhouse, Director, Centre for Applied Research in Education, University of East Anglia.

The gap between the curriculum developer's ideas and the reality of what happens in school is of crucial importance. It helps to explain among other things why the great volume of curriculum development financed at huge cost on both sides of the Atlantic over the past fifteen years has achieved disappointingly little - why so much curriculum development means changing the terms and manipulating the formal activities without actually making much impact on the life and learning of the pupils. (1)

The "public curriculum" depends on the tradition which surrounds it. Curriculum development therefore includes changing the educational tradition. On this hypothesis teacher development becomes central to curriculum change: the specification and experimental development of new curricula are only the beginning of the process. It may get no further if teacher development is ignored or simply regarded as an afterthought.

> "The problem is to produce a specification to which teachers can work in the classroom, and thus to provide the basis of a new tradition. That specification needs to catch the implication of ideas for practice... A new curriculum will never be secure until it accumulates around it a tradition. The strain of uniformly self-conscious and thoughtful approaches to curricula is, in the long run, intolerable... New curricula..., however much the idealist may regret it, must develop comfortable, easy, and anxiety-free habits - though not be captured by them". (2)

All this suggests that the starting point for feasible and effective curriculum development must be an examination of the curriculum in practice rather than the curriculum as it is officially supposed to be. If curriculum development is to bear fruit, its impact on the teacher's situation, self-image and sense of professional security and confidence needs to be a prime consideration. Concern with larger social and political values - which may play a dominant role in stimulating educational reform - has to take account of this constraint. Otherwise the resilience of the traditional curriculum will be underestimated and the novelty of new curricula will prove to be more apparent than real.

METHODS OF ORGANISATION

Control of the public curriculum differs in important respects from one country to another. In the United States and Canada control

---

1) There may, of course, be other additional reasons for the limited results. For a more detailed description see Fullan, Michael, "Overview of the Innovative Process and the User", in Interchange, OISE, Toronto, Vol. 3, Nos. 2-3, 1972. Fullan's main contention is that innovations "developed external to schools and then transmitted to them (have) led to no significant change". In his concluding remarks he takes the view that "effective change will never occur until the... user... is intimately involved at all stages of the innovative process". A contrasting view is set out on page 55, footnote 1 below.

2) Stenhouse, Lawrence, "Defining the Curriculum Problem...," op. cit.

of the school curriculum is decentralised to the local school board or in some cases the states. In the Continental European countries there are formal controls over the curriculum exercised by central government education ministries or, in the case of West Germany, the Länder education ministries. In England and Wales a complicated system of formal and informal constraints apply, with legal control vested in local government authorities and the voluntary (i.e. Church) bodies, who in turn have effectively resigned their controlling powers to the head teachers. These, in their turn, are limited in the exercise of their freedom by external examinations linked at the end of the secondary course to admission to higher education. And in many places there are still examinations at the end of the primary school which are used for deciding to which kind of secondary school children should be allocated.

Where the school curriculum is laid down centrally (whether by the State, province, local authority or school board) the formal document setting down the official programme may go into considerable detail (as in Norway and Sweden) or be limited to an outline syllabus (as in some of the German Länder). It will usually prescribe the number of timetable hours to be devoted to each subject and may, as in Scandinavia and lately in France. deliberately provide for a limited period of the week to be at the elective disposal of the school or the local school board.

It may prescribe the textbooks and other teaching material or set down a list of approved books and teaching aids from which schools can choose, with or without a further set of constraints being exercised at the local school board or local authority level on grounds of cost. Important indirect controls on the curriculum may be exercised in this way, especially if there is a division of financial responsibility between central and local government which provides - say - for teachers' salaries to be a charge on central government while books and equipment have to be paid for out of local funds.

It is usual for there to be a system of examination or grading by teachers at the end of the secondary school, linked to access to higher education. This, too, is a form of curriculum control, even if it is administered internally by the school. Because of the importance of the results - with competitive entry to more favoured faculties and institutions - the secondary leaving examination may also prove to be the point at which parents and the local community bring pressure to bear and exercise a conservative influence on the curriculum.

Many of the informal controls also apply to a country like England where, nominally, the curriculum is not subject to central government influence. The choice of books lies firmly with the teachers, but limitations on the amount of money made available by local authorities, in the form of capitation allowances for the purchase of books and equipment, in themselves restrict the extent to which teaching materials can be changed at any specific time, and therefore the range of new materials which it is practicable to produce in connection with a curriculum development project.

For obvious reasons the techniques and organisation which a country chooses for curriculum development are closely related to the system for controlling the public curriculum which has been inherited from the past. There are discernible differences in curriculum development organisation between the countries with clear-cut systems for central control of the curriculum at national or provincial government level, and those where curricular decision-making is more diffused.

A series of groupings can be identified.

Scandinavia

Though there are important distinctions of emphasis and practice to be made between educational administration and curriculum development in Finland, Norway and Sweden, the points of similarity outweigh them to a marked degree, and it is fair to talk generally of a Scandinavian approach. In the first place, these are countries where curriculum development is seen as an integral part of a larger policy of educational reform. (1) The social and political objectives of this educational reform are determined by Parliament: they, in their turn, are part of a larger policy for the transformation of society as a whole.

All this means that the objectives of curriculum development, like the objectives of the schools and the curriculum generally, are outside the development process (though it may cause them to be refined in particular respects from time to time). It also means that there can be no sharp distinction between curriculum development and changes in the internal organisation of the school or the framework of relationships between institutions within which the school operates: hence in Sweden,(2) for instance, a concern to study all the "frame factors" which delimit what happens to a child's learning and social development; hence also a Government Commission now deliberating on the internal organisation of schools which, while not nominally about curriculum development, will become deeply involved in many of the matters which concern curriculum developers.

All three countries have a system of curriculum guidance which leads to the production of very full documents which are sent to individual schools and which constitute for them the public curriculum. In Finland inspectors are employed to supervise the application of the public curriculum within the schools, which are inspected at regular intervals to ensure that the official policy is being carried out. In spite of a shortage of inspectors, schools can expect to be inspected one year in three. In Norway and Sweden there are differences in the degree of detail in the different parts of the "Mønsterplan" or the "Läroplan", and differences, too, in the extent to which teachers feel bound by them. Some sections of the "Läroplan" have Parliamentary authority and are mandatory upon the schools; others are advisory, expressing the conventional wisdom of the elite group of teachers on whom the National Board of Education rely. No doubt teachers find scope within these copious handbooks for selective quotation to support those aspects of official policy they prefer.

The published curriculum documents are the main instruments by which changes in the curriculum are, as it were, formally registered and transmitted to the schools. This would be so, were there no formal methods of curriculum development, as opposed to curriculum change.

1) See Dalin, Per, Case Studies of Educational Innovation, Vol. IV, Strategies for Innovation in Education, OECD/CERI, Paris, 1973, 296 pp., for a full discussion of the process of innovation and the relationship of curriculum development to other aspects of educational reform.

2) Marklund, Sixten, "The Role of the Teacher in Educational Innovation in Sweden", in: The Teacher and Educational Change: A New Role, OECD, Paris, 1974.

The curriculum development function, therefore, has been integrated within the organisation of the Government department responsible for the administration of the schools and the curriculum. In Finland the Experiment and Research Office is an integral part of the National Board of Schools. For evaluation purposes it calls on the Institute of Educational Research at the University of Jyväskylä. In the case of Norway, the National Council for Innovation in Education (1) is affiliated to the Norwegian Education Ministry. It provides a separate administrative structure to take responsibility for approved experimental and innovative developments which would not otherwise be permitted under the administrative regulations of the Ministry. When and if an experiment or an innovation graduates to the status of an established practice, the ordinary regulations are revised to accommodate it and the first stage of the process of development is complete.

In this way the organisational and curricular changes implicit in the introduction of the comprehensive school were undertaken. Now the centre of gravity has shifted to the upper secondary school. It can be seen that a system of this kind is not without tensions between the NCIE and the rest of the Ministry - for example those which arise out of the attempts to innovate in the upper secondary school and their effect on the Council for Upper Secondary Schools, the traditional arbiters of secondary school policy (ex-teachers, now Ministry officials, selected by the Minister). But the system has the merit of institutionalising these tensions and permitting movement to take place piecemeal, a useful device if the strain of wholesale change is great.

In Sweden the process of curriculum development is inextricably caught up in the administrative techniques of the National Board for supervising the curriculum at every level. "Heuristic" development leading to new curriculum materials takes place alongside the formulation of new syllabuses by simply assembling views - of inspectors on short-term attachment, of employers and trade unionists, of teachers and of academic observers. In-service training of teachers is closely linked to this - though not by any means only to this.

A bureau in the National Board is concerned with research and development and much of its programme is directed towards curriculum development, including sophisticated, social-science based studies designed to refine the process by which the larger aims of the curriculum are translated into the specific objectives of the subject curricula.

But while curriculum development projects of the conventional research and development kind, leading to the production of new curriculum materials (e.g. IMU mathematics), are an important - though perhaps decreasing - element in the Swedish system, this is by no means to be regarded as the 'typical' Swedish method. New curricula are as likely or more likely to be generated by a systematic and recurring process of taking thought, and by culling curriculum materials from a wide variety of already available sources, as by the production of new textbooks and the like. The same is true of Norway.

In the end, the "Mønsterplan" and the "Läroplan" become the curriculum brief and as important as such for the educational publishers as for the teachers. Once the brief is published, another round of

1) See Marklund, Sixten, and Eskil Bjorklund, "National Council for Innovation in Education, Norway", Case Studies of Educational Innovation: Vol. I, At the Central Level, OECD/CERI, Paris, 1973, pp. 161-254.

curriculum development takes place on traditional lines as the publishers analyse it and seek authors capable of preparing attractive and popular textbooks in conformity with it.

More recently, there has been an attempt in Sweden to decentralise some of the curriculum development activity. The mechanism for this has been for the NBE and local school boards jointly to set up "development blocks" within groups of schools, involving a supporting team from a university or college of education. The block provides a means of trying out new methods, new materials, new ways of deploying time and resources - as, for example, in the Skellefteo projects on social studies, natural science and Swedish. These have worked on changes in class hours, the size of the teaching group, the introduction of extra teachers and visiting lecturers, and the mobilisation of additional, extra-scholastic, resources. The development block aims to spread the best practice by example, by staff movement and by the proselytising work of inspectors and consultants. Changes having been initiated in school practice, the expectation is that the materials will take care of themselves as publishers adapt to the demands of the market.

There is also an interest in decentralisation in Norway where the fact that there are no central government school inspectors in itself means that the 'public' curriculum is not 'policed' as closely as it might be. The Swedish "development blocks" represent an attempt to bridge the gap between the "public" curriculum and what teachers and their pupils actually pursue. They involve the teachers more directly in the process of development and they are as much concerned with dissemination and implementation as they are with the earlier stages of development. They are not exclusively concerned with the curriculum, as narrowly defined.

To sum up, therefore: the Scandinavian model of curriculum development organisation has the following characteristics:

- Curriculum development takes place within a more or less well-understood framework of socio-political objectives for educational reform as a whole. (1)
- Curriculum development is therefore a subsidiary activity, geared to already determined objectives, and part of a comprehensive pattern of educational reform which is also concerned with the organisation of the school and the articulation of one institution with another in an educational system.

1) This account seemed too tidy and idealised for one Norwegian expert who writes: "there is some lip service in the Northern countries to the idea that educational reform should serve the purpose of changing society, maybe most marked in Sweden. Yet, looking at what really happens to the curriculum in this process, I think the most one can say is that there is an attempt to correct some of the most obvious biases inherited from the past, in order to reduce somewhat the distance between reality as conceived by most people today, and the picture of reality provided by the school. There is a long way to go even to cope with the task of catching up. Many of us would like to be radical, but the relatively few instances of genuine radicalism in the Scandinavian school systems are nearly always locally inspired, and somewhat embarrassing for the "middle of the road" policy followed by official authorities. In an international comparison, this may of course be something, but too much emphasis on the "changing society" policies of the Scandinavian countries could be rather misleading."

- Curriculum "development" takes place within a central government department, or similar body, which also has responsibility for the "control" of the curriculum.
- Curriculum development uses a mixture of experimental methods, "a priori" reasoning, negotiation and bargaining, and the collection of opinions from interested parties.
- A need is recognised for a measure of decentralisation in educational administration including curriculum development, and this is leading to the creation of other centres of curriculum development located closer to the schools and involving teachers more directly.

France, Belgium, Austria and Spain

A second group of countries can be identified which have certain characteristics in common with respect to their forms of curriculum development organisation, present or putative. The limits of generalisation are quickly reached: it is not suggested that their education systems or the societies they serve are without important differences which affect curriculum development. In some of these countries self-conscious curriculum development activities are only in their infancy. In France, on the other hand, a sophisticated organisation exists, staffed by a cadre of highly trained inspectors who have strong ideas about how the curriculum should develop and clearly-defined administrative techniques to carry out these ideas.

The overall control of the school curriculum in France lies firmly with the Minister of National Education. The national curriculum guidelines in each subject are drafted by a series of curriculum commissions, which now include (beside the specialist administrative staff and the "Inspecteurs Généraux" themselves) selected senior teachers and - in the case of upper secondary curricula - subject specialists from universities. The draft guidelines are referred for informal consultation, before final ministerial endorsement, to relevant interest groups such as teachers' and parents' associations; but once endorsed, they are binding on all schools in the public sector. The guidelines include specifications of content to be taught, recommended teaching methods and approaches, and the time to be allocated in the school's weekly timetable.

This bald description makes the system of curriculum control sound more rigid than it is in practice. There is certainly no truth in the "canard" that at any given moment the Minister of Education will know by looking at his watch precisely which grade of pupils all over France will have reached which particular page in which standard textbook. The French, besides their reputation for Cartesian logic, have another (and contrasting) reputation as a nation of confirmed individualists. So while the overall curricular pattern is expected to be adhered to in general terms, there is room in practice for a good deal of individual variation in style from school to school and teacher to teacher.

Curriculum development, however, is not readily distinguishable from curriculum specification and control. Development normally takes place at national level through the work of the specialist curriculum committees, in the form of periodic revisions to the guidelines published for each sector of the system and for each subject (or, in the case of primary schools, broad grouping of subjects) taught in that sector. But

the commissions themselves are not, of course, impervious to outside forces; it is always possible for an active pressure group (such as the syndicate of mathematics teachers), or even an active and influential individual, to bring about an eventual change in the way a subject is taught.

But since in France the educational system is indissolubly bound up with the political system, any organised attempt to modify the status quo is liable to get caught up in political controversy. Many of the movements for educational reform are seen as having left-wing affiliations: if the Minister shows too much sympathy with them, he is attacked on his right flank. On the other hand, if he proceeds on his own initiative, the innovative-minded teachers see this as an incursion on their jealously-guarded autonomy. Although there are numerous pressures for change, they stem from diverse and conflicting ideologies, and tend to be cancelled out by the pressures of conservatism. The teachers' unions argue that better pay and conditions for their members are the sole prerequisites for educational improvement; most ordinary teachers prefer to avoid traumatic change by sheltering behind the real or imagined restrictions on their freedom (while nevertheless complaining bitterly about them); the treasury officials are reluctant to devote public funds to controversial innovations; and the political leaders hesitate to open the floodgates of change for fear that they will thereby unleash forces beyond their control.

Meanwhile, it is generally agreed that the schools are in a state of crisis, and that attempts have somehow to be made to work out a new structure within which educational researchers, policy-makers and teachers can work together to achieve agreed ends. A first step towards this new structure was taken in 1970, when the INRDP, the main official agency for curricular and other innovation, was formed (together with OFRATEME, the national organisation for educational technology) out of the subdivision of the Institut Pédagogique National. Its main function is research and documentation of a descriptive or evaluative kind: in this it collaborates with university-based research teams as well as with the administration and the inspectorate. It has also, however, taken a more active, developmental role, especially in connection with the major organisational reforms of the primary and the early secondary stages. The INRDP is itself a branch of the Ministry, and its task is therefore to help implement, rather than to question or challenge, official measures of reform.

The main challenges to national curricular assumptions come less from the INRDP than from the strong, and growing, private sector, or from grass-roots consortia of state schools organised on a local or national basis - of which the long-established group of Freinet schools provides the most striking example. But, as in the Scandinavian group of countries, there is now a move away from immediate implementation of change on a nation-wide basis (where the consequences of any major decisions are so momentous that all but the most politically courageous of Education Ministers will shrink from taking them) to a more cautious and piecemeal approach. Thus, the INRDP is associated with a network of Centres Régionaux de Documentation Pédagogique, and with the evaluation of a number of pilot experiments in individual schools or experimental regions, as well as with the detailed implementation of reforms on a national scale.

This is probably the nearest French approach to the heuristic, as opposed to the traditional, development model. For the most part, the task of spelling out national curricular guidelines in detailed classroom

terms if left to the textbook publishers and their commissioned authors (usually experienced teachers, including some of those who serve on the relevant curriculum commissions). Teamwork in preparing curricular materials is still relatively rare, and trial of draft publications and revision in the light of classroom feedback is seldom systematically incorporated into the development process.

The average classroom teacher, although in theory free to develop his own approach within the framework provided by the national curricular guidelines, is usually content to accept the pattern worked out in one of the standard textbooks. There is - in contrast to the other countries in this group - no central list of "approved texts", but the constraints of approval of each school's programme by the regional inspectorate ensure that all textbook publishers and authors adhere closely to the spirit of the ministerial decrees. Indeed, these decrees are more studiously scanned by educational publishers than by teachers themselves, whose main concern is usually with the requirements laid down for the annual school examinations rather than with the curriculum itself. These examinations in their turn exercise a powerful constraint on the teachers' room for manoeuvre within the curricular guidelines.

The lack of an active and critical force for curriculum reform based on the teaching profession is a current cause of concern. Hence the move towards greater devolution of responsibility from the Ministry at the core of the system to the teachers at its operating surface. An example of this is the increased allowance of discretionary time within the weekly timetable - and the accompanying growth of interest at the Ministry in initial and in-service training provision. In the same spirit, the Minister of Education has decided recently to initiate a series of major consultations - involving educational researchers, teachers, administrators, parents and pupils - on the reform of secondary education.

The situation in Belgium is closely similar to that in France, since the two countries share many of the same cultural traditions. The issues here are complicated by the language divide, which results in two virtually separate systems - the Flemish and the Walloon - existing side by side. But apart from the Catholic schools - which form the large majority of the state-supported 'free-school' sector, and enjoy a certain measure of freedom for curricular experiment within the limitations of the state requirements for examinations - the educational provision is reasonably uniform between the two language groups. Women dominate the teaching profession in Belgium to a greater extent than elsewhere and, so it is said, are less inclined to take an active careerist stance than their male or female counterparts in less prosperous or less uxorious countries. Comprehensive reorganisation has been slower to take root here than in many other European systems, and the profession as a whole seems to have taken a relatively inactive part in planned curriculum change.

This is not altogether surprising, given that the traditional philosophy - a purer version of its French counterpart - holds the only worthwhile development to be that undertaken by the individual teacher. The curricular guidelines having been set by central committees of experts, the teacher is expected to adapt them to his or her personal interests and the needs of his or her own students. So every piece of curriculum innovation is by definition ad hoc, dependent on a particular context, and hence unique. In accordance with this tradition there is little systematic attempt by Belgian educationalists (many of whom are of international standing) to undertake curricular research and development.

There is no equivalent to the French INRDP, regional centres or experimental schools.

The major current reform - related to the move to introduce a common curriculum at the early secondary level so as to defer selection by levels of academic ability - is sponsored by the Central Reform Commission of the Ministry for French-speaking schools, chaired by the Minister himself or his chosen nominee. This programme, in which schools enlist on a voluntary basis (though well over half the French-speaking secondary state schools, together with a substantial number of private and state-supported 'free schools', have enrolled since the scheme began in 1969) involves an active programme of teacher development through meetings, publications and collective discussions of educational aims, and is designed to encourage schools to take increasing responsibility for determining their own curricula. Another reform, initiated by the Ministry for Flemish-speaking schools, is concentrating on major changes in primary education. This programme, steered by a twelve-man commission (including inspectors and representative teachers from Catholic, state and municipal primary schools) is now trying out and evaluating a variety of different teaching approaches in schools in four different regions of the country. In terms of curricula for individual subjects, the major reforms have stemmed from active academics and lively teacher associations in mathematics and modern languages.

Austria and Spain are currently at an earlier stage of the development process. In both countries - as in France and Belgium - the overall responsibility for defining the school curriculum rests with the Ministry of Education, which also controls the allocation of resources and authorises the textbooks and teaching materials which may be used by teachers in following the national curriculum guidelines.

In Spain it has been possible to introduce some measure of decentralisation by setting up institutes for educational study (ICEs) in a number of universities. The task of the ICEs is twofold: to provide in-service training for teachers and to develop prototype curriculum materials. Both activities are, of course, pursued within the broad framework of ministerial policy. Attempts to reorientate the curriculum of the Basic School (giving greater emphasis to social goals and to the development of expressive and creative abilities), and to introduce more integrated secondary curricula in science and social studies, are in their early stages. Progress is likely to be gradual, since teachers are not accustomed to taking curricular initiatives and educational agencies at present lack the facilities and know-how to embark on substantial development programmes.

Austria is the subject of a more detailed case-study in Chapter 3 of this volume, so only brief reference need be made here to the current situation. The main innovative agency is the Ministry's Centre for School Experiments and School Development, set up on the recommendation of a School Reform Committee appointed in 1969. The Centre has so far concentrated its attention on a comparative study of comprehensive and traditional forms of school organisation. This study has involved the development of teacher support materials in German, English and mathematics for pupils with a comprehensive range of abilities. The Ministry is also carrying out a project whose purpose is to specify in more detail the objectives of vocational secondary education. The recently formed Klagenfurt Institute of Educational Sciences (an institute of higher education) is intended to become a major innovative agency, but is still in a developmental stage. There is at

present no incentive for the majority of the teaching profession to participate effectively in the process of organised curriculum change.

In summary, the organisation of curriculum development in this group of countries has the following main features:

- Curriculum development takes place within the central government education department, which also has responsibility for the control of the curriculum.
- Curriculum development is regarded as an integral part of educational planning and therefore as subordinate to the overall planning objectives of the education system. But the social and political aims of education are not so clearly defined as in Scandinavia, and the connection between educational reform and social reform is less easy to discern.
- As compared with Scandinavia, there is less emphasis on experimental methods and more on a priori reasoning and on the collective wisdom of experienced people within the system.
- Textbook publishers play an important part in the development process, the published curriculum being in essence the brief used by publishers to produce teaching programmes. Team-based projects leading to the production of tested teaching materials constitute only a very small part of the total effort invested in curriculum development.
- The inspectorate and specialist consultants play a central role in the traditional forms of dissemination and implementation.

Western Germany, the Netherlands, the United Kingdom, Canada and the United States

The differences between the educational systems of this group of countries are more immediately obvious than their likenesses. Each of the eleven West German Länder has its own system, organised along lines somewhat similar to those of Austria, France, Belgium and Spain. Many of the Provincial Authorities in Canada and of the local School Boards in the USA represent a fair degree of centralisation within a highly decentralised structure. In the Netherlands, a theoretically uniform national system is fragmented and weakened by strong religious and political divergences among the schools themselves. In the United Kingdom a diversified system is bound together by a powerful network of external school-leaving examinations.

But sketchy caricatures of this kind conceal a number of significant similarities. These, taken together, constitute a strong family resemblance, at least in respect of the organisation of curriculum development.

To an outside observer, perhaps the two most striking characteristics of the German school system are, on the one hand the fierce suspicion shown by the Länder of any form of federal intervention in the educational process, and on the other, the high degree of respect accorded by society at large to academic research institutions.

Although the policies of the different Länder are to some extent harmonised by the Joint Conference of Ministers of Culture, they vary from one another in several important points of detail. For example, Hessen and the City-States of Berlin and Hamburg are politically committed to the comprehensive reorganisation of secondary schools; the

other Länder are either equivocal or firmly opposed to such changes. Each state ministry has its own set of curriculum guidelines. In some the discretion allowed to teachers is relatively small; in others it is much greater.

Special agencies for research into cu culum or other innovations abound: some free-standing and supported by a mixture of federal, state and private funds; some based on universities; and some more directly under state ministry control. In many such institutes the creation of academic theories is given greater emphasis than the conduct of practical experimentation.

In consequence of the first of these features - a jealously guarded state autonomy - the influence of the Bund (Federal) ministry is largely limited, as it is in the United States, to the injection of additional funds to promote such innovations as may attract political favour at the national level. The amount of central funding is substantial and steadily increasing: in 1973 the total amount available for federal support of innovative educational programmes was 70 million DM. Expenditure is in practice constrained, since each allocation has to be matched on a 50-50 basis by the Land ministry concerned. Nevertheless, a sizeable number of development agencies, experimental schools and individual curriculum programmes have been funded in this way.

In consequence of the second feature - the traditional Germanic esteem for academic research - the large majority of teachers are inhibited from direct participation in the development process. Anyone wishing to embark on curriculum change feels obliged first to pick a way through the dense and luxuriant forest of theoretical speculation - and this seems to deter all but the most determined explorers.

But although "grass-roots" development is discouraged not only by a traditional distrust of pragmatism but also by the growing recognition on the part of State curriculum agencies that their power may in this way be gradually eroded, a few outstanding local development groups survive. The most impressive and best-known of these is probably the Bielefeld team, working under the direction of Professor von Hentig in the planning, staffing and organisation of a new comprehensive Laborschule, linked closely with an upper secondary Oberstufen-Kolleg. But many other experimental comprehensives now exist in various parts of the country; the main problem appears to be that their staffs have developed such a high degree of autonomy that it is difficult to encourage mutual co-operation between them on shared curricular problems.

As in the United Kingdom, the independent foundations - and especially the Volkswagenwerk Foundation - have played an important pump-priming role. A number of the institutes and programmes now supported by federal and state funds owe their existence to private funding of this kind. For example, a major secondary school science project based on Kiel University, and a highly sophisticated primary mathematics curriculum scheme under Professor Heinrich Bauersfeld at Frankfurt, benefited from initial Volkswagen support. The same foundation, though now gradually withdrawing from the field of curriculum development, is currently supporting a variety of innovative programmes at the primary level, including one under Professor Klaffki at Marburg on the development of social attitudes, one under Professor Tütgen at Göttingen on an integrated approach to science, and others concentrating mainly on the problems of socially deprived children.

Despite this considerable range of national and local activities - a recent survey by the UNESCO Institute in Hamburg identified well

over 100 schemes of development of various kinds - there now seems to be a general air of disenchantment with curriculum development in Western Germany. This may result in part from the fact that many enterprises were set up on too small a scale to achieve an effective 'critical mass', and that others embraced with excessive enthusiasm the notion of 'teacher-proof' curriculum materials. In any event, the present backlash takes the form (almost certainly over-idealistic in the national tradition, where teachers have little experience of freedom in curricular decision-making) of a vogue for open-ended, school-based experimentation supported by a new structure of local teacher's centres. One positive consequence of this change of fashion is a greater concentration than in the past on schemes for the professional development of teachers, both pre-service and in-service. The attendant danger may be that this becomes regarded as an adequate substitute for any critical attention to the curriculum itself, or to the creation of learning materials other than those already produced by one or two enterprising and efficient publishers on the basis of a series of centrally-prescribed state curricular plans. The political impossibility of setting up any national co-ordinating and sponsoring agency for curriculum development may well aggravate this danger.

In the Netherlands, the national Ministry of Education - unlike that in England and Wales - issues general curriculum guidelines, albeit of a rather broad and permissive kind. It also centralises, through the Inspectorate and the official testing agency, CITO, the national system of school-leaving examinations. But the tradition of teacher autonomy is strongly entrenched, and the profusion of different curriculum agencies (subject-based national curriculum reform committee, separate national pedagogical centres for Protestant, Catholic and state schools, the national agency for educational research, the new regional pedagogical centres, and various university-based development teams) ensures that no one voice dominates the babel of developmental activity. When, in addition, it is remembered that the schools are divided at both the primary and secondary levels into three separate networks (state or municipal, Catholic, and Protestant), and further subdivided at the secondary level into vocational, normal, and academic sectors, it is scarcely surprising that curricular decision-making tends to become somewhat diffused.

The Ministry of Education is the main financial sponsor of curriculum development, though its activities in this respect are more reminiscent of the Scottish Education Department or the Schools Councils in England and Wales than of, say, their French or Belgian counterparts. In other words, it tends to respond to initiatives within the system rather than predominate to take them itself. The influential primary mathematics programme, WISKOBAS, established in 1968 and based on the Institute for the Development of Mathematical Instruction - IOWO - at Utrecht (which was in turn initiated by active teachers and academics on the mathematics reform commission) provides one example of an officially-funded but semi-autonomous development. The more recent projects in secondary school biology and physics - again deriving from the reform commissions in those subjects - offer further instances. (The physics project initiated in the autumn of 1972 is in fact funded by SVO, the official education research agency in the Netherlands.)

However, some major enterprises with a somewhat more theoretical and less pragmatic approach (such as the LEDO project in secondary school social education, based on Gröningen and Amsterdam, and the LOLA project, based on Utrecht) owe their support to university

institutes of education. Others adopting a more market-orientated stance are wholly financed by major educational publishers such as Wolters-Noordhoff.

The growing Netherlands interest in heuristic curriculum development is reflected in a new concern with initial and in-service teacher education (though the organisational structure of the system has not yet adequately adapted itself to this), and in a sustained national debate on the various proposals put forward by the Commission on the Organisation of Curriculum Development (COLO) in 1971. The Commission suggested three alternative means of simplifying the fragmentary and uncoordinated national pattern of development. Because of the multiplicity of vested interests involved, it seems probable that the weakest model - that of a loose federation of specialist committees and existing agencies - is the one most likely to prove politically acceptable. But the prospect of any form of national agency (inevitably calling for additional resources) may remain in the balance throughout the present cutback in the national educational budget, which accounts for some 9 per cent of the GNP - the highest proportion in Western Europe.

Canada, the United States and the United Kingdom present a similarly untidy picture. In marked contrast with the more orderly approach of the Scandinavian and Latin countries (of which Austria appears to be an unofficial member), there is a profusion of sources for curricular innovation and a corresponding profusion of educational goals. To take the Canadian province of Ontario as an example, the Ontario Institute for Studies in Education (OISE) acts as one major development agency, but the Ontario Ministry in addition maintains ten regional offices staffed by professional 'program consultants' who work with school boards in carrying out the provincial curriculum guidelines. Many school boards also employ their own curriculum specialists; specialist teachers' associations play an independent role in materials development; and private foundations such as the Canadian Studies Foundation sponsor development in specific aspects of the curriculum.

As a result, teachers in this group of countries tend to be used to exercising some choice among a variety of alternative possibilities. Where they lack the professional skills to do so wisely, attempts are made (often on a better-later-than-never basis) to reinforce such skills by some form of associated in-service training.

To conclude, despite the marked differences between their various educational systems and national traditions, this group of countries has the following common characteristics:

- The administration of curriculum development is not located within the central education ministry. Curriculum development agencies are, for the most part, independent or quasi-independent of the national or state education ministry, while drawing on central and local government and foundations for their resources.
- This diffusion of curriculum development often coincides with diffused curriculum control - the sharing of control with examination bodies and higher education institutions and the resulting increase in the number of points of entry into the curriculum development process.
- North America offers the supreme example of multiple goals in educational reform, giving rise to multiple agencies for curriculum development. Most of these agencies extend far beyond the jurisdiction of any single school board. Every known approach

can be found in one United States or Canadian model or another, without any clear consensus about objective.

- In all these countries the objectives of curriculum change are not pre-determined by nationally-defined objectives for social reform though they will certainly reflect heightened national concern about particular topical issues - for example - inner city problems, or racial strife, or community development. In contrast with the Scandinavian and Latin traditions, curriculum development is a stimulus to educational reform rather than the product of it.
- Both heuristic and traditional techniques can be found operating side by side, with relatively more examples of heuristic, project-type essays in curriculum development than in the other two groups of countries. Production of teaching materials has been an important part in this development, alongside the activities of educational publishers with a keen eye to the directions in which development projects point.
- The United Kingdom has produced its Schools Council,(1) a compromise within this general pattern, a central agency for curriculum development, controlled by interlocking committees which reflect the distribution of power over the curriculum in the schools. This is connected to the main instrument of curriculum control, the examination system, but is precluded by convention from backing the products of its development work with any more authority than the schools themselves give them on their merits.

FORMS OF CURRICULUM DEVELOPMENT

Development programmes can, of course, be grouped and classified in a variety of ways. One which seems illuminating for our present purpose distinguishes at the general level between two families of activities: those which stem from an organisational reform of some particular sector of the educational system, and those which derive from an attempt to improve the quality of learning in some particular area of knowledge. For the purpose of this discussion we shall label these system-based and subject-based development.

System-based development

Within the last two decades - at different times in different places - almost every country's educational system has embarked on some major reform. In many cases the reform appears to stem from broadly political and social, rather than narrowly educational, considerations.

The move towards later selection and separation into different types of post-primary schooling is an example of such a reform. Traditional forms of secondary schooling have been judged to reinforce, or at least to perpetuate, existing social class divisions. A quest for

1) See Nisbet, John, "The Schools Council, United Kingdom", Case Studies of Educational Innovation: Vol. I, At the Central Level, OECD/CERI, Paris, 1973, pp. 7-75.

democratisation has led to pressure to defer any major differentiation within the curriculum to a later stage and to permit more mobility between different types of secondary education. In some countries this has meant the complete or partial reorganisation of the secondary system on comprehensive lines; in others, common "bridge" years have been introduced between primary and secondary, or new middle schools have been set up to postpone the secondary selection process until the age of 13, 14 or 15.

Similarly the primary school curriculum is being criticised from many standpoints, with social considerations taking precedence over educational. Critics in some countries - notably Britain and North America - have doubted whether the present conventional emphasis on cognitive goals is sufficient for an era of rapid change.

In their view, every primary pupil should have the chance to acquire other skills besides those hitherto regarded as the bare essentials - the ability to read, write and count. Young children must be allowed greater opportunities to pursue their own creative interests and talents (through art, handicraft, drama and movement) and to discover and enjoy a wide range of physical activities. The social objectives would change from competition to co-operation, and authoritarian teaching methods would give way to an approach which allowed a large measure of choice in their day to day activities. The internal organisation of the school would correspondingly become less formal, and be designed to facilitate active, interest-based learning. System-based curriculum development is an attempt to meet criticism of this kind: though, in the nature of things in Britain and North America, such development tends to be piecemeal and localised.

Curriculum change in the primary field, however, is by no means restricted to the widely-publicised spread of informal methods in the Anglo-Saxon countries. What seems to be common to developments in many of the Continental countries is a desire to extend the range of primary education and to reinforce the cognitive content with more concern for other aspects of human development. Where the primary school system is required in this way to cater for the all-round development of the young child rather than concentrate on the achievement of a certain level of academic competence, the consequences may be far-reaching and result in major organisational reforms.

In most educational systems such organisational reforms - whether at the primary or secondary level - have either been accompanied or followed by planned processes of curriculum change. It was suggested earlier that the main pressure for curriculum development in Scandinavian countries has been generated in this way; many of the curriculum programmes in France, Germany, the Netherlands and Austria also owe their origins to some clearly identifiable process of structural reform. Certain characteristics of this family of system-based curriculum development can be readily distinguished:

- they tend to stem from a consideration of the curriculum as a whole rather than from a specific part of it;
- they attempt to reflect the general goals of a reform programme, and to derive their more specific aims from a chain of reasoning which starts from these general goals;
- they take account of affective as well as cognitive learning and place emphasis on organisational "frame factors";
- they depend on a reorientation of teachers' traditional attitudes,

Two aspects of the development process are often emphasised at the expense of others - the clarification of educational objectives and the strengthening of supporting services for teachers. At the national level effort is concentrated on revising and amplifying the curricular plan. Its rationale, its subject-by-subject content and its recommended methods of teaching may be spelled out in much greater detail than before: but it essentially remains a framework within which suitable curriculum materials have subsequently to be developed, by textbook publishers and their authors. The reform is often accompanied by the creation of new mechanisms for teacher retraining; semi-independent regional pedagogic centres (as in the Netherlands and Spain); local branches of the national research and development agency (as in France); or locally-controlled teachers' centres (as in Britain and - incipiently - Western Germany).

Within the family of system-based developments, however, certain internal distinctions need to be made. In some cases, curriculum renewal is initiated from the outset on a nationwide scale (as in France, Belgium and the Netherlands with the introduction of a 'bridging stage' to defer secondary school selection). Clearly, in such situations the nature of the curricular plan has to some extent to be predetermined, and the initial specifications have to be worked out on a largely a priori basis.

In others a more tentative approach is adopted. Many countries have devised ways of taking a limited sample of schools and using them as test beds for experimental change. The Norwegian NCIE works in this way; so can the Swedish "development blocks". The French have introduced experimental pilot schools and experimental regions, and Austria is using a similar gradualist approach in the introduction of proposed reforms of early secondary and later vocational education. Change of this kind is usually accompanied by more or less formal review procedures, which provide the opportunity to modify the programme in the light of experience before it is introduced on a national scale.

A third type of system-based development owes its origins to local or individual initiatives, rather than to considerations of political or social policy formulated at the national level. Development of this kind, while it stems from concern for overall structural reform rather than piecemeal subject-by-subject curricular change, depends crucially on harnessing the innovative resources of classroom teachers: it is a more clearly "grass-roots" movement. It is not necessarily confined to formally 'decentralised' systems, and may occur within apparently very different educational traditions. Current examples include the steady growth of 'progressive' primary schools in Britain, the long-established networks of Freinet schools in France and of Montessori and Jenaplan schools in the Netherlands, the local experimentation with comprehensive secondary school provision in Western Germany (of which Bielefield and Berlin provide two particularly interesting instances), and - at the radical extreme - the recent deschooling movement in the United States. Some interesting examples of local initiative can also be noted in Italy, where the central government has not entered curriculum development on a large scale. Recent developments include those arising from the IARG Project in Milan (which is mainly sponsored by Foundations and industry, but which also has encouragement from officers of the Ministry of Public Instruction, and some money from public funds for the employment of extra teachers); as a result, some middle schools have been able to extend the school day into the afternoons with a programme which includes organised recreational and remedial activities.

There are, of course, obvious contrasts between this last category of "grass-roots" reform and officially-planned changes for national educational systems as a whole. But one important feature which they are likely to share is the derivation of curricular reform from some broader appraisal of political or social goals.

Subject-based development

Pressures for curriculum reform can be generated within the domain of education as well as outside it: and it is indeed such internal pressures which account for some of the most well-publicised current examples of development projects.

Admittedly, the arguments used to justify developments even within the specifically 'educational' genre may involve appeals to some wider political or economic desideratum. For example PSSC Physics, the fore-runner of all the subject-based curriculum programmes of the past two decades, received a lot of money from the US National Science Foundation in the early 1950s. Support for development projects boosted as a result of the nationwide concern at the launching of the first Russian Sputnik. But once begun, the rationale of development was spelled out in terms of the modernisation of subject content and the reappraisal of teaching approach.

It is this feature in particular which seems to distinguish subject-based curriculum development programmes from those which are system-based. The participants in subject-based development are faced with an apparently much simpler task. Instead of having to keep steadily in view the general (and often amorphous) aims of the educational process as a whole, they can focus on a particular segment of the curriculum and improve on previous orthodoxy within it. They can usually short-circuit the process of trying to derive their guidelines from the oracular pronouncements of politicians or social reformers, and can begin their work on the basis of more narrowly-defined content and process goals. They tend to place considerable emphasis on the preparation, field trial and dissemination of new types of curriculum material. In other words, they characteristically adopt a heuristic, as opposed to traditional, approach to development. Rather than drawing up curricular guidelines and leaving individual teachers or groups of teachers - with the support of educational publishers - to translate these into appropriate class texts, they often see it as their main task to provide well-designed and widely-tested teachers' guides, students' background readers, individual workbooks, and a variety of other teaching and learning resources geared directly to promoting a fuller understanding of their chosen subject.

Programmes which are subject-based, then, often become closely identified with the development of teaching and learning materials. Until quite recently it has been common to find subject-based programmes showing relatively little concern for in-service teacher training, since it has seemed natural to assume that teachers would be familiar with the basic subject-matter; that the curriculum materials themselves would be sufficient to define and transmit recommended changes in teaching approach and to expound any new topics introduced into the syllabus. In both these respects, subject-based development can be contrasted with system-based development, where (as was noted earlier) the definition of goals and teacher support and advice have

tended to be emphasised more strongly than the systematic preparation of materials.

However, the family of subject-based curriculum programmes is no more closely-knit and homogeneous than that of the system-based type. Its main branches can best be differentiated in terms of three models derived from the work of Ronald Havelock and Donald Schon.

The first - which Havelock designates as research, development and diffusion (R, D and D), and Schon as centre-periphery - assumes a logical sequence of activities: the application of research, the design of prototypes, field trials, revision, mass production, dissemination and eventual implementation. Here the development agency's role is to produce packaged solutions centrally and then to promote their adoption at the periphery. The second, the social interaction or periphery model, focuses on the process of disseminating, through personal and professional contacts, the innovations generated at one point on the periphery to neighbouring and perhaps eventually to more distant points. The central development agency in this model acts mainly as co-ordinator and communicator, rather than generator, of ideas. The third model, described by Havelock as problem-solving and by Schon as periphery-centre, emphasises the prior identification of the client's needs at the periphery. The central development agency in this model adopts a non-directive stance, helping in the search for the best available solution and for ways of adapting it to the client's particular circumstances.

The three processes are not, of course, mutually incompatible, but start from different philosophies - the Cartesian logic of R, D and D differs from the Rousseauesque idealism of social interaction and both are different, again, from the Humean pragmatism which lurks behind the problem-solving model.

Curriculum programmes which exemplify the R, D and D approach are not hard to find. In nearly every country which has embarked on curriculum development within the subject-based genre - Sweden, Britain, Canada, Western Germany and the Netherlands as well as the USA - early examples can be found of programmes in mathematics or one of the sciences which embody two key assumptions implicit in the R, D and D model. These are first, that the acceptance of new ideas depends on rational persuasion - that if a practical solution can be developed for any problem, a significant number of those concerned will accept the given solution; and second, that the applicability of the solution can be made independent of individual differences between users.

But such assumptions are, in the light of experience, questionable. Although the costs of an R, D and D programme are high, and have therefore to be justified by widespread adoption, examples can be given of major curriculum schemes (e.g. CBA chemistry in the USA) whose undoubted quality has not been matched by a sufficiently large consumer take-up. Even if adoption has been widespread the end result may be very different from what the developers intended (e.g. some of the early Nuffield secondary science schemes in the United Kingdom). It seems from these examples that the notion of 'user-proof' materials cannot be sustained and that individual differences in teachers' skills and attitudes cannot be bypassed or ignored.

In those countries in which the R, D and D model has been found unsatisfactory in terms of implementation, attempts have subsequently been made to give more emphasis to social interaction. The first exemplars of this trend have often been in the primary school sector (for

example, the AAAS elementary science programme in the USA); some secondary school projects (such as Project Technology in the United Kingdom) have also adopted the same basic pattern, with the central team concentrating on building up a network of co-operating teachers and collating and disseminating the ideas they put forward.

Again, certain limitations of this model have begun to emerge. Not all teachers are sufficiently energetic and creative to develop their own coherent programmes from a set of stimulating suggestions. Projects where the central team has departed from the pure form of social interaction to provide systematically developed supporting materials have tended to survive: those which have placed this burden on the individual user have not. And the extensive communication networks built up by the central team are liable to fragment once that team is disbanded, resulting in more localised networks which perpetuate the original innovation only in a mutated form, if at all. The encouragement of local initiative, which is implicit in this approach, can enhance the motivation and channel the enthusiasm of the more active teachers, but it can also result in duplication of effort and in some materials of poor quality.

In those circumstances in which disenchantment has set in with the social interaction as well as the R, D and D approach, the attention of subject-based development teams is often turned to the problem-solving model. This places the client at the centre of the change process; curriculum programmes adopting this style tend to develop a market rather than a product orientation, and to be judged largely in terms of consumer satisfaction rather than by the extent to which pre-specified learning objectives (often cast in behavioural terms) have been met. Two examples of this pattern - in which the development agency aims to supply consultancy services, not ready-made solutions - are the LEDO project in the Netherlands and the Nuffield Resources for Learning project in the United Kingdom.

If the problem-solving model, contrasted with the R, D and D model, is less paternalistic, taking greater cognisance of the clients' autonomy and individual differences, it is also true that it akes heavier demands on them, and implies the need for a much increased effort in the continuing professional development of teachers. Moreover, a programme based on consultancy techniques is heavily labour-intensive. To offset the costs, some way has to be found to assist the transfer of results directly from one client to others with similar problems. Social interaction strategies may well prove useful in this context: the experience of a number of projects suggests that teachers who have been actively involved in the process of curriculum innovation can themselves provide a focal point for further change among their colleagues in other schools. In any event, because it is also economically impracticable to develop a tailor-made solution to every individual client's needs, problem-solving must assume the availability of a wide range of products of research, development and diffusion - though it can now be recognised that such products will only be useful in so far as they are amenable to local adaptation.

It would seem, then, that successful subject-based curriculum development must rest on a judicious amalgam of Havelock's three models. The problem-solving approach seems the one most likely to identify common user needs; the R, D and D model the one best geared to creating effective solutions to these needs; and the social interaction process the one most amenable to promoting widespread dissemination of the av ilable solutions. Or, to put it in Schon's centre-periphery

terms, the inevitable tension between centre and periphery in any process of planned change can be seen as providing a carrier wave on which innovation can be locally modulated.

However, even if this promises to be the pattern most sensitive to the need for continuous improvement in the quality of subject-based cu: 'icula, it has implications for resource management, role structures and professionnal development, and suggests a need for autonomy at various levels in the system and help for individual constituents to cope with it.

Subject-based development, like system-based development, crosses the boundaries between centralisation and decentralisation. One feature which seems of particular interest is the similar evolutionary pattern manifested in each country which has adopted subject-based procedures, regardless of the formal structure of curriculum control. In educational systems as sharply distinguishable as those of the United Kingdom, Sweden, Germany and the USA, one can discern a progression from "linear" subjects such as science, mathematics and modern languages (which tend to form the natural focus of initial development programmes based on the R, D and D model) to "non-linear" subjects within the area of the humanities and social studies (which seem to appear more adaptable to the social interaction approach). The few recent exemplars of the problem-solving model have tended to lie in the fields of cross-disciplinary studies, where students are offered a wide range of choice within an overall curriculum which brings together subject-matter drawn from both arts and science, and places greater emphasis than before on practical and creative skills.

What appears to be a steady sequential growth in the understanding of subject-based curriculum development is reflected in the internal evolution of two recent programmes - Project "alef", a primary mathematics scheme developed under the direction of Heinrich Bauersfeld at the University of Frankfurt, and 'Science 5/13', an elementary science project developed under the direction of Len Ennever at Bristol University. (1) In each case, the initial approach was through a fairly rigid R, D and D model, embracing the specification of behavioural objectives and the attempt to create 'teacher-proof' materials. But both development teams learned, as their work progressed, that this approach suffered from difficulties of implementation; and both have since evolved through the social interaction stage to a position more nearly characteristic of the problem-solving model.

SOME UNRESOLVED QUESTIONS OF CURRICULUM DEVELOPMENT

Our discussion so far has hinted at the sense of disappointment experienced in many educational systems as the high expectations invested in the curriculum development process have failed to yield commensurate benefits. This sense of anticlimax is not a reason for giving up any systematic attempt to reappraise and improve school curricula: a more detailed examination of some of the underlying causes may well help to promote a more realistic assessment of what curriculum development can and cannot achieve, and hence lead to a better recognition of its full potentialities.

1) See also Chapter 2, pages 72-87.

Fragmentation

A charge frequently levelled against the schools - and particularly the secondary schools - is that they divide the curriculum into a grid of separate 'timetable subjects', and that the real purpose of the educational process (whatever that may be chosen to be) escapes through the meshes of the grid. The educational systems of most countries have shown themselves sensitive to this charge. Attempts are frequently made to review 'the curriculum as a whole' and to present pupils with a less fragmented educational diet and a less piecemeal view of the map of contemporary human knowledge.

What we have earlier referred to as system-based development might be expected to overcome many of the defects of curriculum fragmentation. Starting as it often does from the consideration of broad socio-political goals, and deriving from them a series of more specific learning objectives, this development process might hope to present both the seamless garment of knowledge and the unity of human experience as more-or-less coherent wholes. In practice the curricula shaped by system-based development seem to remain almost as fragmented as before.

One reason is clearly structural - namely that secondary school teachers are in general trained to devote their main loyalties to a particular academic discipline, and are therefore inclined to remain within it and defend its boundaries. We shall examine the implications of this more fully below, in our discussion of interdisciplinarity. Another reason, however, seems inherent in the very nature of the process of formulating educational objectives. Those who have never embarked on this activity are inclined to view it as relatively simple and straightforward. Nothing could be further from the truth. It is highly complex and convoluted, as may be seen both in the vast literature on curriculum theory (whose main sources lie in Western Germany and the United States) and in the lengthy efforts in Scandinavian countries which have been required to produce broad curriculum guidelines. There are no simple deductive rules which lead from general statements of social goals to the specific of, say, a secondary school grounding in science. The connections seem to depend on the exercise of high casuistry rather than low common sense. Nor is it easy to decide the level at which the process of derivation ought to stop: the standard references of Mager and others (1) offer only a few evasive hints. In one respect the more precisely objectives are couched in behavioural terms, offering an obvious check on their attainment, the better: in another respect, the more precise they become, the more trivial they seem, and the more fragmented the field of knowledge with which they deal.

There are in any case other potential dangers in adopting a holistic approach. Unless a curriculum development agency is unusually confident about the future, it may be reluctant to commit itself to a single set of values and a single development style. The more pluralistic the society, the less easy it becomes to view 'the curriculum as a whole' as a single instrument designed to fulfil society's chosen ends.

The extent to which subject differentiation and individual specialisation are permitted at various ages through the secondary school can also place obvious limitation on the 'curriculum as a whole' in the

1) Mager, R.F., Preparing Instructional Objectives, Fearon, Palo Alto, 1962; Popham, W.T. and Baker, E.L., Systematic Instruction, Prentice-Hall, Englewood Cliffs, 1970.

forefront of the debate about differentiation. But competing with the need to postpone differentiation in the interest of equalising opportunity is the need to adjust the curriculum to the growing diversity of interests of the students themselves... the on-going struggle to motivate those whose enthusiasm for school and school learning seems to be least. Because there is a plurality of aims among pupils whose individual differences and differing rates of personal and intellectual development have to be respected and contained within a curricular framework, many people would regard diversity in the secondary school curriculum not as a necessary evil but as a positive good. Indeed, the real conundrum ...posed by any attempt to discuss the secondary 'curriculum as a whole' is how to weld this diversity into a unity without at the same time reducing it to a stultifying uniformity.

The plural aims of society; the range of individual differences (and the differentiation of subject courses and groups of subject courses related to this); the range of individual interests (and the sociological differences they reflect); the desire for high intellectual standards (and the professional credit invested in them); the desire for more elective choice for students and staff, the pressing demands of vocational education; and the desire for individualisation (made stronger by de-streaming) ...all these generate strong pressures which compete with and militate against the coherent design of the 'curriculum as a whole'. As pupils progress through the secondary school, it becomes increasingly an institutional umbrella to cover a range of not necessarily compatible curricula, with only a residual core... which is not always the most important part... common to all. There may therefore be claimed to be some positive merit in subject-based developments which offer a variety of competing development styles, and hence create for pupils a range of choice of both content and teaching approach. This is another way of giving the pupils a bigger say in the curriculum they follow - a wider menu to choose from instead of the table d'hôte meal which the curriculum planners, in their wisdom as surrogates for society, might design for them. It seems inevitable that the consumer will exercise more influence. it could be argued that the disintegration of the curriculum is, in some measure at least, a consequence of this. By giving the consumer an active part in assembling the ingredients of his secondary course, the schools may stand a better chance of absorbing the shocks and stresses inherent in a situation in which different groups of pupils have different aims, interests and priorities (perhaps, currently, their most difficult task, which the Joxe report calls "managing inner conflicts"). All of which suggests that 'the curriculum as a whole' for the upper secondary school has to be an extremely complicated mechanism, if it is to match such divergent needs with a genuine coherence.

But at this point, those who attach importance to a more unifield view of the curriculum will understandably reiterate their objections to such curricular pluralism. They will point to the sense of waste and frustration which a patchwork curriculum of this kind engenders; to the difficulties which face teachers and pupils in adopting a series of subject-based curriculum programmes with mutually conflicting philosophies and styles; to the reduced impact resulting from these internal inconsistencies, where one approach may tend to cancel out the effects of another; and to the diseconomies that a piecemeal approach introduces into the system, where many individual projects begin after a short time to fall out of favour or to demand extensive re-adaptation to render them compatible with others.

One response to these objections, as we have already noted, is to attempt to work back from overall curricular goals to more specific

aims and objectives for particular aspects of the curriculum. Where this alone is seen not to suffice, an attempt may be made to supplement subject-based curricula with general courses on 'civics'. But even in the more pragmatic countries such as the USA, the United Kingdom and Canada, the unease with curricular fragmentation has shown itself in past attempts to introduce 'general studies' or 'project work' into the secondary school. Although many of these attempts have proved in the event to be unsuccessful, their intention was commendable enough: to provide space in the curriculum for relating the study of specialised disciplines to the pupils' everyday experience.

A current fashionable variant of this approach is to be found in the notion of interdisciplinarity. This notion, though most strongly advocated in relation to the terminal stages of education, whether this be at 16, 18 or at the conclusion of an undergraduate course, can be used to serve many different functions. At the university level, it may designate the process of creating a new discipline out of the fusion of two existing ones (biochemistry), or the study from various disciplinary angles of a given tract of time or space (the emergence of Bronze Man, investigated through historical, anthropological and physical science techniques; the developing nations of the Third World as seen through the eyes of economists, sociologists, geographers and demographers). In schools, interdisciplinarity is sometimes given a different slant. At its most far-fetched, it can offer an excuse for exploring - often to the point of absurdity - a general topic in all its aspects ('power', as manifested in physics, politics, psychology and hydraulic engineering); at a lesser extreme, it can centre on the examination of a complex real-life problem which calls for contributions from a variety of different areas of knowledge (pollution, overpopulation, the crisis of diminishing resources).

Although most educators would accept the desirability of helping students to integrate their existing knowledge and experience, and to exploit both this knowledge and this experience sensibly in their everyday lives, subject-based development agencies often seem far from clear about their motives for introducing interdisciplinary curricula. The argument is sometimes couched in the familiar philosophical terms advanced by system-based developers: the need for education to serve society's broad purposes, the need to avoid the artificial fragmentation of knowledge, the need for pupils to see the world both whole and plain. At other times, however, a more frankly utilitarian stance is taken: the problems of everyday life are increasingly complex, and hence the main need is to train every future citizen in complex problem-solving techniques. Or again, the main justification may be motivational: less able pupils find it difficult to approach the abstractions of any discipline, and need to be shown the relevance of such abstractions through concrete examples which excite their interest (teaching physics and chemistry through the study of the motorbike).

But even if interdisciplinarity is a notion covering a variety of learning activities and stemming from a diversity of educational motives, its fundamental attractions cannot be ignored. It serves as the meeting-point of a system-based and subject-based development, and holds promise of a more satisfying and more rounded educational experience for pupils leaving school, in which the world of the classroom can be related to the world of their personal lives.

Sustained attempts have been made to develop interdisciplinary curricula in the humanities and social studies - such as 'the Indian Studies File' in Canada and the Humanities Curriculum Project in the

United Kingdom. (1) In Finland, the explicit goal of seeking to link cognitive and effective content has been adopted - as one observer puts it: "to develop the curriculum so that especially the subjects which offer possibilities of self-expression (music, visual arts, gymnastics) will be integrated with the cognitive processes of the acquisition of knowledge". But such programmes have encountered far greater practical difficulties and have met much fiercer ideological resistance than their single-subject counterparts. One possible clue to the source of these difficulties lies in the noticeably differing degrees of success with which primary and secondary schools are able to teach interdisciplinary courses. To some extent, this can be explained by the more flexible timetabling allowed in the primary one teacher/one class relationship, and by the more elementary level of understanding which has to be aimed at. But it also seems highly relevant to remark that primary teachers are, perforce, general practitioners in education, while secondary teachers conceive themselves as subject specialists. It is perhaps here - in the concept of a specialised discipline - that the main difficulties lie.

Without being drawn into the larger philosophic questions about the nature of knowledge, two things we take to be clear: first, that the divisions between different domains characterised as "scientific", "mathematical", "historical" and so on, are not wholly arbitrary: second, that such natural boundaries and distinctions between intellectual areas as exist for profound reasons, are criss-crossed with artificial barriers manned by functionaries of the socio-political structure of education. These include the universities, as guardians of disciplinary frontiers and mentors of new generations of specialist teachers, with tribal loyalties fixed firmly within the present subject-divided curriculum.

The subject boundaries are reinforced by commerce and vested interests - educational publishing is geared to conventions about curriculum which assume the continuation of the present syntheses and divisions of knowledge: by administrative convenience - staffing and salaries of teachers, the design of schools, the organisation of the timetable, even the arrangement and cataloguing of libraries reflect an existing set of separate subjects. Underpinning and apparently validating the status quo may be subject-based examinations which have gained almost mystic public confidence and thus created a conservatism among parents and "consumers".

Failing some far-reaching changes in the structure of both schools and institutions of teacher training, it seems likely that interdisciplinary development projects which challenge the orthodoxies of disciplinary map-making will continue to rouse the opposition of subject-specialist teachers, publishers, inspectors and administrators, and educational politicians. For any of them who combine far-sightedness with insecurity may discern, in such attempts to change the configuration of the chart of knowledge, threats to themselves, their status and their expertise.

Continuity

As long as each educational system is divided neatly into different segments, each with its own distinct structures and traditions, it will remain difficult to ensure that even the curriculum within a single subject - let alone the curriculum in its entirety - can be presented as a continuum over time.

1) See also Chapter 2, pages 63-84.

In every country, the transition from the primary to the secondary stage is one such break in continuity. The only exceptions are those cases (now rare in Western Europe, and non-existent in North America) in which less favoured pupils never leave primary school at all, but continue in the same institution after the normal age of transfer for a two- or three-year course of terminal education.

Other divisions, vertical rather than horizontal, separate different types of secondary school. Except in areas in which every school is organised along fully comprehensive lines with classes of mixed ability, this kind of separation (between, say, a "Gymnasium" and a "Hauptschule", a "lycée" and a "collège d'enseignement général", a grammar school and a secondary modern) puts up effective barriers against the transfer of pupils from one stream to another, whether or not such transfers are theoretically allowable within the system.

A third example of discontinuity is largely confined to countries with decentralised or diversified mechanisms of curriculum control. Mobility of pupils between one area of the country and another presents relatively few difficulties in - say - France or Sweden, where curricula are relatively uniform: but it can raise problems in Western Germany if the movement is across Länder, and in England and Wales even in moving from one school to a neighbouring one in the same town (where the external examination syllabuses may be set by different boards, and the textbooks and teaching methods could be entirely dissimilar).

It is perhaps tempting for educators to exaggerate such differences, and to underestimate the capacity of pupils to adapt successfully from one educational environment to a second and different one. However, while relatively few children of school age may be affected by a move from one area to another, or one type of secondary school to another, they are nearly all required to transfer from primary to secondary education, usually at an age between 10 and 12.

The change can be traumatic: from a small school, with a stable classroom base and a single teacher (and often a relatively flexible and integrated curriculum, a 'family' atmosphere, and a peer group varied in background and attainments) to a large complex requiring constant movement from one room and one specialist teacher to another (and often a rigid and fragmentary curriculum, an institutional atmosphere, and a homogeneous and competitive peer group). These discontinuities have to be taken into account by curriculum developers. But the developers' problems do not stop there: allowances also have to be made for the entirely different respective backgrounds and assumptions of primary and secondary teachers.

In the majority of countries covered by our study, the initial training of primary school teachers takes place in colleges specially set aside for the purpose: these may or may not have some nominal or real attachment to a university. The level of student intake is lower than that for universities: the curriculum is more specifically oriented towards teaching; and the final qualification is below the status of a bachelor's degree. The trained teacher is, roughly, on a social par with the nurse or high-level secretary (if female - and the large majority usually are) or with the newspaper reporter (if male).

In contrast, teachers in the more prestigious secondary schools (or the more academic levels of comprehensive schools) are usually university graduates. The majority of them will have taken a degree in one or two main subjects, topping this up subsequently with a brief spell of pedagogic training (in some countries - e.g. England and Wales,

France and Germany - such training has only recently become obligatory). At the upper end of the secondary profession (which tends to be predominantly male) the teacher's social status is roughly comparable with that of a solicitor or bank manager. Salary scales are invariably higher than those for primary teachers.

If - as was suggested above - an important part of the curriculum developer's job is, in Lawrence Stenhouse's phrase, "to provide the basis for a new tradition", the constraints imposed by this sharp difference between the ethos of the primary sector and that of the secondary cannot lightly be dismissed. Any attempt to provide continuity between the primary and secondary curriculum, if it is to be at all successful, must include deliberate steps to bring the teachers' attitudes and practices closer together.

In some countries, Sweden and the United Kingdom, there is already, in recognition of this need, a move to merge the processes of initial training, and in France and Austria the creation of a transition stage between primary and schools may help. In Finland, all teacher education for the comprehensive (basic) school and senior secondary school is currently being transferred into universities (eventually preschool and vocational school teachers will also be trained at university). This reorganisation does not only mean that different categories of teachers are educated at the same faculties, they also attend joint and coordinated courses in education. In still other countries, Belgium and the Netherlands being notable examples, there is in the teachers' career structure some incentive for mobility from one sector to another (though because of preferential salary conditions the move is invariably one-way, from primary to secondary).

The creation of local teachers' centres or pedagogic institutes designed to provide retraining associated with the introduction of new curricula (a move which, in one form or another is identifiable in Spain, Scandinavia, France, the United States, Canada, the Netherlands, the United Kingdom, and Germany) may also help, in providing a meeting-ground for primary and secondary teachers whose worlds would otherwise remain, as in the past, totally separate and distinct.

Implementation

It has already been suggested (pages 13-14, and also in our discussion of the R, D and D model of subject-based development, pages 39-45) that one of the major tasks of curriculum development is to bridge the gulf between new educational ideals, however clearly formulated, and the realities of the classroom.

There is a danger, in system-based development, that the social and political impetus behind large-scale organisational reform may result in an undermining of teachers' professional self-confidence. (1)

1) Scandinavian reactions to this section have been to protest at what is regarded as an excessive and peculiarly English concern for the susceptibilities of the teachers and their supposed needs. It is pointed out that in many countries the teachers represent a fairly conservative group. They are not among the first to change and to reform society: so if one considers curriculum development as a part of educational and social reform, the teachers as a group are problematic". It seems to us dangerous to generalise about teachers in this way. There are, of course, aspects of professionalism in

Reformers outside the educational system have little patience for 'professional' opposition based on the traditional academic values, and may exacerbate it by attributing it to conservatism of outlook and political stance. Human attitudes and beliefs cannot be altered by administrative fiat: adjustment, if it takes place at all, is a slow and painful process. The very task of trying to make objectives explicit, instead of keeping them tactfully concealed, will inevitably create a new set of tensions between aim and achievement. A recent survey among a section of the Swedish teaching profession showed a widespread feeling that teachers were failing to attain the teaching objectives to which they were committed - presumably because of their own professional inadequacy, or because the curricular changes initiated with a view to reaching certain objectives were not in themselves capable of producing the desired results, or because the objectives expressed ideals which were inherently unattainable.

As we have already seen, there are similar dangers in subject-based development, unless it derives from changes within the existing classroom tradition (as in the social interaction model) or unless it stems from the teachers' own needs, and its results [illegible]udged in terms of their actual application within a particular educatio[illegible] [illegible]nilieu (as in the problem-solving model). The growing realisation [illegible]t the classic form of subject-based research, development and diffusion fails precisely at the point where it demands to be implemented on a large scale, has led to a major shift of emphasis.

The prime task now, in Sweden and France as in Britain and the United States - that is, in countries which typify both the system-based and the subject-based tradition - is seen to be the mobilisation of professional enthusiasm in curriculum development and the shaping of the new traditions which are needed to support and underpin it. This involves more than the application of new rules issued by central authority; it cannot be done by national development agencies alone, however they may be organised. Authoritarian methods of curriculum development cannot be used to promote non-authoritarian classroom practice.

Curriculum development can undermine and disconcert teachers or be in itself a process of professional renewal. The crucial difference lies in teachers' attitudes towards developers, which in turn reflect the attitudes of developers towards teachers. Where [illegible] serious attempt is made to involve the teaching profession at large [illegible] the development process, where no positive incentives are given to the rank and file of teachers to participate in the reshaping of the curriculum, experience in a number of countries suggests that the results will fall far below expectation.

Note 1 (cont'd) :

teachers, as in the professional groups, which tend to conserve traditional practices; some of them are discussed below. The point which remains, however, is that - whatever may be said of the teachers' conservative professionalism - the process of curriculum development is dependent on winning the acquiescence of the teachers and, more than this, on drawing from them the essential contribution which they can make. Without self-confidence teachers are unlikely to discard some of the defences of conservatism behind which they retire if threatened by brash and technocratic curriculum devel[illegible]rs. In our view, building up the teachers' confidence is not an [illegible]onal extra but a sine qua non of the development process.

One of the reasons why some of the early science curriculum programmes in the United States attracted a disappointingly small following, despite the large resources which supported them, was that the main work was done by university specialists with whose approach the average high school teachers found it difficult to identify, and who were in any case totally unfamiliar with the problems of teaching science to pupils of secondary school age.

But token representation of teachers on curriculum planning committees is clearly not an adequate answer to this. Many countries teachers' representatives have some voice in approving the national lesson plan - they sit on the curriculum subject panels in France, Sweden, Norway; in the Schools Council for England and Wales they form a substantial majority. Yet in all these cases there remains a sense of alienation among the teachers in the field: a sense that decisions are being made which may have a major effect on their everyday lives, but in whose formulation they have no real part.

Nor is there yet an adequately worked out system of incentives for teachers who make the effort - and it can often be a very demanding one - to rethink their attitudes, to modify their long-accustomed habits, to change their educational practice along new and more carefully thought-out lines. Teachers' pay should reflect the demands made on the schools by curriculum development, even though the most satisfying reward to many teachers is the opportunity to become fully involved with and committed to their work.

In countries such as the USA, France and Germany, the absence of a clearly-articulated promotion structure within the school, though laudable on democratic grounds, also has the unintended effect of discouraging the more lively and ambitious teachers from remaining at the classroom level where their professional skills can be used to best effect. Those who can see no prospect of a headship (itself an entirely administrative job in many systems) are drawn to the more prestigious and better-paid outside posts in the national administration, the inspectorate or the staff of a teacher training college. Moreover, in a few countries there are positive disincentives to experienced teachers who wish to participate in advanced courses - far from being given special release time from classroom duties (as in Sweden) or additional payment for attendance at summer institutes (as in the USA), teachers in these countries are expected to give up their own time, and even to pay their own expenses, in attending further training programmes. It does not require a great deal of imagination to see why, in such circumstances, the effort invested in planning curricular change is not significantly reflected in the real world of teachers and pupils, but remains a mere myth to comfort the politician and the administrator.

It is inevitable that a section which dwells at length on the role of the teacher and the essential need to involve him in the process of implementation and dissemination, should run the risk of appearing to discount the contribution which should be made by the pupils themselves, too often the forgotten participants in curriculum reform. (See page 50 and page 52 below). In most of the countries with which this survey is concerned, pupils are only individually consulted - they vote mainly with their feet; their needs and desires are integrated at second hand and their opportunity to express preferences is limited to such curricular options as national systems of education allow them.

Evaluation

When any major curriculum change is instituted, the question is likely to be raised of how its effects should be evaluated. It seems in principle entirely reasonable to demand some objective proof of the effectiveness or otherwise of educational innovation: but the demand has in practice a number of curious features. In the first place, the traditional, as opposed to the new, set of practices is seldom questioned in the same kind of way: its effectiveness will usually be taken for granted within the system. Of course, those who seek to replace it often base their arguments on a general sense of dissatisfaction with the status quo. This dissatisfaction, however, seldom rests on any elaborate evaluation exercise of the kind that tends to be put forward when innovation is being discussed. In other words, new developments are often required to satisfy criteria of effectiveness which are not normally applied to the practices they are intended to supersede.

In the second place, even where systematic evaluation of the effects of change is undertaken, its results seem to have surprisingly little influence on the decision whether or not to adopt the change in question. Examples include the massive evaluation of the Swedish IMU mathematics programme (1) (where the scheme was largely overtaken by events despite favourable evidence about students' performance) and the similarly substantial evaluation of primary schools decided to go ahead with its introduction long before even the interim research results were published. It is tempting to conclude that educational decisions are usually taken either on a political rather than educational basis, or in terms of teachers' subjective impressions rather than on "scientifically objective" grounds.

Indeed, there are those who have begun seriously to question the whole notion of scientific objectivity in educational research, and to point out that existing models of educational evaluation are intrinsically unsatisfactory. We shall return briefly to such basic methodological criticisms later in this section. For the moment, however, it may be sufficient to confine ourselves to the distinction often drawn between 'formative' and 'summative' evaluation. Any development which incorporates an element of trial, feedback, and revision must of necessity be dynamic rather than static. It will not be possible, by taking a 'snapshot' view of it at any given time, to measure its long-term effects, since those effects may well change as a result of later modifications introduced as part of the heuristic process. Educational researchers have therefore had to view the formative process which leads up to the final development as different in its nature from the summative assessment of how that final development works when it is implemented on a large scale. Formative evaluation is directed towards producing feedback information in a more systematic manner; summative evaluation has to wait until the development process has come to an end and the situation has finally stabilised.

What we earlier characterised as system-based developments are in any case very difficult to evaluate. Because they usually start from an attempt to restructure the curriculum of a particular sector in terms of general socio-political aims, the achievement of these aims

1) Taylor, L.C., "Case Study of the Development of a Learning System and its Transfer", IMU Individualised Mathematics Instruction, CERI/CT/71.85.

is not easy to substantiate except through elaborate, long-drawn-out and costly follow-up studies of several cohorts of pupils. One problem with such studies is that by the time any results are available, they are liable - unless social priorities remain remarkably constant - to be seen as merely of historical interest. Where system-based changes result from a locally-initiated "grass-roots" movement, the main criterion for success is in practice likely to rest on the extent of their voluntary adoption throughout the system: and this depends on the 'subjective' impressions of large numbers of individual teachers. Where they are introduced centrally on an experimental basis, the subsequent decision whether or not to implement them on a nationwide scale has usually to be taken in terms of inspectors' assessments and teachers' reactions, rather than as a result of more 'objective' measures. And where changes are introduced from the outset by central decisions affecting the system as a whole, the question of retrospective justification of such changes becomes a politically controversial rather than scientifically neutral issue. If evaluative research programmes are called for in these circumstances, they tend to offer only partial evidence of success (since 'success' itself has to be judged in very broad terms), and such evidence is open to differing interpretations - as the controversy in the 1960s between Torsten Husén and Urban Dahloff on the evaluation of the Stockholm comprehensive experiment clearly demonstrated.

Subject-based development in the R, D and D genre provides the most obviously appropriate context for evaluation of the type favoured by traditional researchers. It shares a common approach stemming from behaviourist psychology: its insistence, in its pure form, on easily-measurable operational objectives lays it open to standard procedures for measuring the extent to which such objectives have been attained. But even in this apparently favourable situation certain difficulties arise. Quite apart from the educational triviality which seems to beset objectives in proportion to the degree of specificity they achieve, at least four major criticisms remain to be met.

The first two focus on the notion of control groups, which is endemic to the standard model of educational evaluation derived from clinical trials of drugs or field trials of different varieties of crops. On this model, the significance of any new development has to be established by careful comparison with an existing product. A new curriculum programme can of course be shown to be better than the one it has replaced if it achieves identical objectives more effectively in some crucial respect. One obvious difficulty is that most curriculum change depends on a reappraisal of objectives: and since the old curriculum and the new aspire to different outcomes, a side-by-side comparison of their relative effectiveness is either impossible (since they have too few common aims) or unfair (since any student achievement test must favour one set of aims at the expense of the other).

A second difficulty concerns the inherent impossibility of setting up satisfactorily matched 'experimental' and 'control' groups in an educational context. It is relatively easy, in testing out a new drug or a new variety of wheat, to control all the experimental variables except the one under investigation. But schools offer an infinitely more complex range of variation. By the time account has been taken of differences in the teachers' competence and motivation, the pupils' age, sex, home background and previous educational experience, and a whole variety of other contextual factors, statistically significant samples accurately matched in every relevant respect are understandably hard to come by. Perhaps it is not therefore surprising that the vast majority

of such comparative studies yield results suggesting that no one educational approach is measurably better than any other. Although this seems to fly in the face of commonsense expectation, it can at least be plausibly explained by remarking that the uncontrolled (and uncontrollable) variables are so large in number that their effects are likely to cancel one another out.

The third and fourth objections are different in kind, and relate to the use of elaborate statistical techniques in traditional evaluation studies. In the first place it can be remarked that statistical analysis is only as sound as the raw data on which it is based, and that such data, in educational contexts, are often very raw indeed. Putting numbers against performance - measuring human quality in strictly quantitative form - is a shaky business, as many teachers experienced in trying to assess their students in terms of examination percentages are ready to admit. The problem is that numerical scales are neatly linear, while scales of human values tend to be untidily multidimensional: it is not all that easy to equate one with the other. In the second place, the 'averaging' effect of statistics tends to eliminate many a typical individual response, and these may provide, in educational terms, the most interesting or the most important clues to success or failure. While the statistician is understandably concerned with identifying general trends rather than individual deviations from them, the teacher or the curriculum developer may gain more useful insights from the performance of an unexpectedly quick or puzzlingly slow individual student than from the average level of achievement of the majority of the class.

These deficiencies in the classic approach to educational evaluation have begun to lead to an abandonment of the control group, and an attempt to assess curriculum change in its own terms rather than in contrast with the procedures it has been designed to replace. The R, D and D model in its pure form allows for a relatively straightforward adaptation of existing evaluation techniques. The evaluator's task is seen to lie in the progressive refinement of objectives, the casting of these in behavioural terms, and the development of appropriate test instruments to measure how far they have been attained in practice. Attention is no longer confined as it largely has been in the past, to pupils' cognitive achievements; attempts are also made to identify objectives in the affective and psychomotor domains. (1) These, not surprisingly, have so far proved a good deal less easy to assess in purely quantitative terms: and the inevitable crudeness of the data obtained from attitude scales, repertory grids and other measures of non-cognitive behaviour contrasts uneasily with the precise statistical analyses to which such data are then subjected.

But while the main focus of R, D and D projects is on the improvement of educational outputs - and hence their evaluation can reasonably be limited to the measurement of these outputs in terms of improvements in pupil performance - other types of subject-based development are less easy to deal with. As the style of curriculum programmes moves away from the neatly logical paradigms of systems engineering towards less instrumental development procedures, the emphasis in evaluation tends to shift from the "product" - the curriculum 'package' and its direct effect on students' 'terminal behaviour' - to the

1) Krathwohl, D. R. et. al., Taxonomy of Educational Objectives. Handbook 2: Affective Domain, Longmans, London, 1964.

improvement of the learning "process" as a whole and an examination of the effects of this on curriculum innovation.

Development based on the social interaction model may indeed abandon altogether the attempt to pre-specify educational objectives. Thus, for example, the Humanities Curriculum Project in the United Kingdom saw its task primarily as the exploration of hypotheses, formed on the basis of classroom observation and experience, and tested out by using materials specifically designed to help change learning procedures in the directions initially hypothesised as fruitful. Where the expected changes did not occur, the hypotheses themselves had to be modified; and where unexpected side-benefits were noticed, the initial hypotheses were elaborated to take these into account. The evaluation of such a programme obviously had to be based on a more sophisticated design than those previously developed for measuring prespecified performance objectives. The evaluators could no longer focus their attention solely on those aspects of student behaviour which had been defined a priori as subject to improvement: they had to widen their range to include the hitherto unanticipated effects of the changes in the learning process introduced by the development programme. In consequence, the evaluation study for this scheme evolved a new set of procedures, including not only the application of a very wide range of quantitative measures but also the design of an inter-related series of case-studies of individual pupils, teachers and schools participating in the project. (1)

The growing interest of evaluators in case-study techniques may well be accelerated as styles of curriculum development shift towards a problem-solving approach. Once the individual client's needs begin to occupy the centre of the development agency's attention, and the role of such an agency is seen as that of a non-directive but well-informed external consultant, the evaluation programme will be required, in the formative stages, to help in the identification of key learning problems: and in the later, summative, stages it will be expected to assess whether, and how far, these particular problems appear to have been overcome. Given the need for a closer scrutiny of the actual transactions between teachers and pupils in a classroom setting, curriculum evaluation is likely to model its style more closely on that of social anthropology, history, or literary criticism than on the pharmaceutical or agricultural models favoured in the past. The focus will be on the 'learning milieu', and on the progressive clarification and interpretation - in ways intended to illuminate educational understanding - of the different phenomena observed in different milieux. (2)

This process can be exemplified in a number of recent curriculum programmes. One striking instance is provided by 'Project alef' in Frankfurt where - apparently quite independently from similar moves in England and the USA - an evaluation design has been developed on the basis of detailed case-histories of participating teachers and pupils.

In short, styles of curriculum evaluation are changing to accommodate themselves to changes in the development process. As the underlying philosophy of curriculum programmes becomes less mechanistic the evaluators of such programmes find their attention directed to

---

1) See Chapter 2, pages 81 - 84 for a detailed account.

2) See Parlett, M. and D. Hamilton, Evaluation as Illumination, CRES Occasional Paper No. 9, Centre for Research in the Educational Sciences, Edinburgh University, 1972.

qualitative rather than purely quantitative evidence. The drift away from behavioural objectives in development is - by something more fundamental than a mere play on words - parallelled by a drift away from 'scientific objectivity' in evaluation.

This is not to suggest that the quest for quantitative evidence is being, or ought to be, abandoned: such evidence provides an important source of insight for the curriculum developer and an important basis for the decisions of the policy-maker. One major (but surprisingly often neglected) aspect of quantitative evaluation concerns the analysis of costs. Both system-based and subject-based development provide scope for economic investigation, and - particularly since substantial resources are involved - often positively demand it. For no policy-maker in education (or in any other social welfare sector) can afford to ignore financial constraints. However, it is beginning to be recognised that even the soundest quantitative evidence is not on its own sufficient, and provides only one weapon in the widening armoury available to the evaluator. Qualitative evidence can also be well-established and not purely 'subjective'; indeed, if it is obtained in a disciplined and systematic way, it can often be both more revealing and more firmly-based than the many supposedly 'objective' measures which, resting on insecure empirical foundations, owe their main support to an elaborate superstructure of statistical technicians.

External change

One of the lessons of large-scale curriculum change is that it is a disappointingly slow process. Even the initial programmes in the United States during the 1950s, which triggered off the series of subject-based curriculum projects in other countries a decade later, took much longer to reach the stage of publication and dissemination than had originally been predicted. Although their design was based on relatively simple principles and took no account of such complicating factors as traditional attitudes and practices, the process of engineering well-constructed and widely-tested packages of materials turned out to take a good deal longer than the standard three-year period normally adopted by sponsoring agencies as the basis for project grant support. (Incidentally, the impatience of funding bodies - and particularly those deriving their grant revenues from the public purse - to see quick results for their money has been one of the many factors constraining attempts at effective curriculum development. Particularly in the United States - where a high social value is attached to 'instant success' - there has been the constant temptation to pull growing plants up by the roots to see how well they are doing. Federal R and D agencies appear without much forethought to have assumed that contract evaluation techniques devised for national armaments or moonshot programmes could be applied mutatis mutandis to the educational scene. They have therefore shown a disconcertingly naïve tendency to demand indicators of success in achieving objectives long before any relevant evidence could reasonably have been established.)

Fairly straightforward curriculum projects, if they are at all substantial, normally seem to take five or six years, rather than two or three, to reach the stage at which their results can be adopted on any sizeable scale. When allowance has to be made not only for setting up a project team, completing the initial planning, developing trial materials and testing them out in an appropriate sample of trial schools, but

also for revision, re-trial, final writing-up and mass production for publication (which may itself take up to a year in many countries) the length of this time-span is not altogether surprising.

But, of course, the more elaborate the pattern of development becomes, the longer the delay between the initiation of the process and the possibility of its eventual pay-off. In those countries which favour a system-based approach, the process of trying to derive specific guidelines for development from broad statements of desired goals is itself slow, complex and laborious. Where the change of direction is a major one, the need to convince teachers of its validity and to help them to reshape their own classroom traditions also brings its own powerful delaying factors. Indeed, those curriculum developers who recognise the key part which teacher re-education must play if any ambitious programme is to be successfully implemented have begun to talk in terms of decades rather than single years, and even to remark (somewhat pessimistically) that no educational change of any significance can be fully achieved in less than a generation.

Whether or not they are right, it seems clear that any centrally guided development process cannot sensibly be accelerated beyond certain limits, and that those limits are more substantial than had at first been supposed. This slowness of pace creates its own dilemma, for changes in the social climate of many countries seem nowadays extremely rapid, and these changes may well in their turn cast serious doubts on the previous assumptions behind some still ongoing process of curriculum reform. The Nuffield Science programme provides a case in point. When it was first initiated in 1962, few people were yet questioning the value of dividing pupils into groups based on similar levels of academic ability. But by 1968, when the published materials were ready to be taken up in a sizeable number of schools, it was already seen as inadequately designed for the mixed-ability groups favoured by a growing minority of secondary schools organised along comprehensive lines.

The solution of this new problem is likely to take different forms in different countries. Those who accept the general arguments put forward by Donald Schon (whose research into the processes of technological and social innovation in the United States and other advanced industrial nations have led him to advocate a strongly decentralised or 'periphery-periphery' model) (1) will doubtless persist in their efforts to base curricular reform on local rather than national initiatives, building up the work on increasing numbers of pedagogic centres designed to harness and provide an institutional focus for "grassroots" innovation. The tendencies in this direction, as had already been noted, seem particularly marked in Western Germany and reasonably strong in the Netherlands and England and Wales. A preference for localised (and usually small-scale) change, in response to the immediate needs recognised and identified within the client system itself, is related clearly by Schon to the speed and success with which ameliorating solutions can be worked out and applied.

But even some of the countries to whose centralised systems such an approach is totally alien may be prepared to acknowledge the validity of Schon's criticism that large-scale, slow and costly development programmes initiated at the national level inevitably find themselves,

1) Schon, D.A., Beyond the Stable State, Random House, New York, 1971.

at the end of the day, coming up with well-designed solutions to issues which no longer exist. Because the environment in which past problems were first identified is itself subject to rapid and unpredictable shifts of pattern, the difficulties now needing urgent attention may be different in character: and hence the painstakingly developed remedies may already have become redundant by the time they are available to apply.

An acceptance of this reasoning could well be implicit in the Swedish notion of 'rolling reform'. The Swedish NBE has been concerned for some time to develop on-going procedures which can continually enable it to adjust the direction of its innovative activities so as more accurately to reflect significant alterations in the socio-political environment in which the education process is embedded. The attraction of rolling reform was that it suggested that, having laid down the social and political objectives, the process of up-dating and re-interpretation could be turned over to the social scientists on a semi-permanent basis. In practice the limitations of the approach have become more apparent and the former combination of traditional and heuristic techniques continues. The impact of the schools has been more clearly recognised: the more often national educational policies are modified to keep up with external changes, the more unsettled and insecure the schools begin to feel. In consequence there seems to be less emphasis now than in the recent past on rolling reform programmes, and a growing interest on the part of the National Board in examining alternative change models (including the "development blocks" which bring the development process closer to the schools).

One possible compromise between the disadvantages of a carefully-planned but slow-moving and relatively rigid centre-periphery process and the drawbacks of a rapidly-adaptable but usually small-scale, limited and unambitious periphery-periphery activity has already been mentioned in the section on subject-based development above. The attempt to explore periphery-centre interactions has been taken some way in the United Kingdom and the United States, where the business of curriculum development has begun to be institutionalised in a new type of agency.

The Centre for Science Education at Chelsea College, London, to cite one example, has taken responsibility for the periodic revision and updating of the various Nuffield Science Curriculum projects. Although a period of at least five years is allowed to elapse between the initial publication of a given scheme and the preparation of a revised edition (and this means that the interval between first initiating a new project and replacing it with a 'second-generation' version is something of the order of eleven or twelve years), the Centre remains in continuous touch with current ideas and practice, both by encouraging its own permanent staff to undertake periods of classroom teaching and by organising a regular programme of initial and in-service teacher development. Similar United Kingdom centres now exist for modern languages at York University and for the humanities at the University of East Anglia. A number of the American Regional Educational Laboratories were originally designed to fulfill comparable functions, reducing on the one hand the gap between the curriculum developer's ideas and the realities of the teacher classroom practice, and on the other the discrepancy between society's rapidly-changing expectations and the normal leisurely pace of educational reform.

Acceptability

We have so far looked at curriculum change mainly from the point of view of three groups of participants - the administrators and educational politicians who control and shape the national educational system, the development agencies who work to bring about desired improvements in it, and the teachers who occupy its front-line positions. But if it is right to suggest that successful curriculum innovation can only result from a full sense of partnership between the three, it must also be remembered that there are others who have a legitimate claim to such partnership. Unless the results are acceptable to these (too often neglected) partners, serious difficulties may arise in the divergence between education as such and the larger society of which it is a part.

The remaining partners - those who are, in a sense, on the receiving end of the curriculum development process - also fall into three main groups. The first comprises what might be called the consumers of the output of the secondary education process: the universities and other tertiary educational institutions which between them take (or reject) a growing proportion of school leavers, and the general labour market which takes (or rejects) the rest. The balance of power between these two sets of consumers has of course changed markedly in recent years, as one educational system after another has edged away from an elitist tradition towards a wider (and, in the USA, more nearly universal) provision of higher and further education. At one time, vocational requirements virtually dominated the curriculum of all except a small prestigious minority of secondary pupils. But in those societies moving into a 'post-industrial' phase of development, the influence on the curriculum of commercial, manufacturing and professional vested interests has tended to decline. Curious relics still remain, for instance in the Dutch, French and German separatism of 'vocational schools' from the rest of the system; but their anachronistic nature has become increasingly evident (and uncomfortable). For the most part, the secondary curriculum has become influenced more by academic than by vocational considerations.

This must be admitted as to some extent an artificial distinction, since academic education itself has traditionally been geared to the demands of elite vocations such as university teaching, the "learned professions" and the upper ranks of the civil service. But whether or not the distinction is valid, it is certainly one of which pupils and students are still conscious - especially as graduate status is no longer a sufficient qualification for a prestigious job and the difference between academicism and 'preparation for life' has become more obvious than ever before. Perhaps partly in consequence of this, the second and third of the interest groups have tended to exercise a countervailing 'anti-academic' tendency.

The second, which might be loosely designated as society at large (the parliament, the local community, and - a group with a special and direct concern - the parents) has become in recent years more and more critical of the academic slant which the tertiary sector in general, and the university world in particular, has imposed on the secondary curriculum. Those who pay their taxes - and those in central and local government who depend on their votes - are apt to look at the escalating expense of post-secondary education, and at the relatively small contribution which it appears to make to social well-being, and to wonder whether the costs have not begun to outweigh the benefits. When, added to this, the mass media in every country delightedly focus on every sign

of student disruption, the man in the street (and his elected counterpart in politics) begins to ask some disturbing questions about university domination of the secondary curriculum.

The third group comprises the clients of the system - the pupils themselves. Until recently, in many countries, they have remained a silent (and passive) majority. But they, too, are now beginning to make their influence felt. Student action movements, pressing for greater personal autonomy, a wider range of curricular choice, and less rigid forms of control of knowledge, have for some years played a part in Scandinavian (and especially in Finnish) education, and within the last few years have appeared in Britain, France and the Netherlands. In consequence, it is not merely the content of education that has come under critical scrutiny, but its whole form and structure. The old relationships between teachers and students - with the former as sources of both knowledge and personal authority, and the latter as compliant recipients - are unlikely to survive for long under the assault of a supranational, persistent and energetic 'youth culture' drawing its strength from changes in the larger society outside the schools.

The competing influence of these three groups reflects the perennial tension between vocational, social and individual goals in the curriculum. In a given nation at a given time, one such set of goals may predominate over the others: but the configuration of the triangle of forces is constantly changing in response to changes in the broader pattern of social and cultural values.

The influence of the universities on the school curriculum is, as has already been remarked, a powerful and pervasive one. But this observation conceals a curious contradiction. Few of the spokesmen for higher education seem concerned in any country to intervene very directly in discussions about the nature and content of secondary education. Indeed, most university teachers display little interest in the secondary schools, and are sharply divided from them in curricular tradition - in much the same way as the secondary sector is prone to ignore and cut itself off from the primary. So a less direct explanation must be found for the undeniable fact that the schools feel constrained in their activities by the nature and requirements of tertiary education.

One source of constraint, clearly, lies in the training of prospective secondary teachers through academic degree courses, to which reference has already been made. Another source can be identified in the expectations of the teachers themselves. It is not so much that the universities lay down what they require from the schools as that the schools, properly ambitious for their pupils' educational advancement, create their own interpretations of what qualities are the most important. They know, after all, from a long process of trial and error which of their protégés succeed and which fail to surmount the heights of academic success: like primitive tribesmen faced with an inscrutable stone god, they read the signs of approval and disapproval through the correlations of their ceremonial dances with glut and famine.

The employers in their turn usually have little to contribute to the substance of the curricular debate, beyond demanding that the educational process should create, from the common clay at its disposal, a race of widely-read, highly-intelligent, well-disciplined, well-rounded polymaths. Yet the teachers in a number of educational systems show deference to employers no less than to universities in their ready compliance with the public certification of their pupils. Why the secondary schools should feel any obligation to undertake the task of initial selection on behalf of industry, the social services, or institutions of higher

education (who must all be assumed to know their own requirements best) would seem to the dispassionate observer something of a mystery: but the fact remains that a vast degree of effort - amounting perhaps especially in Britain to a major national industry - is expended each year in carefully parcelling school leavers into deceptively neat grades of attainment in the ritual of examination performance.

The explanation, once it is put forward, seems disconcertingly obvious. The countries which attach the greatest importance to pupils' performance in terminal examinations, and go furthest in their attempts to ensure that such examinations are - in the jargon of educational research - both valid and reliable, are precisely those which lack any more direct mechanism of curriculum control. It would seem that public examination requirements provide in these countries the general curricular guidelines which are in other systems laid down by ministerial decree. Both the teachers and the public require an external structure against which to judge the schools and their efforts.

But if the function of external examinations is in reality to provide some socially-acknowledged framework within which curriculum development can be contained, the conclusion must be that the sectors of higher education and employment serve, in systems where curriculum control appears to be decentralised, as the unwitting scapegoats of an exercise which has quite other - though usually unacknowledged - ends in view. The actual power of universities and employers over the schools, then, is much less than is commonly supposed in countries (such as Britain and the Netherlands) where public school-leaving examinations dominate the curriculum, and no greater than is normally allowed in countries (such as Germany and Sweden) where the curriculum is designed without such examinations in view.

The second external group - society at large - is so amorphous that its real power over the curriculum is hard to determine. In a theoretical sense, it has absolute authority in Scandinavian countries, since its collective wishes are supposed to be conveyed through the normal processes of parliamentary democracy. (Examples of the influence of the parents' association in Sweden include the mobilisation of opposition to recent attempts to improve the evaluation process in the upper secondary school, inspired in part, at least, by a sturdy traditionalism.) Curriculum guidelines - once they have been derived from the national plans for social reform - are tested out on representatives of the main social power groups: the unions, the churches, the parents' organisations and the like. In the United States society plays a more direct and local role, in that the school board is often able to interpret in a fairly straightforward way the demands of the immediate community.

But elsewhere the connections are more remote and tenuous. Certain interests may, by long tradition, have an influence disproportionate to their strength in the contemporary social scene - thus, for instance, the churches in the Netherlands have managed so far to preserve their historic position as the main arbiters of the curriculum in all denominational schools. In the United Kingdom curricular authority nominally rests with the schools' governors or managers but these bodies customarily exercise no power of curriculum determination over the head teacher and staff.

In France and Germany the links between the schools and the society they are meant to serve appear even less direct. Although parents (who are normally required to contribute to the cost of textbooks for the upper secondary stage) may, by their protests about the

extra expense they have to incur when new curriculum materials are introduced, exercise a mildly conservative influence, the real curricular power in these countries lies in the national or state ministries of education. The degree of allegiance of the official curriculum committees to their minister of education, and his in turn to the electorate he represents, are not easy to assess; it seems that in educational systems of this general type, education remains a work largely closed to public scrutiny and relatively cut off from direct social concerns.

The third and final group, the pupils who are the intended beneficiaries of the educational process, are - as we have noted - growing in influence over the curriculum. It should be remarked that - except in the few countries where deliberate attempts have been made to educate young people in the exercise of sensible and well-informed curricular choice - the manifestations of 'pupil power' have often appeared so poorly directed as to reinforce the prejudices of the conservative backwoodsmen and disappoint the hopes of the radical progressives. Moreover, internal dissension among pupil groups, and the fierce ideological quarrels of extreme left-wing political factions, have minimised their effectiveness.

Even at the university level the relatively more mature activist students have tended to direct their fire away from the centre of the target (at participation in institutional policy decisions rather than at an improvement in the quality of learning provision, or at the war in Vietnam rather than at a broader range of curricular choice), and to break into competing factions who spend more of their energies in rivalry than in reformation. The somewhat inglorious history of the student movement to date reinforces the contention that the complexities of curriculum development cannot be understood merely by the light of nature of the exercise of native wit, but have to be learned by solid and painstaking effort.

ENVOI

The analysis so far has assumed the continuation of something like the present planned curriculum and the formal and informal control systems designed to ensure that the schools serve the aims of the society which supports them. The extent to which this notion of a control mechanism is elaborated in theories of the curriculum differs from one country to another, according to social and political assumptions and the degree of sophistication brought to the study of curriculum theory.

The instrumental approach to the role and function of the school is, however, under increasing attack from at least two directions. A survey of the state of the art which made no reference to this critical opposition would be open to a charge of complacency.

The first group of radical critics are the de-schoolers. For them, the question to ask is not: "does the curriculum carry the particular body of knowledge, the particular attitudes and values which this society or that society wishes to transmit?", but: "do we want the schools to perform this socially formative role at all?". So long as the argument is about what values the curriculum should convey - whether they be single or plural, overt or covert - it comes within the framework of discussion outlined here, and provides grist to the curriculum developers' mill. If, on the other hand, the professionalisation and institutionalisation of education is held to be inherently oppressive; if the education

system is condemned because it is inextricably enmeshed in the corrupt validation of privilege and certification of élite social groups; if, in short, schools and the idea of a public curriculum are rejected not only as instruments of social control, but even as instruments of social liberation - then curriculum development is subject to the same general anathema as schools and schooling. Curriculum development can, indeed, be condemned as making the schools more sufficiently inimical to the underprivileged.

A second group likely to be opposed to the construction and implementation of a public curriculum - by informal methods no less than by formal - would be those whose libertarian ideals demand a degree of individual decision-making which would leave it effectively to each pupil or student to construct his own curriculum. The concepts of freedom in education espoused, for example, by A. S. Neill and other influential advocates of the free school movement are not compatible with any but the most flimsy and insubstantial notion of the public curriculum.

It is not, however, necessary to accept or reject the theoretical possibility of a school with as many different curricula as there are pupils, nor to dispute about whether it would still be meaningful to call such a collection of individuals, each pursuing a different curriculum, a school. Practical issues arise much nearer home. The spread of informal methods of primary schools already means that there are many schools in England, and in parts of North America, where children largely construct their own curricula - where in cognitive terms the public curriculum has been narrowed to a small core built around the basic skills, which each child supplements and extends by making his own choices from the variety of experiences and learning materials which are available to him; where the integrated day effectively takes some of the frame factors out of the curriculum planners' control; and where the teacher is left to provide informally the structures for learning which are elsewhere formally imposed, in an attempt to facilitate the child's own autonomous exploration of knowledge and experience.

In practice, of course, the informal primary school usually stops short of the extremes advocated by the free-schoolers or the de-schoolers. For reasons which some deplore and others welcome, informality is progressively exchanged for more explicitly structured forms of learning as the secondary stage approaches. There is consequently no point in underlining the potential conflicts which arise from the differing basic assumptions of informal primary education and organised curriculum development. Neither the schools nor the curriculum developers are so theoretically consistent as to prevent the emergence of some working compromise. Good education has often enough survived debatable educational theories.

But the movement towards more diversity and auto-direction is not by any means confined to the primary schools. Discovery methods and independent learning have been adopted as important ingredients in many secondary school curriculum projects. Some, like the Swedish IMU or the American IPI, have used independent learning techniques in strictly programmed forms which have kept divergence and differentiation within strict limits. Others, like the Nuffield Resources for Learning Project, have aimed to provide "bricks" which can be assembled in a variety of ways according to the interests and preference of teachers and learners. Carried a stage further, curriculum development for independent learning could become development which conspires to dissolve the public curriculum.

It is in the inner cities - where secondary schools come under extreme pressure as the environment deteriorates, and an unwilling, poorly-performing adolescent minority present themselves to be taught subjects which neither inspire nor interest them - that the public curriculum is likely to be put to its severest test. One response may manifest itself in a greater willingness to let dissident adolescents devise their own programmes of study, and the setting up of curriculum development projects designed to help them do so. The curriculum would in consequence become still more fragmented: the rationale of curriculum development would have to be modified to take account of new but powerful centrifugal forces in the post-industrial society.

It is, therefore, only right to conclude with a recognition that the present idea of the curriculum itself is under attack, and with it the processes by which it is defined, substantiated, modified, and improved. Whereas curriculum developers have in the past been suspect in many educational quarters as radical innovators and disturbers of the peace, the more serious attack in future may well come from those who dub them reactionary and conservative in their essential function.

But long before the de-schoolers and the extreme individualists come together in educational anarchy, their criticisms will have begun to influence the curriculum development process. One hopeful result could be to make social and political leaders more aware of the responsibilities and limitations of their role in relation to the curriculum, and to prevent the emergence of a technocracy of curriculum planning which - more than anything else - might give the libertarians justification for their fears.

Chapter II

INTERPRETATIVE CASE STUDY OF SELECTED PROJECTS

INTRODUCTION: PURPOSES, FOCUS, AND METHODOLOGY

The purpose of this chapter is to describe and analyse a range of developmental characteristics found in selected curriculum projects. It is based largely on an analysis of twelve projects in seven countries, selected for their potential to illustrate diversity in curriculum planning. Thus, the chapter does not contain a comprehensive survey of curriculum projects, but rather a series of case studies.

The chapter focuses on both the origins of projects and the ways in which they have been developed. Project origins are described and related to social forces and particularly significant events and constraints. In the discussion of project development, reference is made to ideas central to the project, to evaluation, and to teacher involvement. Wherever possible, project characteristics are related to the overall social and/or curricular content and to the various forms of governmental control over curricular matters.

Curriculum development, at any level and however amateurish, is essentially a response to some perceived need for a change in the educational programme. Social sanction is granted to some individual or group to test assumptions about how to change institutions, including schools and to recommend changes in subject content, in skills, attitudes and learner behaviour.

This inquiry was begun with the view that an adequate account of curriculum development must include a discussion of social context, idea development, and actual classroom use. This conception of curriculum development is very broad as it includes both curriculum content and instruction. These terms are often separated in the literature and there are institutional divisions in some schools of education and in professional educational organisations which recognize the distinction. (1) An important reason for not making this distinction, however, is found in the increasingly significant role of the teacher as the link between the project as conceived by its developers and the actual classroom situation. The evidence suggests that teachers significantly modify programme content and goals when developers relinquish guidance and control over innovations.

1) This point is more fully discussed in Chapter I.

The interpretations in this chapter are based largely upon data obtained through the use of an open-ended interview questionnaire. This questionnaire, included in the appendix, was developed by the authors of this chapter and interviews were conducted and tape-recorded by members of the handbook team located in different countries. Thus direct contact was limited. Interviews were conducted with project directors and/or their immediate staff. This information was augmented by information found in printed materials developed by the project.

The interview questionnaire has three components. These are origins of the project, project characteristics, and project organisation. It will be noted that interviewers were not requested to rigidly adhere to the questionnaire. This permitted the interviewer to be flexible and to follow up interesting points wherever possible. The twelve projects are individually described below.

Project Descriptions:

LEARNING OBJECTIVES FOR VOCATIONAL SCHOOLS: AUSTRIA

Sponsor:	Federal Ministry of Education and Arts
Funding:	Open
Duration:	1971 - continuing
Staff:	2 part-time civil servants of the Ministry of Education as directors and managers, 3 educational advisers, 1 project planner/coordinator who also functions as an adviser, 37 secondary school teachers representing technical, commercial, home economics and social work vocational schools in six different subjects.
Age Level:	15-16 years
Materials:	Learning objectives classified in general and specific subject areas illustrated by tasks to be solved by students, in Mathematics, English, Electronic Data Processing, Machine shop, Accounting, Book-keeping.

ORIGINS:

The project represents system-based curriculum development and is the first one ever done in Austria. The Ministry of Education and Arts has responsibility and decides upon the Lehrplan of the schools, taking into account other political and societal groups. Concerns about updating curriculum content, coherence, relevance and teachability of course content in vocational secondary schools, as well as general educational reform tendencies in the Ministry on the one hand, and discussions of two Ministry officials with the later project planner on the other, resulted in a proposal for the project. This consisted of the development of a set of learning objectives in six subjects for the various secondary vocational schools. Teachers selected by the Ministry and working under its formal control and funding were to have a major role in the development process, as teacher-based development was considered to be a cheaper and more reality-oriented alternative to a university-based team.

DEVELOPMENT:

A group of twelve mathematics teachers, including several textbook writers, held an introductory seminar with the project planner to elaborate learning objectives for courses in the three types of schools they represented. They began by defining general and specific content areas and examples for specific objectives. The task was divided and assigned to the individual teachers who worked in three teams on the basis of the type of school they represented. The individual work was brought back into the meetings of the teams where it was discussed, revised and integrated. The team meetings had to be approved by the Ministry in every single case and were attended by the adviser (the project planner), who had influence through conceptual inputs but no formal control. The influence of the Ministry on the product is only exerted through the managers, who are officials; one of them is also a textbook writer.

An important although not binding data source for the teams was the official Lehrplan - a document which contains an overall formulation of goals and subject matter listings. Guided by several other data sources (textbooks, scientific literature in their field, etc.) the teachers had to rely on their implicit conception of their field, subjective decisions about which contents are desirable, and their image of desired pupil behaviour derived from their own teaching or textbook writing experience.

The experimental version for mathematics was published on leaflets by the Ministry and distributed in June, 1972, to all mathematics teachers in schools where the corresponding courses are taught. At that time evaluation questionnaires were still being developed and there was no obligation by teachers to use the product or to feed back information to the central team.

So far the only communication of the central team to teachers was provided in a series of short school-based introductory seminars which were held throughout Austria and which reached about 2/3 of all teachers concerned. In 1973 a questionnaire was sent to all teachers to find out about the extent of usage of the materials, to get a first overall estimation of usefulness and to identify teachers who would co-operate more closely with the central teams to evaluate the materials. The results of this survey were quite encouraging. About 70 teachers (of 300) agreed to co-operate in formative evaluation.

The project teams asked experimental teachers to give feedback on the following questions regarding the first experimental version of the mathematics objectives: Are the objectives expressed in a clear, consistent way? Do these objectives correspond with the overall goal of the type of school you are teaching in? Are irrelevant objectives included or important ones lacking? Are there objectives which cannot be realized because of present instructional or educational difficulties? How much time is needed? Are these same objectives relevant for other types of schools? Can you give alternative objectives or sequences?

After the first experimental version of mathematics objectives had been completed, 7 new teacher teams and 2 new advisers were selected for the other subjects, using a similar method of work. These teams produced their first experimental versions in 1973. Their products have also been made available to all teachers and introductory seminars were held.

The fate of the final version again depends upon decisions that will be made in the Ministry. The project planner/co-ordinator would like to enlarge the project with a second stage consisting of test items for student evaluation and a third stage of teacher/student materials development.

CONCEPTUAL SKILLS PROGRAMME: CANADA

Sponsor:	Ontario Institute for Studies in Education.
Funding:	$200,000
Duration:	1967-73
Staff:	2 academics (language development and psychology) 2 research assistants plus part-time assistants
Age level:	Pre-school, Grade 1
Materials:	A kit of inexpensive materials consisting of transparencies and worksheets for children and teacher guides for 150 twenty-minute lessons arranged in four levels of increasing complexity. In addition, two films accompanied by a training package have been developed for use by teacher-trainers and programme consultants for use in training teachers in utilisation of the kit.

ORIGINS:

Recognition of a need for work on an early-chilhood education programme by the Institute led to the employment of two academics trained and experienced in the field. The project had close connection and interaction in classrooms from its inception, beginning with a half day experimental kindergarten programme with a three-pronged attack on reading, numbers, and language development in two demonstration classes. The work in the language development area led to the conceptualisation of the project, with its focus on the development of concepts and thinking skills in young children.

Although funding was on a year to year basis, it was essentially dependent upon a report of progress and further plans. Like so many curriculum development projects, the project was not completely planned from the initial stages, but rather evolved as a result of the experience of the project staff and the trial work in classrooms. This flexibility permitted the staff the freedom to develop their ideas as they thought best.

DEVELOPMENT:

As a result of the experience with the two experimental KG classes, the principal investigators developed a set of materials intended to foster thinking skills in children entering school. It was not concerned as much with language development or the ability of the children to express themselves completely in grammatical sentences, as with the ability to communicate ideas accurately, to use concepts effectively in thinking, and to see relationships between concepts. The programme was never intended as a complete KG programme, but rather as organised instruction (20:1) for short periods of time on each day for use in classrooms with typical teacher-pupil ratios. It is based on the conviction that young children can acquire concepts by means of direct instruction and verbal learning, which contradicts, but does not necessarily conflict with the more popular philosophy that a permissive, free-experience, supportive climate is the optimal environment for school beginners. The developer s view was that an organised, instructional sequence designed to provide for individual differences can be used in open as well as in traditional classrooms.

The concepts incorporated in the programme are simple ones taken from the concrete world the children experience. They include identifying objects, size (big, small, etc.), location (on, in, above, etc.), colour, shapes, parts of objects, actions (sit, stand, point, etc.) uses, and number. In addition to identification through naming, responding, colouring, placing, and drawing, children are expected to communicate their understanding of concepts by following and giving instructions, asking questions, describing, and finally at the most complex level, to see such relationships as similarities and differences, incongruities, consequences, and so forth.

EVALUATION:

The close working relationships between project staff and classroom teachers produced a situation where ready formative evaluation was immediately accessible. Two detailed evaluation studies were carried out, the first involving 20 matched experimental and comparison classrooms involving 480 children ranging from language-disadvantaged children to middle-class native speakers of English. Teachers in comparison classes followed their regular programme, while experimental teachers used the Conceptual Skills programme, following a one-month training programme. Experimental classes performed significantly better on concept development, but not on gains in IQ or creativity. Results were corroborated in a second study on a different population.

DISSEMINATION:

Three approaches to dissemination were employed. After this successful field-testing of the programme, a research assistant who was an experienced teacher was assigned full-time for one year to hold workshops for interested teachers and school boards, with some

follow-up contact. As successful as this was from a qualitative viewpoint, there are limitations on the quantitative side, unless one can afford one or more staff members assigned permanently to such work. Nevertheless, this teacher training experience provided the basis for the development of two films, showing the programme being used in classrooms, accompanied by an instructional guide for trainers. The third dissemination approach was through a network of classrooms associated with one of the Institute's Field Centres active in working with schools on programme development.

INDIAN STUDIES FILE: CANADA

Sponsors:	Ontario Curriculum Institute Ontario Institute for Studies in Education Department of Indian Affairs (federal) Ministries of Education and Social Welfare (provincial)
Funding:	$260,000
Duration:	1965-1973
Staff:	With the exception of a full-time research assistant and an administrative assistant who were employed full-time for two years, all participating staff were part-time. The committee responsible for the project included 2 anthropologists, 2 media specialists, 4 teachers, and 3 evaluators. Additional consultants were utilized, media production work was subcontracted, and close work with 15 teachers in trial classrooms occurred for short periods.
Age Level:	12-18 years, Intermediate and Secondary schools.
Materials:	A multi-media package including films, filmstrips, slides, sketches, recordings, posters, maps, documents, and varied print materials, as well as a teacher's handbook, sold at production cost of $300 to schools. The contents include historical and contemporary information about the culture of the Blackfoot Indians, the cultural changes induced by the horse and modern technology, and social and political relationships with the white man. The kit is not completely self-contained, but open-ended, permitting students to study topics of interest by means of a discovery procedure.

ORIGINS:

Tracing the origins of the Indian Studies File is complicated by the fact that its development mirrors the evolution of the educational reform movement in Ontario. The original sponsor of the project was the Ontario Curriculum Institute, a collaborative undertaking by interested schools organisations to encourage development and share information among members. Four committees were created in Science, Mathematics, Social Studies, and English. The chairmanship of the

Social Studies section fell to a retired secondary school teacher who had pioneered several innovations in Ontario education. She wanted to develop materials which utilized an inquiry method in the study of native people. She gathered a group of interested educators, who at first contributed their services free of charge and subsequently were paid on a per diem basis. The choice of the Blackfoot Indian as the particular group to be studied was a consequence of the group's including an anthropologist who was a specialist in Blackfoot culture. The Blackfoot had maintained themselves as a cohesive group, although their culture had undergone two dramatic shifts within 150 years, from the time they discovered and adopted the horse to the time of the arrival of the "Iron Horse" of the white man - the railroad. The work of the Ontario Curriculum Institute was modestly funded by the province and augmented by a substantial grant from the Ford Foundation. When the Ontario Institute for Studies in Education was created, the OCI was incorporated into it, and with it the Blackfoot project, with certain ensuing conflicts regarding authority over the project. Efforts to infuse academics from OISE into the project largely failed. The evolving nature of the project meant that no clear budget projection existed, necessitating the solicitation of funds from varied sources to complete the project.

DEVELOPMENT:

The general purpose of the project was to have students examine the problems faced by the Blackfoot in attempting to maintain their own culture while adapting to changes from another culture. Students should hopefully discover and understand what gave cohesion and unity to the Blackfoot and develop an awareness of how their culture differs from others.

A set of concepts related to culture provided guidelines to the development and selection of materials, but no set of specific objectives was ever identified, nor were criteria for what should be included. There was a tendency to include any item of current debate on Indian matters. For example, when the Canadian government issued a White Paper on Indian policy, and the Indians responded with a Red Paper, it was decided that both papers should be included in the kit as well as recordings of the interchange between Indian representatives and the Prime Minister.

The materials in the kit were tried with Blackfoot children, and the contents reviewed by consultants from the tribe, and modified accordingly. This provided one type of formative evaluation. External experts were utilized to develop materials or critically review them, such as the preparation of maps of the area in which the Blackfoot live, or the development of materials regarding their language.

A prototype version of the File was tested in fifteen Indian and white schools, selected for their diversity. A three-day training session was provided for the teachers, as well as a consulting service to answer questions which arose in the process of classroom trials. An observation and review of their experience was also carried out. This led to minor modifications of the contents of the kit, and major changes in the teacher guide.

EVALUATION AND DISSEMINATION:

Evaluation was carried out in the trial classes and involved a study of the frequency of usage and user attitudes towards the various materials in the File. In general, the films, slides and printed materials (legends, stories, family life, politics) were best received, while statistical information about the Indians, maps, recordings, and posters were used by 20 per cent or less of the students. 85 per cent of the contents were positively rated by students. Concept development and attitude changes occurring as a result of use of the File were also investigated, with moderately positive results. No final report was available at this time however, due to the death of the chairman and depletion of funds.

Dissemination was made possible by a supplementary grant from the Ministry of Education which provided a full-time field representative (a member of the committee qualified in social studies and teaching by the inquiry method). He conducted a series of workshops throughout the province for teachers using the kit, and provided consultation as they worked with the materials. Participation in a workshop was mandatory with purchase of a kit. Dissemination is in the final phase with leadership training workshops planned for personnel responsible for future use of the materials.

Use of the File requires a change in teaching practice and in time schedules. The inquiry approach adopted does not fit readily into a daily single-period schedule. Given the range of topics or projects which can emerge from the kit some integration with other activities is indicated. Younger students develop more concrete and descriptive projects, older ones develop more abstract and complex projects. Given repeated use of the kit, even with the cost of replacing damaged or lost materials, the cost per hour of instruction is reasonable. However, in a period of declining school budgets, the initial costs plus the policy of participation in a training workshop in order to purchase, restricts the volume of distribution to the number of workshops the single disseminator is able to provide. A different procedure for teacher-training which permits more widespread adoption could reduce instructional costs per student to within reasonable bounds.

BIOLOGY AT LOWER SECONDARY LEVEL - FRANCE

Sponsor:	National Institute of Educational Research and Documentation, Ministry of Education - Inspector General of Natural Sciences
Funding:	No special allocation
Duration:	1970-1974
Staff:	Central team of 4 from National Institute (academic, teacher, psychologist, secretary) working half-time with 50 teachers from seventeen collaborating schools (equivalent to 6 full-time teachers)
Age Level:	12-13 years Secondary schools and Lycées
Materials:	Guidelines, technical reports, and bulletins for teachers engaged in experimental programme of teaching biology at lower secondary level.

ORIGINS:

As a result of new, official instructions approved by the Ministry of Education, the project was undertaken to study their application to the French educational system. The particular project was part of a larger work of pedagogical analysis initiated by the Inspector General of Natural Sciences, and represents an effort to mount a more comprehensive attack upon educational problems by combining the efforts of research specialists and teachers. The research is carried out in seventeen Colleges of Secondary Education engaged in studies of organisation and individualization of instruction. The overall purpose is to succeed in providing greater individualization of instruction with a view to reducing grade repeating and early pupil leaving from school.

This particular project was concerned with analysing obstacles to the development of scientific thinking and attitudes, with developing a progression related to maturation of children, with studying problems posed by group work relative to individual development, and with the question of how to reconcile individual freedom of choice with the need to develop a coherent body of scientific concepts.

To these ends, the project:

1) studied different modes of grouping students,

2) studied the pedagogical differences in the groups created, and

3) developed measures for testing the programme.

DEVELOPMENT:

The organisation of the project was dictated by the existence of working relationships with the seventeen Colleges involved. This made it convenient to superimpose the specific objectives of the project, research on the creation of a scientific attitude through an experimental approach in biology, and the reduction of happenstance inequities through homogeneous grouping. The Colleges, having the freedom to try different solutions in accommodating to differences in the background of students, experimented with variations in instruction and groupings adapted to ability levels. For example, the interaction between students of an intellectual and of a practical bent in heterogeneous groups in one setting was studied. Others were based on interest groupings of pupils, another used groups created on the basis of ability in mathematics to study the relationship between the two disciplines. The primary concern was research within a range of average to superior ability students. Slow learners (moins doués) were not included in the studies.

The heterogeneity of the variables being researched and the various approaches attempted did not cause too many difficulties for the staff because of their conviction (supported by the 1968 authorisation) that scientific training from the beginning is an important element in the general and civic education needed by modern man. This orientation it was felt, provided the best opportunities for individual development and, in the last analysis, for reduction of inequalities. This convergence of intellectual and social objectives, supported by the traditions of the French university, meant that the project director, and moreover the experimenters, were free to do as they wished within the limits of the regulation, itself very liberal. Thus teachers and students had a choice of the projects and activities on which they would work, as well as the manner, i.e. individually or in groups.

The major research problem was to learn how to balance this freedom in the pedagogic process with an objective evaluation of the effectiveness of instruction. Another important concern was to study the innovative process and to discover criteria which affected the success of the innovation. The result was an action-research model whereby the accumulating experience not only modifies or makes more explicit the project objectives but also determines the nature of the data to be gathered for purposes of evaluation. As a result, one aim was to aid teachers in expressing instructional objectives in terms of behaviours and competencies, to determine evaluation procedures which would indicate the extent to which these objectives were achieved, and to develop organisational structures which provided increasing autonomy and self-direction for students. Needless to say, all of this involved changing teacher attitudes vis-à-vis their instruction of students.

The evolving objectives are not in any way specific to biology: all disciplines are capable of producing similar competencies, particularly in encouraging the development of formal thinking ability and the objective attitudes essential to the average citizen. In effect, one prescribes the conditions which control not only all disciplines, but also the general organisation of the school.

EVALUATION AND DISSEMINATION:

The pattern of work was for the central team to develop hypotheses, to organise arrangements for testing them, to provide the collaborating teachers with the necessary technical information and assistance, to work with them in testing the procedures, and then to revise in light of given experience. Each school had a team-leader who gave three hours per week to the project and an hour per week to cooperating teachers. Three-day conferences were held twice annually, each attended by half of the teachers, for purposes of coordinating and consolidating the work.

The documents available provide no further data on dissemination or evaluation, although quite obviously, given the range of the work, uniform data from all experimental conditions cannot be expected. The work in biology, originally intended for the first year of the secondary school, has now been extended into the second year, and research is being conducted to explore how it can be integrated with other disciplines.

PHYSICAL EDUCATION AND SPORT: FRANCE

Sponsors:	Ministry of Education/Secretariat of Youth, Sports, Leisure
Funding:	Within allocated budgets of Ministry of Education - no separate funding
Duration:	December 1971 to June 1972
Staff:	National Commission of 20 taken from two sponsoring Ministries
Age Level:	6 - 11/12 years, Primary school children, general primary teachers
Materials:	Recommended programme for physical education and sport in elementary schools

ORIGINS:

The introduction of new official instructions for EPS in primary education is not, strictly speaking a "project", but rather a typical example of educational innovation in the present French manner.

To understand the idea behind this operation, the importance of the early planners who prepared the ground and are cutting what was obviously a bold plan down to size must be appreciated.

Without going too far back, it can be said that since 1966 a team (some of which are now members of the Commission) has been working:

- in association with the purely athletic institutions (Haut Comité des Sports, USEP), or
- with the Commissions Générales de Rénovation Pédagogique to define the place and role of EPS in primary school reform. This could be the broad outline of a general doctrine.

On the other hand, a large number of local initiatives has led to the finalisation of detailed instructions (as part of the current general curricula) and shown what could be expected from a systematic programme for the in-service training of teachers.

DEVELOPMENT:

The work of a National Commission instructed by the two Ministries to prepare a report on the pattern of EPS in primary education began the development phase of the project.

The Commission consisted of twenty persons taken from the two Ministries on a roughly fifty-fifty basis. It met for two days twice a month between December 1971 and April 1972, and during that time its members went on with their normal duties.

The Commission's membership was significant. It naturally included experts in the discipline, inspectors, teachers from the Ecole Normale, departmental educational advisers on EPS as well as three sports officials (specialising in matters of infrastructure and the linking of physical education with all forms of extra-curricular sport) and a doctor. But it also included non-specialist education officers, primary teachers, inspectors at different levels and even, as Chairman, an Inspecteur-Général de l'Instruction Publique, which clearly showed the desire to consider EPS reform as an aspect of the overall reform of primary education. Lastly, the USEP (Union Sportive de l'Enseignement Primaire), a school sports association which is the outcome of a large-scale private movement for extra-curricular education and a properly qualified auxiliary to public education, was officially represented (as well as unofficially because of the composition of the Commission). The USEP's presence was intended to recall that the school's educational activities, particularly as regards sport, should be coordinated with those open to school children in their spare time.

The Commission's work, therefore, was concerned with two types of problem:

- the reform of a system of primary education, mainly criticised for not doing enough to remedy the social and cultural disadvantages which prevent a great many children from underprivileged homes from reaching, in the time allowed, the required standard for entry into secondary education;
- how to give fresh impetus in school to sports, which are not sufficiently widespread and produce too few champions.

The Commission undertook to show that these were not two independent problems, but two closely linke ' aspects of one and the same question, that of an educational system adapted to the biological, psychological and sociological conditions of modern life and man's psychometric unity which is particularly sensitive during a child's development. It did not shut its eyes to the difficulties facing it because of the existence of a firm dualist tradition, reinforced by the division of responsibility between the two Ministries, the teaching staff's psychological and technical unpreparedness, and the inadequacy of the equipment.

On the other hand, it could rely on a perceptible change in opinion, particularly among parents, and on the psychological shock produced by the introduction of the education "Tiers Temps" (the organised day) - a reorganisation of the primary school week with six hours devoted weekly to EPS, fifteen to French and mathematics and six to other subjects (elementary science, knowledge of the community, aesthetics and ethics) grouped under the heading "subjects stimulating awareness".

The Government has allowed the Commission complete intellectual freedom; the directives given to it by the Minister of Education were those proposed by its Chairman. The work of the Commission is, of course, only a small part of a much more extensive operation.

EVALUATION:

From the beginning of 1969 a whole fund of study and experience, both local and general was available which then had to be evaluated and systematically put into practice. This fund of knowledge was also enriched by the fact that no detailed instructions were immediately published after the 1969 reform of the timetable. Rather, local initiatives developed on the basis of a national gathering of departmental education advisers which led to the publication of a provisional brochure and instructions very briefly defining the guidelines to be followed. The Commission undertook to work systematically with the local leaders, who were consulted by questionnaires. It considered that its task was to provide them with a coherent and flexible framework in theory, and, as far as possible, to distinguish scientific knowledge (or at least the rational approach) from what is, and can only be, an act of faith and to allow each team to continue with its original work assessing it in relation to objective frames of reference.

ELEMENTARY MATHS "alef": GERMANY

Sponsors:	Max Traeger Stiftung, Stiftung Volkswagenwerk
Funding:	DM 1,050,000
Duration:	1966-1973
Staff:	Project director, 5-8 people in the development team, 2-6 members in the evaluation team; working in close cooperation with a total of 52 teachers over 5 years in development work and applying the materials in their classrooms.
Age level:	6-10 years, Elementary Schools
Materials:	Teachers' books and students' working sheets and games for mathematics learning, and arithmetic and related operations.

ORIGINS:

The project originated in an invitation by the Max Traeger Foundation to the project director to start curriculum development in modern mathematics. He was interested in independent creative work in this field, and was furthermore stimulated to undertake research and development work by an exchange of ideas with like-minded colleagues in England and the United States.

German teachers believed arithmetic instruction in elementary school to be especially in need of reform and lagging behind other countries which had already begun improving elementary teaching. The director's contacts with Americans engaged in educational development provided added stimulus during the first stages of the project and helped to increase his sensitivity to certain somewhat unexpected findings, which led the staff to pursue previously unanticipated directions. The results of the formative evaluation, the ideas and discussions of staff and teachers and the outside contacts produced an extensive change in the underlying theoretical formulations, in the educational goals, and the shape and content of materials; all affecting the form of teacher and student involvement in the course programme. No constraints whatsoever came from the funding agencies either before or during the project.

DEVELOPMENT:

The project was located at the University of Frankfurt. The director, a professor of mathematics education, was responsible for direction, budgets and representation to the Foundations. The staff concerned with developing materials was mainly mathematicians, with a smaller group (partly psychologists) responsible for summative evaluation.

The development group from the beginning worked in close co-operation with the teachers of the experimental classes, where the materials and ideas were tested thoroughly. Formative evaluation, done through informal and clinical methods such as case studies, observations, and interviews as well as testing, was the responsibility of a particular central team member, but was carried out with strong involvement of the ten experimental teachers who worked closely together with all members of the development team. The teachers used the materials in their classes, (grades 1-4) participating partly in development work themselves or influencing it through their findings and their feedback. Teachers and central staff met twice a week, in addition to one or two week-long workshops per year during the experimental phase.

In 1968, one year after the experimental group had started teaching, another 42 teachers joined to teach the course for a four-year testing period. The initial difficulty of relating to the increased numbers gradually improved as the team learned more about how to involve a greater number of participants in their research. The participation of teachers in material development was found to increase their motivation to teach the course, and the best results were consistently obtained from their classes.

Although the main ideas came initially from the project director, the development team all contributed; and the project was shaped in a spiral manner by member inputs and teaching results. The original orientation of the course programme was towards compensatory education for exceptional children, the disadvantaged, the slow learners and the gifted. This was accomplished through open ended games and problems in concept formation, where differential achievement was possible. The use of thinking games and other such activities related to cognitive development stems mainly from the director's interest in and hypotheses about the relationship between non-verbal thinking and language development. This resulted in a course programme which stressed verbalization as a step following the prior development of mathematical reasoning through active and iconic performance of the corresponding operations by the children. The tasks provided in the teacher's book and pupils' work sheets use iconic representation, especially in the first year, while actual calculation begins only in the second year. At the end of the fourth year, the children have the same skill in routine calculation as those taught in the traditional manner, who start with counting and calculating in their first year. Children moving into traditional programmes after having started with "alef" catch up easily with the traditional methods, but the reverse is not the case. "Alef" puts more stress on understanding the concepts and operations underlying arithmetic, such as set theory, geometry and relations, than on the mechanics of addition.

Another special feature of "alef" is its reliance on group work. During the experimental teaching phase it became evident that strong noncognitive outcomes occurred in the social and affective domain;

apparently an effect of the group work. This generated more interest about attitudes and social competence, and the team began to view their programme not only in cognitive terms but also in terms of personal growth and related individual and social educational goals. The type of materials used and the activities performed by the children in the programme seemed to stimulate their curiosity with the result that their total approach towards problem-solving became more "intelligent". Not unimportant, especially in German schools, is that children like the "alef" method and have fun using it. They show an interest in maths, which all too often is destroyed in traditional programmes by their boring, routine activities.

EVALUATION AND DISSEMINATION:

The summative evaluation followed a preplanned design and was a large-scale operation in which 3,000 pupils (1,500 in the experimental group and 1,500 in control groups) participated. The testing was done before, in between, and after each year of the four-year course. The results were analysed along social class lines and show relatively larger gains in test scores in the lower and upper social classes. The tests included: Piaget tasks and intelligence tests, various tests related to maths and geometry, methods reflecting cognitive style, attitude tests, questionnaires and interviews with parents and teachers, language tests for understanding and reproduction, and a structural analysis of the verbal behaviour of children occurring during task performance.

Though not every single test instrument has shown increased scores, there were enough significant positive results to support the claim that "alef" is probably superior to traditional teaching. Not only does it achieve the same skills in calculation in a shorter time, but in addition, it generates motivation to learn, leads to enrichment and precision of language, influences social learning and competence and develops thinking power.

Dissemination of "alef" and the introduction of materials into the schools depends upon the decision of the Ministries of Education in each of the German Laender. Currently, more than 50,000 pupils are using the programme.

RELIGIOUS SOCIALISATION OF SWEDISH CHILDREN: SWEDEN

Sponsor:	National Board of Education
Funding:	Kr 900,000
Duration:	1967-1973
Staff:	4 full-time staff and many teachers and research students, Department of Educational and Psychological Research, University of Stockholm.
Age Level:	10-12 years
Materials:	Various programmes to discover what children think about. One sample project consisted of nine slides of children of students' own age, each accompanied by a short unfinished story. Programme developed to look at religion from child's viewpoint; to discuss questions of religion and ethics at child's level of conceptualisation. All the pictures were neutral projective, TAT types. The students were asked to look at the pictures, to attempt to put themselves in the role of each child presented and then to complete the short story by telling about what the boy or girl in each picture was thinking or feeling. Except for the last text which mentioned God, Jesus and religion, they did not lead the subject with respect to the content of such thoughts. The answers from the children dealt with life and death, responsibility and guilt, suffering and compassion, fear and security, loneliness and fellowship.

ORIGINS:

The project had its origins in discussions occurring during the 1960s which culminated in the most recent school reform. As a part of the school reform the programmes developed became part of the national syllabus adopted by parliament in 1969.

Religion is an obligatory subject at all levels of the Swedish comprehensive school system. It is one of the subjects grouped under the heading: orientation studies, which includes civics, history, geography, and natural sciences. These subjects are taught together through projects. Their purpose is to show how people, on the basis of experience gained from their geographical, social and cultural environment, relate

to their surroundings and to life itself and how they try to find answers concerning the origin, the meaning, and the goal of life and the universe. Students study how geographical, social, economic, political and religious factors have influenced mankind. The aim is to show that religion plays an important role in society and individual lives.

On the topic: Goals for the Subject of Religion, the Swedish National Syllabus reads:

> Instruction shall be broadminded and objective in such a way that factual knowledge concerning different religious beliefs and philosophies is presented without pressure being exerted on the students to embrace one particular ethic. This instruction should be carried out in such a way that the students understand the seriousness and importance of questions with which they are dealing. It should enhance their personal development and help bring about an understanding of the value of a personal ethic. The students should also gain understanding and respect for different points of view in questions of ethics and religion. It is thought that this approach is a good way for the students to find a philosophy that can be their own. It is for the students, not the school, to take a stand.

DEVELOPMENT:

The chief task of the project was to investigate and analyse student predispositions toward instruction in religion as well as to develop and test methods for such instruction.

Applied research was carried out in three major areas; analysis, method development, and evaluation, with some thirty pieces of research work completed to date, as reflected in the following sample:

Analysis

Inventories of research on religious education

- Review of research
- Children's beliefs and teenagers'doubts
- Pupils views of religious education

The educational setting for teaching religion

- Interest in religion in grades 1-6
- Difficulties for teachers in religious education
- Readability of different translations of New Testament
- Teaching methods in religion and orientation subjects

Objectives

- Analysis of objectives
- Comments from youth organisation
- Discussion with public-opinion leaders and theologians

Interests, Concept Formation, and Readiness

- What do children think about
- Children and religious symbols
- Readiness and the teaching of religion

Development of Teaching Methods

The teaching of religion - methodological aspects
Plans and experimental projects for religious education

Evaluation

Formative and summative evaluation of projects in religious education
Evaluation of religious education

The result of the studies was the development and testing of a number of projects which attempted to correlate the questions which this age-level child had with the objectives of the national syllabus. Projects were open-ended, student-centred, and integrated across orientation subjects. For example, one entire project concerns, "How did everything begin?" Children study origins in plant life, human life, myths of creation, different concepts of God, that man himself is a creator. Texts, music, and art, are used as means for children to express their understanding and thinking of both scientific and religious answers to the question. Various religious views and beliefs are explored.

EVALUATION:

The focus in evaluation has been more on attitude development than on factual learning. An Osgood type scale, 35 attitude items and 5 open-minded questions were given to the students who had been studying the UMRe programmes. The teachers were interviewed and they also evaluated the programmes by means of a questionnaire. The projects received very positive evaluations from both teachers and students. About 85-95 per cent of both gave favourable answers to the attitude questions. There were no big differences between the best and the poorest students in the attitudes expressed.

GEOGRAPHY 14-18: UNITED KINGDOM

Sponsors:	Schools Council University of Bristol
Funding:	£ 74,328
Duration:	Development 1967-1970 Funding for 1970-1974
Staff:	Project director, assistant director, project member, secretary
Age Level:	Secondary school generalist/specialist geography students; teachers of geography
Materials:	Materials are not a complete package. Samples are produced by the control team and by teachers in the pilot schools. Materials take various forms and they vary in quantity and quality depending on the particular working relationships with the particular school. They are not seen as definitive, but rather, as items in a free choice system for teachers.

ORIGINS:

The project resulted primarily from the dissatisfactions of geography teachers over discrepancies between the new university approaches to the study of geography and the more traditional approaches to the teaching of geography in the schools. This was especially felt by the director of the project, who was in teacher training and thus in a position to see this discrepancy.

During the period from 1964 to 1967 there were a number of locally based teacher initiatives in parts of the United Kingdom which culminated in a conference held in 1967. The conference proposed a curriculum development project which was subsequently put before the Schools Council and approved and budgeted in 1969. An important factor in the origins of this project was the intervention of an inspector at the conference in support of a project proposal. It is not at all common in England or Wales for inspectors to play this kind of role, and his support and encouragement led the drive to develop and follow through with a curriculum proposal.

DEVELOPMENT:

In 1970, a research fellow was appointed to develop a project strategy. His work included an appraisal of strategies developed in earlier English and American projects, including the American High School Geography Project. Following the first appointment to the project, a period of literature survey and international travel to study other projects was undertaken. This work led to a report on strategy in 1970, which yielded a two-year funding phase. During the first six months of this phase the project team members visited schools and met teachers, establishing the working basis for a programme of development in which classroom teachers were to play a major part.

The existence of a system of external examinations was a major constraint in the development of this project as many teachers felt that the exams inhibited new approaches in the schools. The project team agreed, therefore, that new materials alone in geography would be insufficient and that the project would need to undertake the development and reconstruction of the examination system itself. The new exam however, was still to be geared towards the geography specialist rather than towards the general student.

It was decided that the first priority was to deal with the examination system since it would be impossible to gain widespread teacher acceptance of new approaches without first insuring that the public examinations would reflect the change. One of the eight public examination boards was approached and work was begun with pilot schools on experimental examination materials. This was a complex activity since all eight examination boards must approve changes sponsored by any one board. The procedure followed was for the Schools Council to propose a change in the examination, circulate the proposal to the eight boards and then arrange a meeting called by the sponsoring board. In this way the project staff and the representatives from the Schools Council met with the boards and were able to directly influence the format of the new examination.

The examination for advanced level in the English General Certificate of Education is based on a two-year syllabus. Because of the time schedule of the project and limited resources it was necessary to shorten the early development stages and there was, in fact, no real pilot study. The pilot study was part of the actual development work itself.

In this project, ideas about strategy, content and teaching methods are primarily those of the project director and the associate director, but with a small staff there is very little division of labour along these lines, and all participants, including teachers in pilot schools, are involved in the development and implementation of ideas.

Teachers are very much involved both in the development of the new examinations and in the trial of materials. During the pilot study a method of working with teachers in ten schools was established that involved the evaluation of examination systems, the reorganisation of the examination system and the development of new materials. The considerable attention given to examination problems was justified by the belief that what teachers regard as important knowledge is strongly conditioned by the requirements of public examinations. Yet, it was also believed that it is impossible to make radical changes in either the content or the form of examinations; a belief that this project has attempted to modify. The basic objective of the project, therefore, was to modify only 50 per cent of the examination and encourage teachers to work out

new syllabuses in trial form, test it in the classroom and then feed the information back to the central team. There is also an interplay between the teachers and the examination board itself, since the moderators of the board must consider the teacher's criteria in the innovative areas. This whole process permits a break in the cycle where the examination determines the curriculum and, in general, discourages innovation and change.

The project developers think of the project as primarily a project in teacher education. The procedures they have adopted are intended to open up a closed system for teachers and permit them to become involved in the development of instructional and examination materials. Teachers are involved in the central planning process, including the "what" and the "why" questions. A network of teachers is being established which it is hoped will continue after the termination of the project.

EVALUATION:

No member of the project team has been appointed to undertake formal evaluation. All the evaluation is informal, based upon responses of teachers and perceptions of the developers. No money has been provided for formal development procedures and the continual evaluation and modification of materials is primarily based on a reflective process.

A major item that the project planners feel should be taken into account and perhaps done differently in similar projects is to carefully budget project personnel time. This project resulted in a tremendous amount of wear and tear on the three project personnel. Furthermore, this wear and tear may not ultimately be personally productive since there is no clear career line for curriculum developers who must ultimately return to other careers.

HUMANITIES PROJECT: UNITED KINGDOM

Sponsors:	Schools Council Nuffield Foundation
Funding:	£174,328 from Schools Council; £60,000 from Nuffield Foundation
Duration:	1967-1972
Staff:	Project director, development team of 6 persons, evaluation team with 4 members, consultative committee with 15 members
Age Level:	14-16 years, average and below average ability. Secondary schools
Materials:	Original source materials based on inquiry areas used as evidence in discussion of the following topics: war and society, education, the family, relations between the sexes, poverty, people and work, law and order, living in cities. The materials included poetry, prose, photos, cartoons, graphs, advertisements, audio tapes, films, songs, drama and newspaper reports. A revised edition has been published commercially since 1970. Together with the materials comes a handbook with index of materials and a self-training scheme for teachers, as well as an outline of the teaching method to be used with the materials. The method of work recommended is group discussion, with the teacher acting as neutral chairman, but also includes individual projects, drama, and role play. These methods are used to promote critical thinking about controversial value issues.

ORIGINS:

The project represents a response to the raising of the school leaving age from 15 to 16 and is part of the Schools Council programme of research and development to meet the new demands made on schools. The Nuffield Foundation financed a feasibility study which was published as a working paper under the title "Society and the Young School Leaver". This paper met with considerable criticism, and instead of appointing one of its three authors as the director of the Humanities Project, the Schools Council invited a lecturer in education to become director. A Schools Council working paper on the raising of the school leaving age,

published in 1965, became the basic reference for the project work, rather than the feasibility study, as the ideas it expressed were more in harmony with those of the director.

The working paper defined the aims of humanities teaching: "To give every man some access to a complex cultural heritage, some hold on his personal life and on his relationships with the various communities to which he belongs, some extension of his understanding of, and sensitivity towards other human beings". The aim was to forward understanding, discrimination and judgement in the human field, by using not only factual knowledge but also direct and imaginative experience and rational thought. The project started in 1967, and guided by these objectives the team developed materials, teaching methods and research procedures relevant to inquiry-based learning in the humanities.

It was decided that in the Humanities Project subject-boundaries would be crossed instead of merely updating content. The efforts of the team were based on a concern for important human issues and the development of an understanding of these in students. Given a democratic, pluralistic society, a common set of values and opinions cannot be enforced, and a method of classroom work had to be chosen which took account of divergent views, while developing understanding of value judgements and the complexity of human affairs.

The solution adopted by the team was to focus classroom work on controversial value issues which were to be discussed and examined in an open classroom forum. In this way, the project team felt they could help schools respond to the demand that the curriculum offered should be "relevant". The position taken however, involved the creation of new relationships with adolescents, who would have to be treated as adults. Open discussion as a method of work meant that teachers could not force their own attitudes on pupils, but would have to cooperate in developing capacities for independent study and inquiry, and a flexibility of mind. Teachers would have to share responsibility for learning with students, and tackle controversial issues with them in an honest and adult way. This orientation became more precise as the project developed.

Soon after the preliminary definition of this theoretical position and the first definition of a teaching strategy, the project team and evaluation officer held induction conferences, chose a sample of experimental schools and collected materials. They studied the possible effects of adopting a more open type of classroom work and the problems and demands arising for teachers, students, and school organisation. The team had to help teachers understand and implement the new relationships, procedures and underlying educational goals, which was often a difficult task.

The central team put forward hypotheses about teaching strategies, and asked the teachers to test them by adhering to suggested rules. The teachers were also asked to comment on the usefulness of the materials when these rules were followed, to suggest alternative rules or hypotheses, and to develop other inquiry activities that could be built upon the classroom discussion.

During this experimental period, from 1968-1970, the central team visited schools and arranged for group meetings with teachers, collected data from teachers and students and used their observations to revise materials and collect new sets for additional topics. From 1970 on they published and circulated data and reports written by

teachers, and used the experiences of teachers with the new strategies to develop a self-training scheme for the handbook accompanying the materials.

In 1970 the first implementation phase started after commercial publishing of materials and the first handbook and self-training programme appeared. The team members responsible for implementing the project set up a network of contacts with the Local Educational Authorities and organised introductory workshops attended by teachers nominated by LEAs. The central team did not see itself as a central training institution, but more as a linking centre aiding in the initial stages of dissemination and implementation while leaving the training itself to the local authorities or schools. They feel that teachers who have taught the course are better able to train their colleagues than are members of the central team whose speciality is research in teaching.

EVALUATION:

The curriculum has been tested in 34 schools with 150 teachers, in university departments and colleges of education. The evaluation started in 1968 when an evaluation officer was appointed whose task was to provide feedback to the central team about progress of experimental teaching in those schools. From 1970-1972, four evaluation team members carried out full-scale evaluative research providing data for curriculum decision-making. The evaluation unit operated independently of the development team but its work was complementary during the experimental phase. The evaluation officer, who was appointed soon after the project started, provided the design for research into teaching methods and did case studies in experimental schools. The evaluation scheme expanded to cover many aspects of curriculum innovation, including the ways in which schools as organisations respond to fresh initiation in teaching procedures. Observational data and reports by teachers were published in research reports sent to all teachers. These research reports also served as a means of exchange and support for humanities teachers during the first implementation phase, 1970-1972. In 1969, the evaluation officer began the preparation and adoption of measuring instruments for the evaluation of the construction of sample schools. A smaller number of schools was selected for intensive "clinical" studies, and a larger and more representative sample of schools was chosen for systematic quantitative studies. The evaluation design presented a difficult task as there was practically no data on humanities teaching which could guide the efforts and because the project team did not wish to define specified behavioural learning objectives. Furthermore, no usable model existed for an evaluation explicitly providing information to all those individuals and groups concerned with curriculum decision making.

DISSEMINATION:

During 1970 over 600 schools bought materials but fewer than half of them attended 3-5 day introductory training courses run by the central team. The Local Education Authorities have sent staff for training and they in turn have taken over the responsibility of introducing

and supporting teachers using the course. Emphasis is laid on self-training and self-development. Today, about two-thirds of all LEAs have some kind of training facility, some of which are very effective. A Humanities Teacher's Association has been founded which also has a supportive function.

SCIENCE 5-13: UNITED KINGDOM

Sponsors:	Schools Council Nuffield Foundation Scottish Education Department Plastics Institute University of Bristol School of Education (Grant Holders)
Funding:	£167,500
Duration:	1967-1974
Staff:	Director, 6 team members, an evaluator, advised by a 22-member consultative committee which includes 5 inspectors or former inspectors of schools, a representative each from the Department of Education, 6 directors or organisers of other School Council projects, a headmaster, a headmistress, and representatives from higher education. Work in Pilot Areas is supervised by an Area Representatives Committee of 26 members drawn from 22 Areas.
Age Level:	Primary and Middle Schools
Materials:	The materials consist of a series of 25 units on topics such as Early Experiences, Coloured Things, Ourselves, Working with Wood, Trees, Structures and Forces, written for the teacher. The aim of the units is to assist teachers to help children through discovery methods, to gain experience and understanding of the environment and to develop their powers of thinking effectively. The units consist of two or three books relating to classroom activities and background information for teachers. Two publications, 'With Objectives in Mind' and 'Understanding Science 5/13', for teachers, provide a self-instructional orientation to the project and a general guideline for identifying and implementing ways of attaining their objectives in using the science units with children.

ORIGINS:

The predecessor project was the Nuffield Junior Science Teaching Project (1964-1966) which like Science 5/13 took a child-centred view of science teaching. The Science 5/13 Project identified objectives for children learning science and designed materials to help teachers

construct courses relating their own objectives in science to a framework of concepts appropriate to the ages of the pupils. The project was designed to cater for children of different abilities and from different backgrounds. The project director assembled a staff of seven professionals with background experience in teaching physics, chemistry and biology at primary and secondary levels, and in teacher education. One of the staff members, with the project from the beginning, was responsible for evaluation.

DEVELOPMENT:

A unique characteristic of the project is that development, evaluation, and dissemination proceeded apace from the beginning. A second is the clear enunciation and relationship between objectives, evaluation, and the development of materials.

A search through the literature for a 'framework of concepts appropriate to the ages of the pupils" revealed that it did not exist. Attempting to formulate such a framework provided a useful starting point in developing behavioural objectives and took up a large part of the first year's work. The approximately 150 objectives served four useful purposes :

1. clarifying the thinking and guiding the writing of the materials
2. providing a basis for developing evaluation procedures,
3. serving as a guide to teachers in their classroom work, and
4. helping teachers to identify their own objectives.

The main objectives follow :

Primary Objective	Broad Aims	Specific Objectives include
Developing an enquiring mind and a scientific approach to problems.	Developing interests, attitudes and aesthetic awareness.	Desire to find out things for oneself.
	Observing exploring and ordering observation.	Ability to frame questions likely to be answered through investigations.
	Developing basic concepts and logical thinking.	Formulating a notion of horizontal and vertical.
	Posing questions and devising experiments or investigations to answer them.	Ability to make comparisons in terms of one property or variable (initially).
	Acquiring knowledge and learning skills.	Familiarity with a wide range of forces and of ways in which they can be changed.
	Communicating.	Ability to select the graphical form most appropriate to information.
	Appreciating patterns and relationships.	Development of a concept of environment.
	Interpreting findings critically.	Recognition of role of chance in making measurements and experiments.
		Awareness of the universal nature of gravity.

Given the framework of objectives organised roughly into Piagetian levels of cognitive difficulty, certain key questions and key assumptions guided the development of the materials. The questions were:

1. What science is right for children?
2. What achievement is desired?
3. How can one help them achieve the desired objectives?
4. How can one find out what children have actually achieved.

Assumptions shaping policy were (a) that teachers should be responsible for planning and executing their own programmes; (b) that close working relationships were necessary between project, educational authorities, and teachers - the authorities for sanction and support, the teachers serving as filters through whom innovations must pass. The curriculum development model stressed local development guided by external assistance; (c) that children work best when working on their own problems, having direct experiences exploring materials and situations, gathering information and devising means of testing judgments.

EVALUATION AND DISSEMINATION:

The working pattern which evolved was the development of skeletal units, preliminary development of ideas for evaluation, informal try-outs in classrooms of pro-draft materials, trials of test materials, feedback for revision of materials and evaluation procedures. The approach took cognizance of the fact that teachers had little preparation for science instruction, yet said to them: "Here are materials which we hope will be helpful to you and concomitantly beneficial to children. Help us to improve them". The result was a troika of development, evaluation, and dissemination in harness together. The formative evaluation procedures were planned to provide immediate assistance to writers in revising materials based on classroom experience.

The overall evaluation plan included information on changes in children's behaviours, both cognitive and affective, the opinions and reports of teachers, interaction of teachers, children, and materials, and the learning environment. Tests, reports, questionnaires and observations were used in data gathering, and cluster analysis of teacher response to determine conditions correlate with successful use of materials. The evaluation information was particularly useful for the revision of materials, for information regarding children's performance relative to established objectives, and for informing teachers on outcomes. Procedures were initiated to help teachers organise their existing knowledge of children so as to identify their states of educational (Piagetian) development.

Dissemination procedures included an informal try-out of materials by teachers in close liaison with twenty-six area representatives who served as links between the projects and the educational authorities and selected the schools for formal trials and evaluation. A series of news-letters were also used. Some 740 classes in 23 local educational authorities participated in pilot try-outs.

AESTHETIC EDUCATION PROGRAMME: USA

Sponsors:	Central Midwestern Regional Education Laboratory (CEMREL), a private non-profit corporation supported in part as a regional educational laboratory by funds from the Department of Health, Education and Welfare
Funding:	$3.8 million for three contracts
Duration:	1967-1975
Staff:	Phase I - Director and staff Phase II - Director and development staff, associate staff, evaluating team and cooperating schools
Age Level:	5-13 years
Materials:	Teaching units, teacher books, Curriculum Development Guidelines (a handbook), journals, articles, books, pamphlets. Multi-media teaching units for use by general educators are grouped in study areas which focus aesthetic elements, processes, experiences, judgements and performances in categories such as the physical world, art elements, the creative process and the artist. Ten teaching units are commercially published with four in final stages. Specific materials are now being developed for use in educating teachers to aesthetics and the teaching of aesthetic education on both a pre-service and in-service basis.

ORIGINS:

The major emphasis of curriculum development in the early sixties in the USA was on science, mathematics, and foreign languages. By the mid-sixties a growing concern was expressed about the lack of attention given to the arts and humanities in the school programme. Educators committed to the development of an aesthetic education programme felt that existing courses were handicapped by limited conceptions about the potential contributions of aesthetic education to the quality of personal and social life.

Early encouragement to formulate a functional plan for such a curriculum came from the Arts and Humanities Division of the United States Office of Education. In 1965, it funded a seminar in Art Education which focused on research and curriculum development in this

field. From this initial forum specific possibilities began to emerge. A Research and Development Center in Aesthetic Education was proposed but was not approved because its design, involving scientists and art specialists in a loosely knit organisation, lacked the specific structural mechanisms needed to implement single-institution programmatic research and development.

In 1967 the Arts and Humanities Division sponsored a conference to define goals and activities for a programme in aesthetic education which would meet the structural criteria for support. An existing Regional Education Laboratory was invited to prepare the second proposal, and in spring 1967 Ohio State University and CEMREL cooperatively began the exploratory work.

That same year, art and behavioural science scholars reviewed the planning document, with its preliminary rationale for curriculum in aesthetic education. A teacher education programme and a basic research programme had been considered as alternatives, but were bypassed in favour of a programme consisting of curriculum development and effective change in schools. The programme's responsibility was defined as "extending and refining theory and systematically building and testing curricula consistent with the unique contributions that aesthetic education would make to general education". The three major tasks for the Aesthetic Education Programme were to review research related to the arts and aesthetics, to develop guidelines for the development phase, and to design an instructional programme and its implementation.

DEVELOPMENT:

Phase 1: During the first phase of the project, summaries and indices of existing social and behavioural research and a set of guidelines for development were prepared. The first step in developing these guidelines was a review of existing art education programmes, followed by the selection and abstractions of key source materials in the arts and in behavioural research. Out of these evolved concepts for aesthetic education and rules for curriculum development, published as The Guidelines: Curriculum Development for Aesthetic Education. Supplementary materials to this handbook consist of hundreds of concept cards, activity statements and a workbook to aid the curriculum developer. A third task of this phase was the formulation of a plan for curriculum development in the schools which would permit flexibility and outline goals, objectives, procedures and resources.

Phase 2: In autumn 1969 a revised draft of the Guidelines was used to orient and train members of CEMREL's staff for curriculum development work. Staff associates, scholars in the various arts, aesthetics, general media, and behavioural psychology selected topics and produced content outlines for the six arts areas in which the programme is based - literature, music, film theatre, dance and the visual arts; to guide the curriculum writers who were practising artists as well as teachers. They are supported by graphics personnel, editors, and evaluators.

The development of packaged instructional units goes through three major stages, each including development, testing, and revision of instructional concepts and materials. In the initial stage, a curriculum

writer or a team of writers choose a concept which meets criteria for grade level, content area and learning process, and specify the objectives and classroom activities. Graphics specialists then help to design prototype materials which are tried out with children in informal settings, with resulting revision based on student and teacher responses. The second stage is the trial of the package in a non-arts classroom under the observation of the curriculum writer and a staff evaluator. After a second revision, the packages are given to teachers and classes in two different socio-economic settings for pilot testing. The teachers receive minimal orientation to the package so that the programme staff can determine the adequacy of the teachers' guides and evaluate the overall effectiveness of the package for students. Staff evaluators use the combined observations of these test-teaching situations to make recommendations for revision. After final revision the packages are sent to the commercial publisher.

EVALUATION:

During the developmental period materials undergo considerable formative evaluation, after which the emphasis shifts to summative evaluation. A longitudinal study of the effects of the programme over a 5-year period is in progress. Other summative evaluation studies are also in progress. Surveys of teachers' and students' opinions about various aspects of the packages have returned largely favourable results for the programme.

DISSEMINATION AND IMPLEMENTATION:

These two phases are considered an extremely important part of the programme. Presentations and publications have been effective but more important is the establishment of liaisons with existing networks or schools and various administrative agencies and development organisations that can assist in introducing the packages into schools. A continuing project is the development of models for inter-agency cooperation. Numerous workshops for representatives of school systems have been held, in-service and preservice courses in teacher education were initiated or taught by staff members. They also sponsored teacher education conferences with representatives of 30 higher education institutions, made presentations to professional and general audiences, published articles in professional journals, and provided resource materials and progress reports to support teachers and others involved in school or curriculum change. Several model programmes for teacher education in aesthetic education are under development around the country. These centres will demonstrate approaches to educating teachers, both preservice and in-service through universities, colleges, school districts, and arts organisations with the programme serving as a catalyst. The promotion of inter-agency cooperation and the testing of the teachers' materials are also functions of the teacher education centres.

MODERN LANGUAGE PROJECT: USA

Sponsors:	Massachusetts Council for Public Schools Ford Foundation U. S. Office of Education Eastern Massachusetts Council for School Television Heath de Rochmont Corp.
Funding:	$520,000
Duration:	Development and evaluation: 1959-1965
Staff:	Project director, television teacher, 4 area coordinators, 2 researchers, supplemented by consultants, television and film production teams, and 200 classroom teachers
Age Level:	9-11 years, Elementary schools
Materials:	The preliminary product of the Modern Language Project was a three-year series of fifteen-minute television programmes broadcast twice a week to elementary school children in their fourth to sixth year of schooling. Teachers were given a manual providing an equivalent amount of follow-up activity. The final product was a multimedia kit consisting of 122 fifteen-minute, 8mm coloured films, manuals, workbooks, tests, projector and recordings.

ORIGINS:

The project formally began in 1959 when the Massachusetts Council for Public Schools, a private organisation interested in public education, obtained a commitment from the Ford Foundation to fund one year of a three-year project to develop a series of television programmes for teaching French to elementary school children. This was supplemented with an additional research grant from the US Office of Education, which essentially provided for summative evaluation. At the end of the first year a private film company agreed to finance the final two years of the project, with the right to publish a revised edition in film form. A second federal grant was received to support research. In the final year the film company merged with an educational publisher, and provided final funding. The project terminated in 1965.

The evolution of the project was complex and occurred at a time when the teaching of a second language in the elementary schools by the aural-oral method was gradually gaining ground. An upstate New York community was attempting to teach French, live, by television, at the same time that the Office of Education, responding to Sputnik, created a new media section to develop techniques for the teaching of science, mathematics and foreign languages. A private non-profit organisation raised the money, organised the project, hired the television teacher and arranged with a school television council and an educational television station to produce the programme. A committee of some fifty nationally prominent foreign language educators was established to set general policy guidelines, provide some formative evaluation, and incidentally academic and educational respectability. Conceivably, the status of the committee members could have facilitated dissemination, but little consideration was given to this problem in the early stages. The focus was primarily on programme production for the requirements of the broadcast schedule and secondly on research and evaluation.

DEVELOPMENT:

A subcommittee of the national committee was consulted for advice as needed. The development of essential materials was planned primarily by the project directors (three during the life of the project), the television teacher, and to a lesser degree by four area coordinators whose main responsibility was to work with teachers using the programme. Individual specialists were also called upon for consultative advice. Objectives were stated in the broadest terms: "the teaching of French to elementary school children by means of listening and speaking the language with the help of classroom teachers". Fluency was defined in terms of "speaking like a native" which gave direction to the evaluation procedures. Programme content was based on Le Français Fondamental, a report of the frequency of word usage in oral language prepared by the Ecole Normale Supérieure at Saint-Cloud, France. The instructional format utilised the prescribed language repetitively in a situational context, i.e. in the home, on the street, while shopping. Teaching was direct, through the camera, to the child. The children responded directly on cue to commands from the TV teacher, such as: 'écoutez!, répondez!'

In the second year of the project, support for development was provided by a commercial film producer, with continued support for research by the US Office of Education. In subsequent years all support came from the commercial film-maker engaged in partnership with a publishing firm. This meant that project staff had two responsibilities after the first year:

1) producing the second and third year of the television series, and

2) revising and converting the programmes for film.

The television programmes were all produced in studio. The film programmes were not only produced in colour film, but the film crew went on location in France to provide authentic cultural content for the programmes. During the course of the project, the materials shifted from the simpler television series with teacher guide, to a multi-media, self-contained kit including programmes, follow-up, support and evaluation materials.

DISSEMINATION AND EVALUATION:

Given open-circuit TV broadcasts to school systems within the area, an audience of some 40,000 children was immediately available. The first problem therefore was to insure effective utilisation of programmes. For this purpose, four area coordinators held workshops with teachers which emphasized teaching skills rather than language fluency. It was assumed that teachers would learn with the children, and the television teacher would provide the appropriate and dominating model. Teachers generally accepted this role. However, by the time instruction reached the third-year teacher, who faced children with greater fluency in French, teacher resistance was noticeable.

The film-producer permitted other stations to broadcast the programme; these gave it nationwide distribution. No control over utilisation in these areas was possible. In addition, the programme was one of 30 series selected from 300 for national distribution by programme rental from regional depositories. Again, there was no control over utilisation.

Dissemination of the film package was through the conventional procedure of publisher's representatives, with the difference that the area representatives were qualified to instruct buyers on programme utilisation. However, a unit cost of $4,000 for a year's programmes and materials limited buyers, in spite of the fact that repetitive use of programmes reduced per capita costs to acceptable levels. The initially widespread use of the television series slowly faded, in part for lack of a support system.

The separate source of federal funding for evaluation necessitated an experimental design in order to qualify for the funding under competitive conditions. This in effect restricted the use of these funds to summative evaluation during the first three years. The evaluation involved comparisons between experimental and control classes with regard to pupil learning of pronunciation, rhythm and intonation, dialogue, listening comprehension, and total language usage. In a series of seven studies involving some 14,000 pupils, the relationships between intelligence, general achievement, teacher fluency, amount and kind of follow-up activity, pupil motivation, selected auxiliary teaching materials and learning on the various aspects of French were determined. Further differences in achievement associated with varying combinations of instructional activities over a three year period were also studied.

A somewhat unusual aspect of the evaluation, because of the publisher's interest in developing evidence to convince prospective purchasers of the high quality of the materials, was that the work of the evaluations was independently carried out by the Educational Testing Service, a national research and test development agency, located in Princeton, New Jersey, USA.

PROJECT ORIGINS

The following section does not attempt a comprehensive analysis of the origins of projects but rather tries to point out certain common variables in the projects studied, which should be interesting and suggestive to project directors.

One of the most interesting features of the projects is the variety of circumstances surrounding their origins. Each had some unique feature which was critical to its beginnings. In two projects, Modern Language and German Mathematics, private organisations became interested in curriculum development and initiated contact with project directors. Sponsorship of projects by foundations is not uncommon and it could be useful for curriculum developers to be on the alert for such support. The Indian Studies File while not principally sponsored by a foundation, obtained financial support from multiple sources. It might also be useful for curriculum developers to have available a clearinghouse for information on foundations, the kind of work supported in the past and the kind of interests now shown by them.

Public organisations such as the Schools Council in England or the National Science Foundation in the USA may play influential roles in development. The Humanities, Geography, and Science 5-13 projects were supported by the Council, as were many of the major science projects in America. With Humanities, the initiative came from the Council through a series of working papers leading to the establishment of the project; yet the choice of the project director was critical to the direction taken. With Geography, the Schools Council was approached much in the way a foundation would be, and granted support. However the Council was able to exert considerable influence pertaining to key project concerns by insuring that the project directors were given access to the examinations board. A private foundation [illegible] versity professor would have difficulty gaining this access. In fa[illegible] s not uncommon to find that projects have difficulty gaining access to schools. Again, governmental and public organisations can be valuable intermediaries in this respect.

Projects differed in the degree to which the concept of the subject matter and how it was being taught was a significant factor in the project's origin. In the case of the two mathematics projects and the Modern Language Project the necessity to produce more adequate content was constant but the decision on who defined that content varied. For the Modern Language Project, a private organisation interested in media and in modern languages won a federal grant and hired linguists to define the content. In the case of German Mathematics, again a private foundation decided that a maths programme was necessary and permitted an academic professor to determine the character of the content. The Austrian Mathematics, on the other hand, developed as a cooperative venture between an academic and the Ministry. Although the primary

definition of the content areas was made by the project director and the teacher-development teams, the project was under the control of the Ministry. The Conceptual Skills Programme was principally concerned with developing basic conceptual skills rather than with specific content areas. This concern was translated into the definition of fundamental skills using a variety of subject matters appropriate to young children. The definition of skills was made by the project directors. The Indian Studies File represented the most innovative content since its objective was to introduce an entire area of Canadian culture into the curriculum. The project's concern was more with social responsibilities, however, than it was with upgrading knowledge in specific areas.

Three of the projects, Humanities, Geography, and Religious Socialisation were concerned with teaching and methodology and with the development of a school climate supportive of the skills needed to treat controversial issues and develop individual values. The Humanities Project elaborated a specific instructional method derived from the philosophical views of the project director, whereas the Geography Project operated on the assumption that the subject area was eclectic and could not be specifically defined. Here, therefore, the basic concern was for more adequate content, combined with the recognition of the importance of teacher responsibility in curriculum development and implementation.

In Sweden, the goal set for the study of religious education grew out of discussions in the 1960s on school reform. These discussions were primarily concerned with the question of whether "objective" instruction of highly controversial material could take place in the school, and resulted in a decision by the National Board of Education to finance a project investigating how the goals for religious instruction could be implemented in a pedagogically suitable way. This project goes furthest in systematically organising a research programme to provide the substantive and methodological knowledge needed to formulate an education reform in a highly sensitive area, and in so doing achieve the broad philosophical ends identified by parliamentary act. In a less controversial area, the French Biology Project has parallel objectives but seeks their solution by more empirical means.

The French Physical Education and Sport Project was sponsored by the Ministry of Education and the Secretariat d'Etat Chargé de la Jeunesse, des Sports et des Loisirs, as French government structure requires two departments to be responsible for EPS in the schools. Here, the development phase, or finalisation of instructions, started only after the initial dissemination of the preparatory work and should remain permanently as a system of generalised field work, alternating with study groups at various levels. As described above, "staff" to a varying degree implies large numbers of persons working in "educational promotion teams". However removed this approach may be from the usual curriculum development schemes, it has been included to illustrate the methodological problems involved.

As expected from these differences in the circumstances surrounding the origins of project ideas, there were differences in the way in which these ideas were carried forward throughout the life of the project. Project directors were primarily responsible for project development in the case of the Modern Language and the Conceptual Skills programmes. In the former case, the limited field testing meant there was little ongoing modification of ideas except by expert opinion, whereas in the latter case the demonstration classrooms provided the developers with a basis on which to test and modify their ideas. As noted in the

project description, similar modification of content on the basis of trial occurred in the Science 5-13 Project, important given the secondary school and university background of the staff. In the case of the Austrian Mathematics, ideas developed cooperatively with the project director, the participating teachers and the Ministry, although the Ministry maintained ultimate control throughout. An interesting modification occurred in the German Mathematics Project which had one of the most clearly conceived set of ideas initially. During the course of its development, the project director relaxed his control and style of leadership giving teachers more influence and responsibility in the formulation of ideas. Consistent with its origins, ideas on the Geography Project were continuously under the development and scrutiny of the teachers themselves.

The project directors' background and former experience in development is also influential to the life of a project. The director of the Science 5-13 Project, for example, had had a somewhat unsatisfactory experience with the development of unstructured science materials prior to initiation of the project. This led to a concern for organisation and structure in the development of that programme. Another example is found in the Indian Studies File where the director was a retired teacher with an indomitable personality. Thus, while the director did not give strong leadership in terms of the ideological content, her abiding interest combined with her freedom from her other responsibilities ensured that work progressed. The Geography Project is especially interesting in that it originated almost accidentally. As noted, a conference of concerned people had been called merely to discuss problems in geography curriculum. However, the Ministry representative at the meeting stepped out of the passive role ordinarily played by such representatives, actively supported the ideas discussed at the conference and, furthermore, gave strong support to the concept of the Geography Project. It is possible that conferences such as these can be more widely used to stimulate interest and concern over an area, as was done by the Canadian Studies Foundation to draw attention to the problems of Canadian studies curriculum throughout Canada.

The character of different projects is naturally affected by organisational patterns and by the media adopted. The decentralisation of curriculum and the limited funds for school materials in the United Kingdom explains in part the greater emphasis on methodology and teacher responsibility. Such an observation does not, of course, rule out the possibility that a centralised system would also encourage these factors, as demonstrated by Austria, France, and Sweden.

In North America, the greater funding per pupil encourages extensive material and media utilisation. The Modern Language Project was possible because of an existing network of educational television stations, a strong interest in introducing foreign languages in the elementary school, a shortage of bilingual teachers, an upsurge of interest of subject matter specialists, and not incidentally, its occurrence at a time of heavily funded centralised projects in North America. The theme during this period was that experts were the proper people to develop and test curricula. Thus, while the government itself did not exert authority over specific projects, the development climate was such that teachers and boards were not seen as the principal agents in the development process. Two conferences to develop the Aesthetic Project followed the pattern set earlier in the sciences - the meeting of subject matter experts. A somewhat similar situation is found in the German Mathematics Project since the materials were sponsored by a

foundation and developed outside government control. In this case, however, the sensitivity of the project director led to decreased central control over the project.

Project origins are both diverse and complex. Whether this is because the projects studied are atypical or because of the cultural diversities involved, is impossible to know. It is clear, however, that none of the current models of change offer acceptable explanations of why and how the projects studied developed as they did.

PROJECT GOALS AND OUTCOMES

If curriculum development is defined as influencing in a systematic way what children learn in school (which is closer to what these projects actually do than the definition of curriculum as material production) there are several basic types of project goals and project outcomes.

a) One important distinction concerns the extent of the educational innovation. Project outcomes can be characterised by whether they are directed mainly towards the production of a set of materials or content, a programme; or whether their major thrust is towards a change in frame factors: teacher role, student role, school climate or organisation; classroom structure, subject composition, time-tabling, the institutionalised range of basic behaviours admitted to the classroom and defined as being valuable teaching or learning patterns.

b) Another distinction may be made in terms of the effects of the innovation on students' learning or status - whether the innovation makes students learn what they always did, but in a more efficient or effective way (i.e. it takes less time and energy or even is more satisfying while it lasts) - or whether students learn something quantitatively different; develop traits, dispositions, attitudes, skills or mental functions that they did not in the old programme.

c) A change in the function of education (which may be present in the latter case) occurs if the relation between school learning or school conditions and students'after-school life has been altered, for instance if they develop new traits which lead to competencies or satisfactions they would not have attained otherwise. This can happen also through a change in conditions which have not changed learning processes per se: a new definition and view of students' achievement, new rules for the evaluation of students'performance may alter their chances for upward mobility, for entrance into a larger number of occupational fields, may lead to a different status in community or society, or different attitudes towards them by others. Changing views of educational goals and standards of evaluation create differences in opportunity and in outcomes.

Project outcomes can be ranked according to the extent of innovativeness, to the extent of "how much" is new, or how many new elements have been incorporated. It can be programme renewal in the sense of updating, or the creation of completely new programmes which have no precedence in classroom practice. Between these two extremes are intermediate levels where the product has its roots in existing courses

but introduces new components which lend a different quality to the programme as a learning system.

The Conceptual Skills, Indian Studies, Humanities and Aesthetic Education projects represent programmes that add a new area or topic of teaching which have never before been taught in schools on a regular, organised basis. For each of them, there may have been some corresponding topics, presented in a different context, but there was no complete programme with comparable course objectives. Some kindergarten-teachers in Canada, for example, have practised conceptual training with their pupils in an informal way, correcting concept use in speech habits or pointing out differences in colours or personal characteristics, but rarely would they exercise this in a regular, carefully sequenced way. The general "ideology" for teaching and learning in the early school years in Canada still tends to favour self-directed activities and involvement of the children through a stimulating environment, rather than organised "precision training".

Indian Studies, while more or less non-existent when the project started, has during its development phase gradually received more attention by teachers. This was facilitated by the support of the Ministry of Education in Ontario, even before the 1965 Social and Environmental studies were defined as one of the four sections of the whole curriculum. The Guidelines issued by the Ministry outline a general area and provide principles of teaching, but leave the teacher free to operate as he judges suitable. Teaching about indigenous peoples constitutes a convenient means of illustrating cultural matters; but the knowledge and material available to the ordinary teacher was never adequate to present the pupil with sufficient evidence or information to let him find out, by way of inquiry and personal research, about basic characteristics of society and culture, the effects of technological innovations, or negotiations between representatives of different societies.

Similarly, prior to the development of the Humanities Project, the humanities did not exist as a separate teaching unit in English schools. Although topics on war or urban problems were included in the curriculum in other subjects, such as history, English, geography, or social studies, they were never before components of a special course dealing only with controversial issues. The Humanities Project has introduced a method of handling humanities in schools which is not unique to this subject and which may find wider application in other areas.

In the United States, courses in art, music, literature and theatre have usually been taught as independent courses in the curriculum. The Aesthetic Education Programme has taken a more imaginative approach to this subject matter and has developed an integrated research and teaching programme which combines many aspects of the visual and performing arts.

These four projects all include a specified teaching method as an integral part of the innovation. The teacher is not supposed to use the content in whatever way he wants but is expected to follow a teaching procedure specifically designed for use with the materials.

The Modern Language and Science 5-13 projects also introduce several interesting innovations. Though the teaching of French as such has existed in North American schools for some time, it has not been a regular part of the elementary school curriculum. The Modern Language programme was meant to alleviate this situation by attempting to use non-fluent teachers in a language teaching situation. Although the

evaluation study revealed some problems (non-fluent teachers need taped materials for follow-up work on developing correct pronunciation), the technique has merit for beginning instruction in countries lacking sufficient numbers of trained second language teachers. The use of television and film in direct language teaching is not a widespread technique, therefore this project also demonstrated the potential uses of a new media.

Another significant feature of the project is its emphasis on spoken language and its integration of language teaching with the French cultural background. This satisfies a longstanding demand of language teachers and educationists that the purpose of learning a foreign language is to be able to use it as a means of communication, a goal not realized by the traditional read-translate approach. Language is seen in an everyday, observable context directly related to culture and society. Thus bringing the social and physical environment where the language takes place into the classroom, adds a vital dimension in understanding and using foreign languages.

Science 5-13 is similar in that the subject did exist in English schools but had not to any substantive extent been offered as a consistently organised study area in elementary school programmes. Furthermore, this science programme takes from the progressive education movement, a now widely used approach in education, the emphasis on the interaction of pupils with the natural environment. This represents a "extension of the classroom walls" to embrace children's experiences with their environment through systematic observation, analysis and experimentation. Its aim is to contribute to a more scientific attitude in dealing with the physical environment. Hopefully, it will provide the base for further scientific activities in later school years, by having children not only learn relevant concepts but also develop ways of thinking native to the scientific method of understanding and creating new knowledge.

In comparison to the traditional teaching of elementary mathematics in German schools, the German "alef" introduces some radical innovations in its approach to the development of numerical skills. The cognitive games which children play during their first years stimulate the development of basic, logical concepts. These are gradually directed towards mathematical concepts and operations which otherwise might have developed in only a few of the very brightest children. By building on the logical basis of numerical skills, the child acquires techniques and ability for problem solving which go far beyond what is learned by the traditional drill method.

The project team claims to have evidence that children taught by the "alef" method also do better on intelligence tests that are unrelated in specific concepts to what has been actually covered in the course. Another qualitative innovation of the mathematics curriculum lies in the area of social effects. The games create social interactions between the pupils which do not occur to any substantial extent in the traditional classroom, and they have led to social attitudes, responsibility, group work and personal interaction patterns which are certainly attributable to the programme. These dispositions, in turn, may help to develop further social interaction competencies which open up increased learning possibilities and productive or satisfying behaviour patterns.

The discussion of "alef" is pertinent to the next aspect of curriculum innovation in that it stresses the new effects or consequences of learning for individual growth, later learning and, in projection, for

adult behaviour or personality. For the Science Project, too, mention was made of the function of learning affected by the programme for later learning. Extending this perspective, we can differentiate between four different types of knowledge use offered by Broudy, et al. (1): replicative, interpretive, applicative, associative. In this respect the learning of a language will result mainly in replicative use, and the use of basic algebra, technical maths and part of geography will be replicative or applicative. Much of Geography and practically all of the Indian Studies and Humanities will have an interpretive function in that it is used in later life to understand and put into perspective the phenomena encountered in daily life, be it the news, reading or private problem-solving. The general concepts and cognitive operations acquired through "alef" or Science 5-13 may be seen in a similar way as aiding the interpreting, orienting function of an increased and improved set of intellectual tools. The effects of the Aesthetics Project certainly fall into this category also, as does that part of the Modern Languages programme which confers information about French culture and life.

These four categories do not cover adequately the effect of educational programmes usually seen as process learning: cooperation in small groups, inquiry, discussion, forming opinions, making judgments. Though they seem to fall into the application category, their significance must be seen more in terms of individual growth and personality characteristics, like forming dispositions, shaping self-concepts or developing intellectual power.

In Sweden, for example, the type of religious instruction currently being given is quite different from that previously found in Swedish schools. Student-centred, non-denominational and comparative instruction is designed so that students will come in contact with documents, life ideals and values from Christianity and other religions, as well as secular world views such as Marxism. This contact should influence the students' attitudes and way of looking at life, and thus be of importance for their personal development; creating respect for those who think differently and giving the students the possibility, with the help of the material with which they come in contact, to build up a personal faith or philosophy.

Likewise, in the Humanities, Aesthetics, and various Civics programmes, students hopefully develop discussion skills, evaluative judgments and rational analytic thinking about social values and the meaning of cultural products, which should continue to exert a psychological influence after leaving school. Indeed, it must certainly make a difference to the whole world view and personality development of the student, if inquiry, open discussion, group work and self-guided activities are used instead of rote learning for a major part of one's school life. A scientific orientation acquired in the early school years might pervade subsequent approaches to learning and exert its effects into adult life. As adults, students trained in this way should be better prepared to analyse social events in their own life time, which they might have otherwise ignored, and may be able to solve problems which they would not have dealt with satisfactorily if they had no experience in open-ended, uncensored discussion and critical thinking.

---

1) Broudy, H. S., Smith, B. O., and Burnett, L. R., "Education and the Uses of Knowledge", in: Vandenberg, D. (ed.), Theory and Knowledge and Problems of Education, Urbana: University of Illinois, 1969.

The social significance of these projects thus derives from the fact that they encourage and stimulate reflection and critical thinking in areas which previously have not been of much concern in curriculum planning, but which are highly relevant to all. In this respect they are highly innovative, not only in content and methods, but also with respect to potential for ultimate student growth. One caution has to be noted: single courses are never independent and exclusive causes for personal development, but depend on the interactive effect of the total school experience. The fragmented approach to curriculum, therefore, can frequently defeat the attainment of such high-level goals.

NATURE AND EXTENT OF INNOVATION

The product or outcome of the development process can be characterised in various ways which merit a closer look at the nature of the innovation, its relationship to present school practice, the amount or difficulty of change necessary in order to introduce it into schools, and its place in pedagogical thinking or educational theory.

From the projects observed it is obvious that many curriculum developers do not see their function merely as producers of new materials. (Indeed, the production of materials may be viewed as a more subordinate attribute, a by-product, which is necessary partly because sponsors and the general public expect a packaged output.) Rather, they see their main function as educational innovators, and define their task as to plan and implement change, and feel responsible that the proposed innovation is turned into actual behaviour at the school or administrative level. Of course, the production of materials or programmes may include, for example, innovations in teaching and learning patterns so that there is some overlapping, but the distinction makes sense with regard to the emphasis given to programmes versus educational innovation by the development team.

It would seem that a development team's view of educational or societal needs and of the educational and social change process is a determining factor in how they define their role as innovators. A good illustration of this point is the Humanities Project. Though the team produced materials for classroom use which influence the topics of discussion, they emphasize strongly that the most important and most difficult task is to change teacher behaviour, their understanding of worthwhile classroom procedures and learning, and their views of their own role and that of their students. The project director sees his project based on a philosophy of education which emphasizes that the school's (teacher's) attitude towards the student should be one of equality rather than an in loco parentis relationship which enlarges or extends the function of schools to include the parent role. What is preferred in the first position - represented by the neutrality of the teacher during class discussions - is the tendency towards de-schooling, and less interference with certain student behaviours. For the Humanities Project the innovation lies in the vision of educational and social change, and the project team is aware of the extent of change and the difficulties and problems that must be resolved in order to be "successful" in their own terms. Support nets and self-training schemes, they hope, will help teachers to realize, for instance, how authoritarian they may be. A decision-oriented evaluation, reporting information on teachers' experiences of the adoption process and the effects of the course

on those involved, will assist those evaluating the project as an educational innovation.

An important innovation common to all the Swedish Religious Socialisation Projects has been to give the students the opportunity to explore different religious beliefs subjectively; in a way that believers of that faith or teaching would consider correct. It is also recommended that the students be given the opportunity to evaluate the value systems that they have attempted to experience. If, as is likely, the students inquire into the teacher's own beliefs during discussions of the material, the teacher is asked to present his point of view, or when applicable, doubt. The teacher should emphasize that his or her point of view is only one among many and that it is important for the students to try to develop a personal set of beliefs.

The Austrian Project hopes to develop a set of learning objectives for several vocational school subjects, which can then be used to improve the Lehrplan. The development teams are thus attempting to come up with a structured, ordered specification of what students should know in the various subjects, specified in terms of content, not process. Essentially, the project attempts to reach the old goals in a better way, to update the content and teach the centrally prescribed course in a more consistent, integrated manner. With the help of objectives, the team hopes the old course will be easier to teach and learn, and will be more transparent and less confusing for teachers and students. The project output, then, leaves untouched any of the frame factors or educational structures; it does not try to change teachers' views of education substantially or to introduce completely new subject matter or teaching methods. The innovation, in this respect, is not very extensive or far-reaching.

If the work of the Austrian team leads to an adoption by the Ministry of Education of the objectives they developed, which might then be used as a basis to change the centrally prescribed Lehrplan, this would be a far-reaching and extensive innovation and a change of frame factors. However, because of the project's dependency on the Ministry this change in frame factors cannot be attributed to a decision made by the team members but regarded rather as a step taken by the Ministry. Prior to the start of project work, the Ministry had already decided to consider a change in the Lehrplan, but to delegate part of the preparation to the development team, who would participate in the generation of alternatives for decision-making. It may be that the person who wrote the proposal for the project has influenced the Ministry to consider Lehrplan revision as an urgent or feasible task, but this cannot be counted as a project output because it happened before the project was authorised. After the project had been set up, the development teams could not then decide on changing frame factors, such as introducing new subjects or deleting examinations but had to stick to their original objectives.

By contrast, the Geography Project is a good illustration of an innovation in frame factors. Although programme renewal was important, the change in frame factors achieved by the team was even more remarkable because of its relative infrequence in curriculum development, where project staff tend to stay within the boundaries of programme development. The approach of the project team was both logical and convincing; in order to improve geography teaching, they had to change the prescribed examination because this exerts such a strong influence on what is taught and learned. Consequently, they started project work by introducing different items and standards into the central examination.

Of course, project outputs are complex and can be categorised in different ways, and thus cannot claim exclusiveness in any one aspect. Often it is a matter of degree, and no standard yet exists to measure exactly the amount, nature or impact of an innovation.

The extent and nature of the innovation which the project outcome represents can however be related to the ease and smoothness of its adoption by users. Research on the change process has drawn attention to certain characteristics of innovations which facilitate their widespread adoption or lead to their rejection. The evaluation officer in the Humanities Project mentions that the Humanities course, because of its innovative characteristics, faced enormous difficulties for diffusion. The effort taken in this project to record events in the process of adoption (events in school, views of teachers and students) is a result of the team's awareness of the demands they make on teachers, who teach the course for the first time. In this case, the innovation challenges basic values, role definitions and problems of teachers' identity. The teacher traditionally has been seen as the person who knows better, has the more mature morality, and is the transmitter of culturally valued insights. This method of teaching the humanities forces him to admit that students' value judgments, perceptions of complex situations and the value choices they make for themselves are as good and acceptable as their own. This position, though logically sound, runs counter to the allocation of roles since schools were invented, where the teacher always has been the master, and the student the recipient.

The Humanities Project, in this sense, might be predicted to have the most difficult stand as an innovation because it touches the "sensitive area" of basic human concerns, social values and controversy in society; touchy topics in most countries and often not thought to be a subject area for teaching. In this respect, a science curriculum poses much less of a problem. Introducing scientific thinking and experiment into elementary school also represents a substantial deviation from former practice, but it is an innovation which is less prone to arouse moral indignation or anxieties. This applies especially to the German Mathematics Project. Introducing games and group work into elementary maths in Germany is definitely innovative, and for those not used to psychological reasoning it might not be seen as belonging to mathematical growth, and therefore might be opposed as being artificial or alien to the established goals of learning arithmetic. But the course probably will arouse less antagonism because similar kinds of innovations are characterised as progressive, and are accepted in many countries and many types of schools.

The Indian Studies File is potentially a "difficult" innovation because, like the Humanities Project, it exposes delicate issues. If students conclude that the government is unjust or that issues such as authority, public injustice, cruelty and the doubtful achievements of Western civilisation are suitable and important classroom topics, conservative elements of society might raise the criticism that schools are promoting too much critical thinking in the young. The possible "touchiness" of the course, however, is justified by present political circumstances since the cause of the Indians has become a major focus of public interest in Canada; the injustice done to them by the whites being seen as a violation of human rights. In addition, it is seen as desirable to acquaint students more with Canadian studies, which includes the study of indigenous peoples. A favourable climate of opinion is, of course, no guarantee for successful diffusion of an innovation and cannot overcome problems of dissemination and financing which may prevent the widespread adoption of such a course.

A similar point can be made for the Modern Language Project. The project is apt to be regarded favourably in Canada because the teaching of French is said to assuage certain guilt feelings of a predominantly English-speaking public in an officially bilingual country. This does not counteract the structural dissemination problems mentioned earlier, such as the high price of the films or the need for in-service teacher workshops.

So far, the nature and extent of innovation has been considered, in particular its relationship to socio-cultural conditions affecting adoption during the dissemination and implementation phases. Another aspect is the relationship between innovation and project origins, or the circumstances affecting the set-up and the working of the project. The general conditions for educational change and curriculum development in a country necessarily affect the range of ideas which will find a sponsor and the shape these ideas will take during development. The output will incorporate these ideas, although incidental factors and decisions affected by chance, constraints, or unforeseen forces also enter in. Structural characteristics of the educational, political, and the R & D system interact with personal and conceptual factors to limit the range of project topics and shape the special features of the innovation.

The Austrian project is a case in point. The centralised system limits the possible range of ideas which could have been put forward in the proposal to the Ministry. Similarly, any substantial deviation from this proposal subsequent to authorisation has to be given permission by the Ministry. Creative ideas concerning, for example, new kinds of procedures, institutional arrangements or change of content by the project coordinator, cannot be integrated into the development process unless they have been accepted on the higher level. Here, certain kinds of ideas are less prone to be seen as convincing than others. Administrative personnel, for instance, not used to social-psychological thinking, will give consideration more readily to financial matters than to problems of personal growth, meaningful learning or systematic criteria for the social benefits of vocational education. Rather, the proposal which will cause the least indisposition and opposition and will be acceptable to the greatest number is the one that will be approved.

In Austria there are not only numerous institutions and agencies which have a legal right to be heard on curriculum changes, but it has become a custom for additional social groups and associations to be asked regularly for their opinion by the Ministry. The curriculum is of course that part of educational planning where every group feels obliged to save the nation from dangers and moral or economic decay, and to make sure that their philosophy of life gets due consideration. The Ministry, being aware of all these forces, will not waste its money on a project which is going to be opposed by most or by very large, important social groups. In passing, it may be mentioned that political and social struggle is the one most devastating factor in educational reform in Germany, where the educational ministries in the Laender are unwilling to renounce any autonomy in favour of a nationwide curriculum reform.

TEACHER ROLE

All of the projects examined in the study are concerned in one way or another with the role of the teacher. In part, this concern reflects the increasing degree of decentralization of curriculum planning found in some of the countries in which the projects were studied and, in part, reflects the widespread understanding of the experience of the heavily funded centralised American projects; that teachers are a significant filter between materials and students. The teacher's selections, attitudes, postures and language are potentially capable of modifying not only the specific curricular objectives but the curricular ends themselves. Studies have been conducted which indicate that even under situations of teacher education for specific projects, teacher understanding of key project concepts was minimal. In situations such as these the teachers could not be expected to give the orientations implied in the basic goals of the project.

Other studies have examined the actual performance of teachers and have found the variation to be so great that it was not possible, statistically, to discriminate between teachers using experimental materials and teachers on regular, control materials. These and other findings of experienced curriculum developers support the view that the critical factor in a programme's success is a teacher's understanding and commitment to the programme's intentions. The projects examined in this study reflect a cross-section of approaches which accommodate to teacher influence over the realisation of project goals. In some cases these accommodations consist of various forms of involvement of teachers in the actual development process and in others to the design and construction of programmes directed at in-service teacher education. Both of these accommodations can be found in certain projects.

Teacher involvement in the development process is present in a variety of forms. Teachers were involved with the origins of the project; with ongoing development and evaluation; with evaluation only; or only in the dissemination phase. In the Geography Project the teachers were major determinants in the project's origin, as they were independently undertaking innovative work prior to its establishment. These teachers were participants in the original conference which submitted a funding proposal to the Schools Council. This project is the best example in this study of "grass roots" development. A somewhat different model for "grass roots" development is found in the Canadian Studies Foundation work with the Canadian Studies Curriculum. The Foundation was created as the result of an influential report which was conducted by a teacher and which gained nation-wide publicity. The Foundation itself encourages and funds local teacher-based development throughout the country. The Foundation does not specify the content of the curriculum but does establish broad criteria on the nature of Canadian studies, which serve as guidelines for the local teacher groups.

In three projects, Geography, Austrian Mathematics and German Mathematics, teachers were involved in the writing of the project materials. The three projects represent a continuum, as ordered, in the degree of teacher responsibility for the ideas and materials developed. For the most part, project personnel act as consultants to teachers in the Geography Project. Here, as in the Canadian Studies Foundation work, the materials are very much the teacher's own. In the Austrian Mathematics Project, there is an interplay of individual teacher development with team criticism and discussion. In this way materials developed by individual teachers are given a degree of commonality with

other materials through the group criticism process, with final sanction provided by a Ministry of Education imprimatur. The German Mathematics programme began its work by using teachers in a test role but subsequently found that teacher motivation increased when teachers were involved in materials development itself. This project then, has increasingly given responsibility to teachers.

In five of the projects, those described immediately above plus the Science 5-13 and Conceptual Skills Projects, teachers were involved in ongoing evaluation procedures. In the case of the Geography and Austrian Mathematics projects development and evaluation is an interwoven activity, since teachers are the principal writers as well as testers. The remaining three projects had field-testing activities from the beginning in which feedback on the materials was provided by teachers. The most comprehensive example of this is found in the Aesthetics Project which used a repeated trial-revision-retrial procedure plus a longitudinal study of outcomes. This project and the Science 5-13 Project appear as models of teacher involvement in all phases of development. Although the objectives of the projects differ, one developing resource materials for teachers and the other (Aesthetics) more comprehensive packages for teacher and students, teacher involvement was crucial to project success.

An interesting and complex procedure for providing feedback is found in the Science Project. Here, a computer analysis was made which correlated teacher criticism with observational data on the teacher's style, classroom organisation and procedures. The data was ingeniously used to hold those factors constant which were seen as favourable by the teachers and to alter factors seen as less desirable. The effect of these procedures was not only to modify the materials but to provide a reference file for a self-instructional introduction to the materials in which the philosophy, concepts, and procedures proposed by the project are presented.

In France the primary school teacher's versatility is not regarded merely as a fact - a difficulty resulting from the traditional structure of primary schools - it is presented as the functional outcome of an educational concept. If it is acknowledged that a child of school age is "a young animal in the process of becoming adult" and that "education consists of encouraging and guiding this evolution", it is to the educator's every advantage to pay special attention to the sensorimotor activities which form the basis of a child's mental, moral and social development. In this respect, the primary teacher is first an educator and supervisor (or "trainer") and lastly a teacher (in genetic and not hierarchic order).

Teachers here are expected to take an empirical attitude towards their profession (in this as in other disciplines) and are encouraged to work in teams and study groups rather than being given a series of perfectly prepared directives to put into practice.

In short, the underlying idea is as follows: curriculum development should go in line with teaching; it should be the task of the teachers themselves working as a team, with the assistance of experts and advisers. As a national body, they should bring together the results of the local research work, promising innovations and points of common interest, and ensure that information so collected and processed is distributed.

Such a strategy implies a coherent alignment of the teacher's initial training and continuing training (specific training in a discipline,

initiation into the techniques and methods of research action):

- educational leadership in the field; and
- the work of the study centres (administrative) and research centres (universities).

Lastly, it is a matter of replacing an instructions-application system or a research-development dissemination system by an automatic closed circuit system where a linear succession of different phases can no longer be distinguished. To date the experimental work on the French projects is not sufficiently advanced to assess the relevance or effectiveness of this approach to curriculum development.

In Sweden the national syllabus presents a number of major objectives for the different levels of the comprehensive school. Teachers have great leeway in deciding how to organise their instruction, as long as they continue to meet the general goal, which includes among other elements, "understanding of the value of a personal life ethic and respect for different ways of understanding ethical questions". The subject of religion aims to make available to the student knowledge about the content of various philosophical or religious points of view, their function and importance in man's life. Adjusting to this new programme has been difficult for a number of teachers, and it has been unclear for many just how this instruction is to be carried out. One solution has been in-service training programmes in which members of the project team are involved. Despite the problems, surveys, questionnaires and attitude scales, used with students and teachers, reveal a strong favourable reaction to the use of recommended projects and methods.

Several interesting mechanisms were identified for solving the teacher training problem. In the case of the Geography Project, project directors expect the network of involved teachers to function as a farm system in which other teachers are informed, become interested and continue with the work. No deliberate mechanisms for dissemination are foreseen in this project and project personnel rely on the enthusiasm of teachers who have been actively involved in their own development. At the other end of the continuum the Science Project was aimed at the development of teacher materials. While not stated explicitly, it may be assumed that the way to influence practice is to influence teachers directly. This, of course, is a basic assumption of teacher education programmes everywhere but the notion is not usually translated into specifically defined subject areas.

The most common mechanism for in-service training is teacher workshops, but follow-up is essential if they are to be effective in ensuring appropriate utilisation. An interesting application of the workshop concept is found in the Conceptual Skills and Indian Studies programmes, where a full-time person was employed during the first year of dissemination to give workshops to interested teachers. Schools could not purchase the materials without workshop and follow-up involvement, which provided greater control over use of materials, if at the expense of wider dissemination. Workshop activity, to be effective, however, is very time-consuming and expensive and is almost prohibitive if aimed at all possible users.

In addition to workshops, the Conceptual Skills programme also utilised demonstrator classrooms. These classrooms are used by project personnel, as well as by teachers to conduct classes. A special feature here is that the demonstration classrooms permit the developers to gain first-hand experience on the use of the materials under development, something which adds to the normal observation-feedback data.

The second feature is that the classes serve as exemplars for interested teachers, principals and others who may wish to inspect the programme in operation [illegible] again, however, exposure to demonstrations needs provision [illegible] -up and subsequent involvement if it is to be effective as a n[illegible] dissemination.

To solve this problem the Conceptual Skills team prepared two films based on demonstration classes, illustrating the theory and use of materials. Teachers thus had direct access to visual and auditory experience to support the basic rationale, philosophy and objectives of the programme in use. The ideological basis and the practical exemplar are key dimensions of any teacher instructional programme and the use of properly designed self-instructional materials for teachers such as those found in the Science 5-13 and Conceptual Skills programmes have the benefit of potentially reaching everyone using the materials.

The examination of teacher role in the various curriculum development projects has shown that a key concern at the initial stages must be to carefully work out the relationship between the roles and responsibilities of external directors, project directors, liaison staff and co-operating teachers. In particular, the development of a functional working relationship between the project and the teachers is of crucial importance for project success. An over-emphasis on the purity of ideas as defined by project staff can lead to excellent but potentially unusable materials.

LINKAGES BETWEEN PROJECTS AND SCHOOLS

The variety of roles teachers perform in the several phases of development - identifying objectives, developing materials on their own initiative, field testing, formatively evaluating materials, and providing experimental classrooms for summative evaluation, is evident - even in the brief descriptions of the various projects. Their most common role is to provide the experimental classrooms in which the developer can try out his ideas and evaluate their effects upon learning. True, exceptions occur, as in the Science 5-13 and Geography projects, but these are rare, at least in the purview of the projects known to us. Usually, the teacher is the guinea pig through whom the developer hopes to validate his convictions, if not his wishes. The developer gives the teacher additional work and frequently adds a fillip of excitement to her or his daily routines, and in the process often enhances the quality of the programme, and converts the teachers to his views. But this group of teachers is almost always a limited population. Converting the masses, euphemistically referred to in the literature as dissemination, requires more than the sowing of seed.

Schools and school systems, as organisations and institutions, have their own lives. They possess structure, routines, schedules, social as well as educational units, value systems, inter-action patterns, all the elements by which sociologists and psychologists characterise organisations and groups. Given the variety of schools, some perform excellently and some poorly by whatever standards employed. Yet, from time to time, as a result of some confluence of forces, authority is given to try to change what goes on in schools. Thus the birth of the professional curriculum developer or educational reformer. And in an era convinced of the virtue of change, and plagued by the transiency of life conditions, these converging forces can be accepted uncritically.

The attempted solutions may be mounted in a seemingly haphazard fashion as in the Anglo-Saxon countries or in a seemingly systematic fashion as in the Scandinavian and Western European countries.

Engaging teachers as colleagues in a development role is quite different from getting unknown teachers not only to adopt but to appropriately utilise new curriculum, especially if it is a radical departure from custom. Dissemination, to be successful, requires establishing links between developers and decision-makers in the schools or school systems. For example, if the use of new materials necessitates a change in teaching skills in order to be successful, increased linkages with individual teachers will be needed. While a mail order advertisement may be all that is necessary to ensure the adoption of a new textbook or the revision of a popular one, at a minimum some kind of direct training is required (whether by workshop or by film) when new teaching tactics are envolved. And the greater the expected change, the greater the needed support, not only to insure the proper utilisation of materials, but also to maintain the interest and motivation of the teachers. A conspicuous example of this necessity is seen in the Modern Language Project. The television broadcast version of the programme was most successful where strong support was provided by both school administration and project staff. With the filmed version, distributed over a continent and beyond the range of staff support, administrative support was of critical importance and, progressively, technical support in the form of skilled second language teachers, as the students progressed through the grades. This occurred in a minimum of cases. Whether by television or film, the role in which the teacher was cast was that of a recipient whose teaching skills could be utilised in the absence of subject matter competence. Illogical as this may appear, it worked, in part, because the level of the French was such that an adult could readily master the programme content. Cast in the role of passive recipient, the teacher responded passively, despite the quality of the programme materials and their demonstrated effectiveness. The result was a gradual fading out of the programme.

From the developers'view, as numerous CERI publications indicate, the process of curriculum development, given sponsorship, theoretically follows a logical sequence of planning and development, trial and formative evaluation, revision, summative evaluation, production, and dissemination. As the project descriptions show, it rarely works this way, and when it does, the project team which works in isolation until the dissemination phase is reached is seriously risking failure. This is especially true when the curriculum product requires major changes in school organisation and teaching practice. The Indian Studies File is an example. The concepts involved in the kit, attaining an understanding of a novel culture through an inquiry method, and of conflict between cultures, are not only new to the secondary school, but highly complex. The open-ended method of instruction was a radical departure in a school system of 500 secondary schools spread over an area as large as Europe, which had only recently departed from centrally prescribed didactic courses of study and fixed time schedules. Effective use required flexible time schedules and possible integration with other subjects. Given their teaching competence, and convinced of the value of their objectives and methods, the development team gave little consideration to the problems the materials posed for schools and teachers. As the kit developed, little attention was given to the effect of each added item to ultimate cost to schools. Only as the production stage was reached was consideration given to dissemination procedures, which was too late. By then it was evident that dissemination could

proceed only as long as someone was actively engaged in working with schools and teachers, and this had not been budgeted for, and more important, no working linkages had been established with the Ministry or with local school districts.

The importance of linkages to the success of the entire development process is striking at all phases - sponsorship, development, evaluation, dissemination. Links between projects and school systems appear critical, but those between related organisations, and even individuals influential in providing professional support are important. In most cases, the linkings appear voluntary, which points to the need for reciprocal motivation, reciprocal in the sense of being complementary, for rarely are the motivations of the users, or other individuals or organisations congruent with those of the developers. Such motivation is important even where the relationships result by fiat of minister, school superintendent, or other official. Despite the fact that linkages are temporary - five years seems to be an average life expectancy for a project - they are too often of too short a duration and too infrequent an occurrence.

CONCLUSION: DIFFICULTIES AND CONSTRAINTS

On the basis of the preceding analysis of curriculum development projects, it is not possible to make clear cut, definitive proposals for the future. However, some of the more common difficulties and constraints which influence the success or failure of the projects can be pointed out and should be given consideration by project personnel undertaking new work.

The constraints and difficulties which loom largest in the projects studied are divisible into those internal to the project, those external to the project and those related to the delivery of project outcomes for the schools.

Three kinds of internal difficulties, project complexity, personnel problems and problems of conceptualisation were identified in the projects. Some of the difficulties associated with complexity are illustrated by the Geography Project which simultaneously undertook materials development, examination revision and teacher education activities. The three people running this project were involved in the initiation of a development plan which included teacher-based materials in geography and in geography evaluation; they were making arrangements with ten test schools and were working through an intricate set of negotiations with the examinations board. The complexity of the project resulted in extreme demands on the time and energy of project personnel, a factor, which, as noted above, is directly related to the funding of the project.

Again in the case of French Biology, a small central team, working under a broad mandate with 50 teachers in 17 schools on a project involving a complex matrix of variables, found the problems of evaluation considerable. The audience of the Modern Language Project was so widespread that the developers and publishers were unable to provide the needed support for an interesting innovative programme. Ability to meet such complexities appears a fundamental task to be faced by managers.

There are a myriad of details with which project personnel must be concerned when schools, teachers and external agencies are involved. The complexity of curriculum development projects and the resulting effect on personnel suggests that projects should establish an internal organisation which permits the handling of many unplanned contacts and which conserves the energies of its personnel. Consideration should, for example, be given to minimizing the number of test teachers, since the amount of information gained rapidly decreases in relationship to extra effort required.

If large numbers of experimental teachers are involved, however, a sophisticated and well-organised scheme like those of the Aesthetics and Science 5-13 projects are needed. The former project applied a series of stages from trial to final evaluation, each with specification of method of observation, feedback, personnel and revision. Science 5-13 is outstanding in its systematic relating of educational goals, learning objectives, classroom activities and dissemination network.

Personnel difficulties identified in the projects tended to be conceptual in character. In the Modern Language case, conflict developed between the linguists, who defined the content, and the filmed demonstration teacher, who defined the teaching methodology. The evaluation programme had personnel problems in the German Mathematics Project, where one member was oriented toward formal psychometric testing methods and another towards informal formative evaluation. For the Humanities Project, personnel difficulties arose when new people joined the project. The lack of definition and the novelty of project concepts tended to make new personnel ill at ease. An especially interesting problem arose with the Humanities Project when the project became identified with its project director rather than its subject matter or purpose. This event apparently occurred in consequence of the project director's role in relating to outside agencies and groups.

The Aesthetic Project also identified its major problem as being conceptual in nature, i.e. what is the role of aesthetic education in a total curriculum; should it be a discipline or an area of study? This was finally resolved by a decision of the project director in favour of an area of study. Some problems in the planning phase deriving from the three sponsoring agencies, each with its own policy and administrative regulations were also reported. These difficulties were largely overcome with the definition of a project programme for a five-year period and with the designation of a permanent director. During the development phase under CEMREL, some limitations were experienced because of the fiscal and budgeting regulations of the laboratory, but these were procedural in nature and did not affect available resources. Having to follow the "traditional" model of development established by the laboratory imposed limitations, e.g. the literature search was time-consuming and not highly productive, and conventional models of evaluation created problems in an area as novel as aesthetic education.

Four projects, Geography 14-18, Indian Studies, Secondary Biology, and Modern Language reported financial constraints. In the case of the Indian Studies programme, the financial difficulties were related to the character of the project and to its project director, both operating without a long-range plan over an eight-year period in a time of very rapid change in the curricular context. During this period, curriculum was decentralised by the Ministry of Education and was made a local school responsibility. At the same time, a major educational institution, the Ontario Institute for Studies in Education, was established, and the project, which had been housed in the Ontario Curriculum

Institute, became part of the Institute. Here had it not been for the fortuitous intervention of the Chairman of the Curriculum Department the project would, in all probability, have terminated at a premature stage. Support for the project came from private and public sources and consisted of both time and money. Without the efforts of the project director, the support which did exist would, in all probability, not have materialized.

In the case of the Geography Project, the total funding was inadequate to the overall ambitions of the project, partly as a consequence of the increasing complexity of the project throughout its history. New and diverse tasks were continually undertaken within a fixed budget.

In the other two projects, the constraints were not as critical. The restrictions on use of funds required by multiple funding agencies limited flexibility on the Modern Language Project; and the lack of additional funds to reward teachers for extra work affected morale on the Biology Project. The financial difficulties of these four projects suggest the importance of long-term project planning and the necessity for limiting projects to fairly clearly defined goals. Project ambitions can easily outrun project financial resources with the result that project quality can only be maintained by extraordinary demands on and effort by project staff.

Another factor identified in one of the projects, Geography, was that of external examinations, which are by no means unique to the United Kingdom. Properly speaking, this was less a constraint than an integral part of the curriculum development study, as it was assumed that the "examination was the curriculum" and much of the project's efforts were directed at the modification of the required examination. Nevertheless, the principal concern was to improve geography instruction by a programme of curriculum development. In this sense, the examinations were clearly a constraint. Consistent with its procedure of involving effective people in decision-making, the Geography Project directly involved personnel from the examination board, who in turn, permitted the inclusion of teacher-defined materials on the central examination. The project developers recognized the necessity to strike a balance between the old and the new, such that teachers of various persuasions would find the examinations acceptable. In this way, with the gradual introduction of new items on the central examination, change slowly occurred in the examination. Inevitably, changing examinations produced change in curricula.

The effort to modify examinations led to time constraints in the project. Since examinations were revised on a two-year cycle, it was necessary to undertake this work one year ahead of its schedule in order to meet the beginning year of the examination cycle. Accordingly, there was no time for a real pilot study in the project and, in fact, the project was under way before it was known whether the examination proposal was accepted. Thus, the pilot work in this study was part of the development work itself. This procedure is consistent with the emphasis placed on local school and teacher involvement and can hardly be said to have inhibited project development.

One of the major difficulties faced by any curriculum development project has to do with its successful delivery in schools. It is widely recognized in North America that without adequate attention to dissemination, well conceived programmes may not be used. In two of the projects studied, Modern Language and Indian Studies, the effort required to mount a dissemination programme was the principal difficulty

eventually faced by the projects. In both cases the inadequacy of teacher skills to handle materials was the central problem. The Modern Language Project attempted to meet this problem by having the teacher watch the modern language films and thereby learn with the students. Teacher resistance rapidly developed, particularly in more advanced grades where student language skills were superior to those of the teacher. Workshops were tried but were largely unsuccessful since it was not possible to have adequate follow-up.

The inadequacy of teacher skills was also involved in the Indian Studies Project, where teachers lacked experience with the inquiry approach necessitated by the kit. A programme of teacher workshops was initiated, in which participation in the workshop was prerequisite to the purchase of the materials. This procedure was costly and could not be maintained indefinitely. It is worth noting that in the Modern Language Project, where adequate school support existed in the form of an organised foreign language programme, the programme was successfully installed. The cost of building such support systems where none exist is, of course, a major undertaking. The Modern Language Project also confronted delivery problems but here the problems were more conceptual than financial. Teacher reliance on project personnel was difficult to resolve given the very different teaching roles recommended by the project.

The Indian Studies File represented still another difficulty with project delivery, namely, package cost. The project came on the market at a time of decreasing school board budgets and the large initial kit cost made it difficult for many smaller boards to purchase the materials. The Modern Language Project faced a somewhat similar difficulty when it moved from television production to an overall multi-media programme based on an 8mm. package.

The introduction of new curriculum for Physical Education and Sport in French primary schools is described theoretically in the Commission's report which is to be published shortly. Transmitted to the ministers concerned in June 1972, it was held up by various political difficulties and also by the resistance, which is easily understandable, of a bureaucracy disturbed in its habits. The report, in fact, concludes that instructions should not be produced in the traditional form and that the problems should be defined only as a general outline in the light of which the local educational teams will draw up their own curricula.

This strategy involves making a sustained teacher-training effort and speeding up the introduction of a network of educational advisers who could give an impetus to the preparation of curricula adapted to all the various local conditions. (This has been started but is not advancing quickly enough.)

The Swedish Project must be seen as an attempt to illuminate very broad questions which have been difficult to deal with in practice and difficult to describe in the space of a few pages. The Swedish way of dealing with questions about the specialisation of religious attitudes must be seen as one way among many possible. While it has been rather successful in Sweden, this method may be impossible or nearly so in other countries with different social orders and religious traditions.

These then are some of the problems that have confronted curriculum developers during the course of the projects studied. The fact that each project manifests in lesser or greater detail such clearly defined problems should be a warning for future developers. It is clear, however, that the nature of curriculum development is such that each

project, simply because it is based on intricate human relationships both within the project team and with the teachers in schools, will need to adopt suitable strategies to deal with such major constraints as funding, linkages, teacher involvement, evaluation, implementation and dissemination.

Appendix

THE QUESTIONNAIRE

Project Title:

Sponsor(s)

Total Funding:_____ for development_____ dissemination_____

Duration: (enter dates (month and year) where applicable)

Date project authorised:

Date project started:

Development phase : from_____ to_____

Dissemination phase: from_____ to_____

Project end:

Staff: Identify number and type of person (skills, abilities, tasks performed) who participated on the project. Indicate whether their involvement was central or secondary.

TO THE INTERVIEWER:

To begin with, we need as factual a statement as possible of the characteristics and purposes of the project. You will have to introduce questions to meet the variations which present themselves, for our questions are drafted on the assumption that materials production will be a main characteristic of most of the projects selected. Even here, wide variations will occur. Some may be concerned with highly organised materials, others with loosely organised kits, others with guidelines, and some intended basically for teachers. Any materials, reports, or descriptive materials available about the project will be useful.

The topics on which we seek information are the following:

Social and cultural factors affecting the project

Antecedent events influencing the shape of the project

Programme specification - the extent to which preplanned, evolving, non-existent, or otherwise - including statements about aims, target, learner characteristics, abilities, aptitudes, variability, etc.

Objectives - how stated, how explicit, how detailed

Programme - what it is based on, what concepts of learning, child development, behavioural analysis; how is the content organised - around identified concepts; linear sequencing; discrete units; what ability levels are prerequisite in students; what is the nature of the activities presented; what type of instructional procedures are utilised - programmed learning, inquiry methods, etc.; what media are utilised.

Staff and organisation - what demands are placed on existing staff and school organisation. What skills do teachers need to utilise materials; does the programme fit existing school organisation or require modifications. How drastic are the changes required of staff and organisation?

Evaluation - what procedures have been used in evaluation, during the formative stages, and with regard to instructional outcomes? Were field trials used and what effect of revision; are learner performances specified?

Production - what is form and cost of final product. Is it within normal school budgets; how long will the materials last and are replacements of parts available. Any estimates of cost per hour or instruction?

Dissemination - what procedures were adopted with what degree of success. What are trial and adoption rates?

The top of page 1 is to be filled in, points 1-3 below are questions for tape-recorded interviews. Feel free to add any questions or elaborations which are pertinent.

Tape record responses to following questions. Identify project, date of interview, and person responding.

1. Origins of project

How did project come into being - were you invited, submitted, or what?

Were there other particular social forces or influences which shaped the character of the project (political, technical, economic, pedagogical, moral, other)?

What constraints or conditions did you face in designing project:

a) agency policies, objectives
b) agency funding procedures
c) social needs, acceptability
d) resource availability ?

Were there particular views or convictions of your own or your colleagues which shaped the project, for example your subject matter orientation, social convictions, educational philosophy, social or educational needs?

Were there particular events which were significant to the origins of the project?

Once your project was authorised and funded, were you a free agent? Could you make decisions without influence or review by superiors?

What problems arose in the planning phase?

2. Project characteristics

If the answer to questions on project characteristics is no, seek an explanation. If response is yes, seek a description.

Is the target audience identified? No? Why not? (Is it implicit?) Yes? What?

Are audience characteristics specified? If so, which?

Are the rationale and the instructional aims of the projet decribed? In general, or in detail? Is any documentation available?

Describe the produce/output of the project.

Is it a kit, package of materials, set of guidelines, programme, etc?
Is the content subject matter oriented, integrates several subjects, topically oriented, etc.?
What media are involved?
What skills are needed to utilise the materials - is training provided?
Does the product fit existing school organisation or require changes? If so, what?
How are the materials organised - self-contained, open-ended, etc.?
What do the materials cost?

3. Project organisation

Questions for consideration - Chapter II

1. How is the project organised?
2. How is the project managed - who makes what decisions, allocates what resources, reviews performance?
3. What activities took place prior to initiation of materials development, i.e. survey of needs, etc.?
4. Who developed the ideas?
5. Did this person or persons work throughout the development period?
6. Who prepared, wrote, developed the materials? Qualifications for?
7. How were they organised - writing teams, advisory committees, sub-contracted, etc.?
8. Did teachers play any role in development? What?
9. To what extent do the materials specify or take learner characteristics into account?

10. To what extent does project take teacher characteristics into account, and necessary teacher training?

11. What formative and summative evaluation procedures utilised?

12. What teacher education procedures developed or used?

13. What dissemination procedures used and who responsible?

14. How many classrooms or schools usi: it with what success? What contact of project staff with adopting schools?

15. What follow-up/feedback mechanisms adopted and to what effect?

16. What are major successes of project?

17. What could have been done differently?

Chapter III

ADMINISTRATIVE AND SOCIAL SETTINGS OF CURRICULUM DEVELOPMENT

INTRODUCTION

In this chapter the tasks of initiating and sustaining curriculum development are examined from three contrasting national standpoints: those of Austria, Finland and the United States. The first two studies illustrate the problem in settings where there has been relatively little curriculum development; the third is a critical reflection on unfulfilled expectations in the country where large scale project development has been most widely tried. Each study consists of a personal assessment of the manner in which powerful institutions and interest groups guide or constrain curriculum change. Although very different in style and emphasis, they all underline the need for curriculum developers and policy makers to take careful account of underlying social forces and pressures, which are no less powerful for being hidden or indirect.

In particular, emphasis in the Austrian study is on the legal and customary power of a developed centralised system. This power is exercised not only through the authority vested by law in the Federal Ministry and various regional and local bodies, but more subtly through the perceptions that teachers have of their roles.

Curriculum development, conceived as a continuous and comprehensive process of planned change, is limited, in Austria, by the need to conform to the requirements of a carefully articulated educational control system. It is important to recognise that this control system is not arbitrary, but is designed in part to provide and maintain a fair distribution of educational resources and to ensure that the educational service is responsibly administered. Attempts to activate such a system through wide-ranging experimental projects carry the twin risks of organisational disruption and pedagogical failure.

A basic question is posed in the analysis of educational structures and the emerging apparatus of curriculum innovation in Austria. It is whether stability and responsible management, on the one hand, and the disruptive but possibly creative endeavours of curriculum developers on the other, can be reconciled within an evolutionary reform movement. It is clear that curriculum development on any scale will not succeed unless ways are found of strengthening teacher support systems, modifying teachers' perceptions of their task through in-service programmes

and encouraging the public to accept a wider and more active role for the school as an agent of social change.

In the Finnish study, emphasis shifts from the constraints of administration and law to the manner whereby curriculum decisions are influenced by the various interest groups which exercise power in modern societies. These interest groups are concerned with maintaining their power and are likely to seek ways of using the school curriculum for this purpose. For example, the treatment of value disputes and controversial issues in textbooks and other materials placed in the hands of learners, either overtly or tacitly, may favour the view of one group rather than another. A problem of particular concern is that the experts to whom the task of developing new materials and teaching procedures is assigned, may themselves be oblivious of how their own perceptions and values have been shaped by class origins, experience and training.

The chapter concludes with an American assessment of what in time may appear as the high tide of large scale curriculum development - the big-project movement of the nineteen-sixties. This movement, examples of which are discussed in Chapters I and II, was characterised by optimism concerning planned social and educational change. Confidence in the capacity of scientific and engineering approaches grew as the scale of social problems increased. American experience seems to suggest that much of this confidence was misplaced. At any rate, it generated social expectations which curriculum developers have been unable to satisfy.

Whether education is a process and a field of inquiry which is susceptible to scientific treatment has been debated at least since the time of Herbart. The continuation of scientifically-based research is not in dispute. What is argued in this chapter is that educational policy is not reducible to science-based knowledge. Judgments embodying values play a central part in decision making. Furthermore, in the field of social action, there are many unanticipated consequences of intervention. It is clear that neither the existing level of social knowledge nor the role of values in policy decisions justifies the belief that education is a science.

The conclusion of the chapter is that the large scale social engineering approaches favoured by some governments and educational reformers are no longer what is most needed in curriculum development. Interest in local initiatives, in school-based developments, in more evolutionary types of change is growing. These local initiatives should be carefully studied, so that those which seem best to satisfy educational criteria may be selected for support and encouragement. To apply Schon's centre-periphery model of change, it should become one object of policy to encourage promising developments at the periphery, even if this means abandoning some of the high expectations which have been held of education as a force for large-scale social change.

All three sections of this chapter demonstrate that the needs and interests of various social groups are not being satisfied by the strategies so far evolved for curriculum development. Indeed, none of the approaches examined in the Handbook comes to grips with the problem of how those groups which exercise little influence, for reasons of social background and education, are to be brought into the decision-making process. The American reliance on prestigious national projects has not encouraged their participation. The Finnish view, as expressed in this chapter, assumes a conflict, or at any rate, continuing

tension, amongst the various groups competing for power and influence. Some of these groups are striving to maintain existing patterns of culture, whilst others are seeking to change them. The analysis of structures and concepts of power, interest, decision-making and policy in the three national settings raises issues which profoundly affect the purposes and procedures of the whole curriculum movement.

I. AN AUSTRIAN CASE STUDY

The Organisation of the School System in Austria

The Austrian school system (1) is composed of two sub-systems. One caters for general (i.e. academic) education, the other for vocational education, and each sub-system contains both "compulsory" and "non-compulsory" schools.

Table 1 presents a simplified model of the system.

All pupils pass through the lower division of the compulsory primary school, and after the fourth grade may transfer to the lower division of a secondary general school if they have reached a certain level of attainment or passed an entrance examination. Those not so selected attend an upper compulsory primary school or, in rural areas, the upper division of a compulsory primary school.

After four years at an upper primary school a student may pass on either to one of the upper divisions of a secondary general school if he has reached the required standard, or to an intermediate or secondary vocational school if he passes an examination. Those without the necessary qualifications or aspirations who are still below the school-leaving age (15 years) attend a "polytechnic course" for one year.

Apprentices who are over 15 must attend a part-time compulsory vocational school for the duration of their apprenticeship, which is usually three to four years.

When a student has completed his secondary general or secondary vocational education successfully, he may proceed straight to university or other institutions of post-secondary education without further examination. (2)

The legislation passed in 1962 which organised the national education system (except for the universities) in this manner incorporated the following important innovations:

- teacher education (with a few exceptions) (3) was transferred to the post-secondary level;

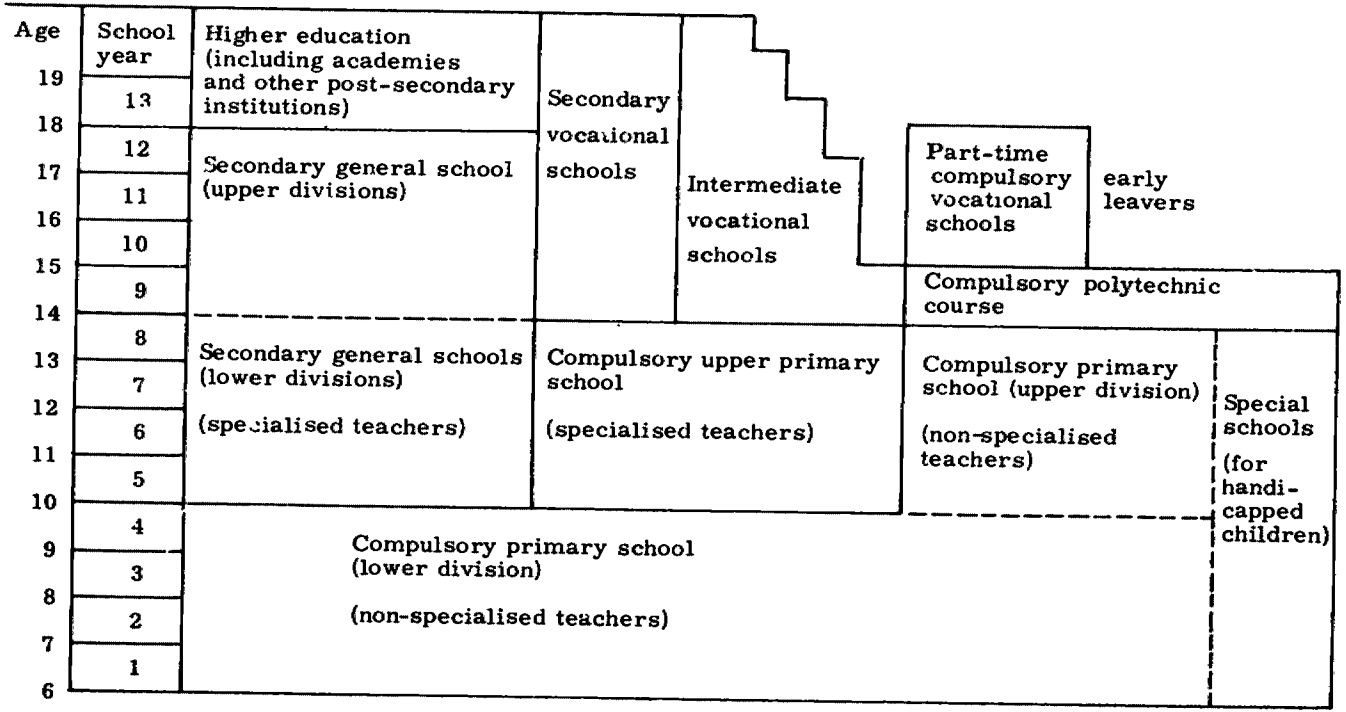
1) The system of post-secondary education is not mentioned here and will be referred to in the section on teacher education.

2) There are some restrictions for students from secondary vocational schools and for certain types of higher education, e.g. the Art Colleges, where special entrance qualifications are required.

3) Nursery school teachers, underteachers (e.g. for boarding schools) and handicraft teachers are trained in intermediate vocational schools (which will be raised to secondary level).

Table I

THE AUSTRIAN SCHOOL SYSTEM



- the duration of full-time compulsory education was increased from eight to nine years;
- the first legal provision was made for the development of the vocational sector, which initiated rapid expansion in these schools;
- the following procedures facilitated the introduction of comprehensive schooling:
  - the progressive elimination of the upper division of the compulsory primary school: pupils with a compulsory upper primary school in their area may not attend the upper division of a compulsory primary school;
  - the establishment of certain secondary general schools (upper division) for the specific purpose of facilitating the transfer of pupils from compulsory upper primary schools to higher education;
  - the creation of upper secondary schools consisting of an upper division only, whereas, originally, upper secondary schools had been conceived of as homogenous institutions for the transfer of gifted students from grade 5 through grade 12 to higher education;
  - the synchronisation of the Lehrplan (1) for the lower divisions of secondary general schools and compulsory upper primary schools.

The trend towards a comprehensive system for the 11-14 age group was confirmed by legislation passed in 1971 which provided for the setting up of experimental comprehensive schools.

The Administration of the Austrian Education System

The administration of the education system functions on three levels:

- central level:
  the Ministry of Education and Arts;
- intermediate level:
  the Federal Education authorities in the provinces and political districts;
- institutional level:
  the administration of the individual school.

Austria is a federal republic; generally its nine provinces may themselves administer all those concerns which have not expressly been given over to federal jurisdiction. The Austrian school system is an exception. It is entirely a federal affair except where concerns have specifically been delegated to the provinces or districts. This results in strong centralisation, and Table 2 shows the locus of responsibility with reference to several variables which are related to curriculum development.

---

1) Lehrplan - a scheme which lays down general aims for schools, guidelines for instruction, time allotted to each subject and the organisation of subject matter. See pages 138-141.

Table 2

LOCUS OF RESPONSIBILITY IN EDUCATION

Selected variable	locus of responsibility		
	institutional level	intermediate level	central level
Lehrplan			*
Allocation of time to school subjects			*
Time tabling	*		
Methods of instruction	*		
Supervision of instruction	*	*	
Assessment of students	*	(*)	
Syllabus of pre-service teacher education			*
Syllabus of in-service teacher education		* (1)	* (1)
Teacher selection		*	
Authorisation of student materials			*
Finance of student materials			*
Selection of authorised student materials	*		
Selection of teacher materials	*		
Finance of teacher materials		* (1)	* (1)

(1) Depending on the type of school.

It may be seen that most of the major decisions are taken at the central level.

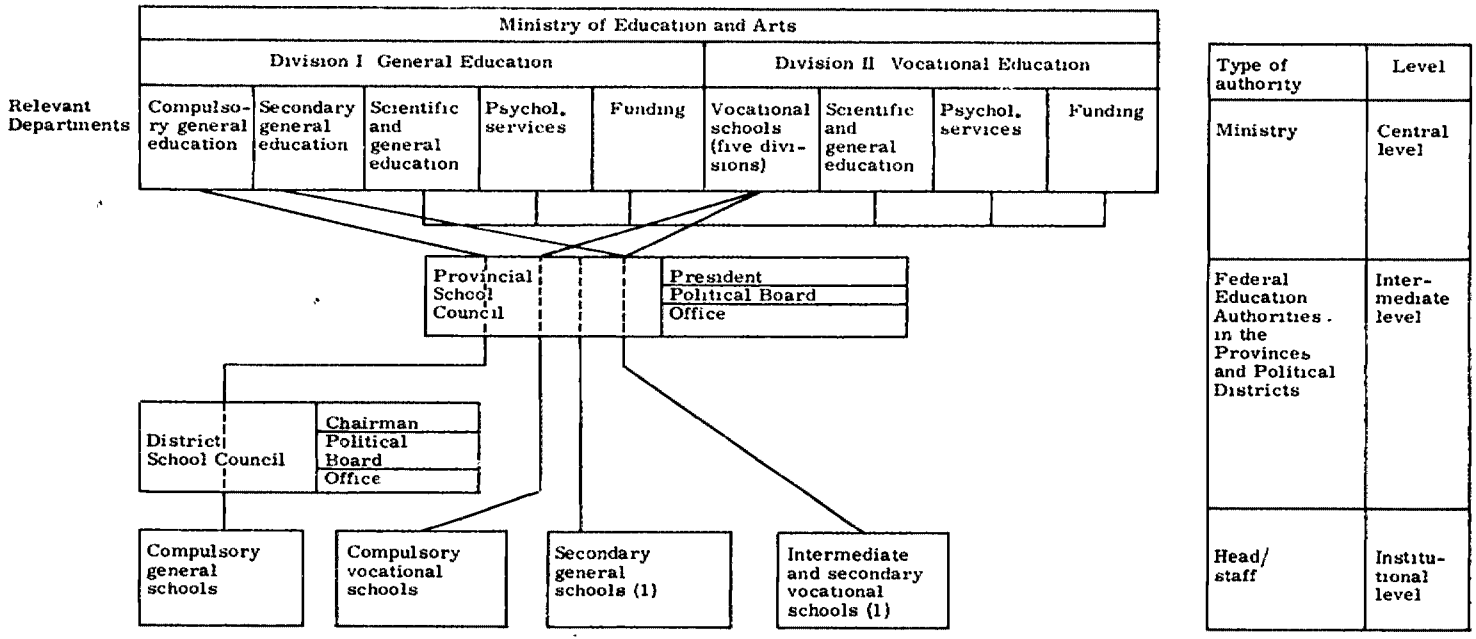
Table 3 gives a survey of the administration of the school system, and Table 4 refers to some relationships between social groups outside the system and those institutions which are responsible for planning, legislation, organisation and control in education.

Parliament has a strong influence on the school system, since legislation (1) regulates many matters relevant to the curriculum including:

1) School laws in Austria are on a par with constitutional laws. Any alteration needs a two-thirds majority in Parliament.

Table 3

ADMINISTRATION OF SCHOOLS



1) A few of these schools are under direct control of the Ministry

Table 4

SOCIAL INFLUENCES IN THE EDUCATION SYSTEM

Institution \ Selected social group	Political Parties	Union (teachers unions)	Parent Association	Family Council	Student Council	Chamber (of Labour, Commerce, etc.)	Churches
Parliament	A	C	C	C	C	C	C
School Reform Commission	A	A	A	A	A	A	A
Ministry of Education and Arts	C	C	C	C	C	C	C
Provincial School Council (Political Board)	A	-	-	-	-	B	B
District School Council (Political Board)	A	-	-	-	-	B	B
Individual school	-	-	-	-	-	-	-

A, B: influence by membership
A: deciding
B: advisory
C: influence by formal consultation (1)

1) Informal consultation plays an important role too but cannot be dealt with adequately here.

- the division of power between the Ministry and the provincial or district school authorities;
- types of school and their function and organisation, the duration of courses and the formal qualifications of school leavers;
- the subjects to be offered by each type of school;
- guidelines for experiments in education.

The School Reform Commission was formed in 1969 by parliamentary statute to advise the Minister for Education and Arts on the reform of the school system and teacher training. It has over 100 members, divided into five sub-committees (1), and is convened by the Minister. Its main concerns are pre-school education, special education for gifted and handicapped students, and comprehensive education. So far its most important success has been the passing in 1971 of a law which laid the foundations for the introduction and scientific monitoring of broad-based school experimentation.

The Ministry of Education and Arts is the central education authority. Its education sector has three divisions, dealing with general education, vocational education and teacher education. Each division contains several departments (as set out in Table 3), and offices within each department are responsible for specific tasks.

Other institutions, apart from these divisions, which are directly responsible to the Minister include the Centre for School Experiments and School Development which has three sections, and the ministerial committee for school reform.

The Ministry's most important tasks in relation to the curriculum are:

- the establishment of a Lehrplan for each type of school and for the non-university teacher-training institutions;
- the approval of teaching materials;
- school experimentation;
- in-service teacher education (except for teachers in compulsory schools);
- the issuing of directives for the supervision of schools.

It is clear that the Ministry has considerable responsibility in the field of curriculum development.

At the intermediate level are the 'School Authorities of the Provinces and Districts', which are federal authorities and directed by the heads of the provincial or district governments. The decision-making body in each authority is a political board, the composition of which must reflect proportionally the political composition of the provincial or district legislature. The executive power lies with the office of each authority, and its primary concerns are supervision (by provincial and district school inspectors) and psychological services. Since nearly all legislation on education is federal, the provincial and district authorities are mostly executive organisations for the federal government. They can take some independent decisions in a few areas only, such as

1) The sub-committees deal with the structure of the school system, educational methods, assistance to gifted and handicapped students, teachers, and the economics of education.

those concerning personnel and the organisation of in-service education for compulsory school-teachers.

The 'individual school' is not an administrative unit and should not therefore, strictly speaking, appear in a synopsis of administration. In fact several tasks have been delegated to the head of the school and to the teachers' conference. The head of the school is responsible for the time-table, for the selection of approved student materials and as a first instance for teacher assessment. (1) The teachers' conference has a few rather vague functions, its most important one being the assessment of students. Table 4 shows that at every level (except the school level) there exist formal relationships between the institutions responsible for the school system and social pressure groups. These relationships have in part a legal basis, for instance, every draft bill must be sent to the legally acknowledged institutions for their opinions before it is presented to Parliament.

By tradition drafts of Ministry decrees (e.g. of the Lehrplan) are also presented to a considerable number of other groups. The School Reform Commission is an official link connecting the Minister for Education and Arts with social institutions. All pressure groups which have an interest in school affairs are represented on the commission. The boards of the provincial and district authorities are agents of the political parties, but other groups have a legal advisory function. At the school level alone there are no formal relationships with social pressure groups. There are informal relationships with parents' associations, which vary in importance, but their current influence on the curriculum of the individual school is negligible.

The Development of Curriculum Materials

Two types of curriculum materials can be distinguished for our purpose:

- materials which contain directions for teaching and learning (the Lehrplan, (2) collection of problems and exercises, instructions for experiments, guides, etc.);
- materials which contain information for teachers and/or students (text books and audiovisual materials);

The Development of Textbooks

Textbooks are primarily concerned with the presentation of information. Instructions for teaching and learning are less commonly included. Textbooks exert a strong influence on instruction, not so much as study aids, but because the content and sequence of instruction is often dependent upon them. Most of them, although sold as materials for students, (3) are rarely related to their prerequisites and are addressed to the teachers.

1) This assessment affects the teacher's career only in cases of total failure (extremely rare) or for appointment to a director's or inspector's job. There are no grades of teachers distinguished by achievement.
2) The Lehrplan has special significance because of its official and obligatory character, and will be dealt with in a separate section.
3) Very few materials are explicitly intended for the teacher.

Table 5

THE DEVELOPMENT OF TEXTBOOKS

Development agents \ Development activities	Initiative and Planning	Development	Approval	Production	Dissemination	Selection	Finance
Individual or groups of teachers	x	x					
Publishers	x			x	x		
Ministry of Education and Arts			x				x
Classroom teachers						x	
Inspectors	(x)						

Table 5 gives an idea of how textbooks are developed. An initiative for a new textbook is generally taken by either a publisher or a teacher. In the latter case the individual teacher has to find a publisher for his project.

The manuscript for a textbook is first examined by the publisher, modified if necessary in cooperation with the author(s), and then presented to the Ministry. The Department of Scientific and General Education then passes it on to one of several dozen commissions established for the purpose, consisting typically of four teachers of the subject concerned. One or two of the members are then charged with the preparation of a report (within two months or so) and the commission then decides - also on the basis of the author's reply to the report - on a recommendation to the ministry, which is, however, not binding on the latter. Criteria for the report include: the textbook must support the teacher in his teaching efforts and the student in his homework, cover the subject matter specified in the Lehrplan, be attuned to the developmental characteristics of the intended age-group, have aesthetic value and be linguistically sound.

There is no further evaluation, but a provisional edition may be issued to a group of teachers who record their experiences with the book and provide feedback for further revision. This procedure is informal, financed by the author(s), and has no effect on the official approval.

If more than one textbook is approved for a given subject, type of school and grade, the teacher may decide which one he prefers and the pupils obtain the book from bookstores in exchange for vouchers. The bookseller is reimbursed by the Government direct.

The Ministry of Education and Arts plays a passive role. It takes no formal initiatives in either guidance or coordination. (1) These are taken almost exclusively by the publishers.

The Development of Audiovisual Materials

Much audiovisual material is produced for educational radio and TV broadcasts, (2) generally presenting information only. Other possible functions feature even less than in the case of textbooks. Some transmissions are received in class and others, particularly radio programmes, are recorded by teachers and presented as required. About 1000 radio and about 100 TV productions for schools are produced and broadcast each year, often repeatedly.

Table 6 refers to the development of educational radio and TV productions.

The Department of Scientific and General Education of the Ministry of Education and Arts and the Austrian Broadcasting Corporation (ORF) usually co-operate in the planning of radio and TV productions. Script-writing is shared between teachers and Ministry officials. All

1) Informal initiatives are taken, since a number of Ministry officials are authors of textbooks.

2) A few materials (instructional films, slides, tapes) are produced for classroom use. They present information only and are not dealt with in this paper.

educational TV programmes are commissioned to private producers whereas radio programmes are developed and recorded by the ORF. Before transmission Ministry officials examine the productions in order to check their quality and instructional relevance, but there is no legal way of preventing the ORF from transmitting non-approved programmes. The Ministry can only refuse the description "recommended". All productions are transmitted by the ORF, and individual teachers are free to select programmes as they wish. They receive detailed information on the educational programmes in two monthly Ministry publications. At present costs are shared between the Ministry and the ORF, but the former is likely to take over all financing in the future.

The Development of Teaching Systems

The term "teaching system" refers to a co-ordinated and comprehensive set of curriculum materials containing information, directions for teaching and learning, and instruments of evaluation. Two projects, planned as teaching systems, are being developed at present:

1. The Centre for School Experiments and School Development

In 1971, on the recommendation of the School Reform Commission, an amendment to the Law of School Organisation was passed. This authorised the Ministry of Education and Arts to introduce experimental forms of school organisation, monitor them scientifically, and provide for the necessary institutional preliminaries. The law states that up to 10 per cent of the schools of each type may be engaged in experiments. Other specific organisational innovations are also legislated for in an experimental context and include:

- for the 6-10 age group:
  - pre-school classes for children of school-age who have been held back for a year
  - ability-grouping in certain subjects
  - instruction in one modern language.
- for the 11-14 age group:
  - comprehensive schools (with ability grouping by subject).
- for the upper divisions of secondary general schools:
  - ability grouping by subject and special courses for gifted and handicapped pupils.
- for teacher-training colleges:
  - responsibility for the training of teachers for upper primary schools, polytechnic courses and special schools (1)
  - co-operation with institutions of higher education.

These legal tasks can only partially be regarded as experiments in any strict sense. In reality they are to a considerable extent organisational changes which have been labelled "school experiments" because their general introduction did not seem opportune or would not receive a majority in parliament. In a country in which the school system is regulated in detail by quasi-constitutional laws "school experiments" like these maintain some flexibility and effect changes step by step.

---

1) At present these are trained in special institutions for in-service education.

Table 6

THE DEVELOPMENT OF INSTRUCTIONAL RADIO AND TV PRODUCTIONS

Development activities / Development agents	Initiative and planning	Script writing	Production	Admission	Dissemination	Selection	Finance
Ministry of Education and Arts	x	x		(x)			x
ORF (Austrian Broadcasting Corporation)	x		x (1)	x	x		x
Film producers			x (2)				
Classroom teachers						x	
Individual or groups of teachers		x					

1) For sound productions

2) For TV productions

In order to carry out these tasks the Ministry of Education and Arts established a Centre for School Experiments and School Development which is commissioned to plan and organise school experiments, develop the necessary materials, advise the experimental schools and evaluate the experiments.

The Centre has three sections. Sections 1 and 3 are responsible for the first three areas mentioned above (1), and Section 2 for evaluation. Each section has a director (2) and a small staff attached to it, and cooperates with groups of teachers in experimental schools, their advisers and teams of teachers responsible for developing materials.

Table 7 refers to the Centre's organisation, and sections 1 and 2 will now be discussed in greater detail. (3)

Section 1 deals primarily with comprehensive schools. Four groups of personnel co-operate in the experiments.

- The principals and teachers in the experimental schools.

The initiative for a school experiment is usually taken by the head of a school. His proposal is examined by the Provincial School Council, and the Ministry of Education and Arts decides whether to accept it. The principal and participating teachers are paid for the necessary extra work.

- The advisers to the experimental schools.

Every school in which experiments are carried out has an adviser. (4) These are usually professors from teacher training colleges, but also school psychologists, school heads or inspectors, and are appointed by the Provincial School Councils. They are expected to organise the experiments in co-operation with the teachers, keep the pupils' parents informed, advise (5) the teachers and provide feedback to the Centre on the progress of the experiments. The regional co-ordination of school experiments is carried out by regional advisers, who are usually provincial school inspectors. They too are appointed by the Provincial School Councils and are responsible for organising regional training courses for the school advisers.

- The development teams.

Twelve development teams are engaged at present in the development of materials for comprehensive school experiments. Each team is composed of four to six teachers and is directed by a member of the Centre staff. The materials are developed individually and then discussed and co-ordinated in monthly workshops. These teachers, appointed by the individual Provincial School Councils, are not released from normal teaching duties but are paid for their contributions.

---

1) Section 1: all general schools except for the upper divisions of secondary general schools. Section 3: the upper divisions of secondary general schools.

2) The Director of Section 3 is also Director of the whole Centre.

3) The organisation of Section 3 is similar to that of Section 1 but less formal.

4) Some advisers are responsible for more than one school.

5) They may not, however, give directions to teachers or inspect their instruction.

Table 7

THE PERSONNEL ORGANISATION IN SCHOOL EXPERIMENTATION (1972)

Sections I and II

The Centre	Centre staff					Affiliated personnel		Experimental schools	
	Director	Teachers		Others	Clerical	Development teams	Advisers	Compulsory primary (lower division)	Comprehensive
		Full time	Part time						
Section I	1	-	3	1	1	16	120	92	59
Section II	1	3	3	3	1 1/2	-	-	-	59 (1)

1) Plus 26 control schools.

- The staff of the Centre

The staff of Section A are responsible for the overall co-ordination of the experimental schools, the direction of the development teams and the training of advisers. Three teachers from teacher training colleges are under part-time contract to direct the development teams.

The developmental activities aim at producing materials for Mathematics, English and German, which are grouped to cater for three levels of student achievement. The materials are organised in units, each one covering four or five weeks of instruction. The units are composed of the following elements:

- the categorisation and analysis of subject matter;
- instructional objectives (partly operational);
- instructional recommendations to the teacher;
- a textbook;
- a bibliography of other materials available for teachers and students;
- worksheets with additional information, exercises and feedback to encourage students to take responsibility for their own performance;
- achievement tests by which students can be transferred to other achievement groups.

Each of the units, developed in a different version for each level, is made available to the experimental schools. There the advisers are responsible for the implementation of the materials and feedback to the Centre.

While Section 1 is primarily engaged in organisation and development, Section 2 is responsible for evaluation. Its sole concern is a comparison of the effects of comprehensive schooling versus selective schooling for pupils in the 11-14 age group. The results of this research are expected to provide the basis for political decisions on the future structure of the school system for this age group. For this purpose a detailed experimental design was developed based on the following types of questions:

- does comprehensive education improve the education of students who are socio-economically or socio-culturally disadvantaged?
- does comprehensive education favour co-operative behaviour patterns in teachers and students and intrinsic motivations?
- does comprehensive education have a negative effect on the achievement of students with certain characteristics?

The hypotheses of the experimental design contain almost forty dependent variables and the same number of treatment variables.

'Treatment variables' are the organisational units in the experimental schools (achievement groups in mathematics, English and German) and in the control schools (classes in two traditional types of school). (1)

---

1) The lower division of the secondary general schools and streams A and B of the compulsory upper primary schools.

'Dependent variables' refer to the expected effects of the treatment variables, including achievement levels, motivation, the attitudes of students and their educational and professional careers.

'Control variables' include the initial characteristics of the students, the instructional objectives, the instructional materials, the methods used, the distribution of ability in each set or class, and teacher characteristics. Relevant data are collected in experimental and control schools (1) at the beginning of grade 5, towards the end of grades 6 and 8, and on the completion of grade 8, using questionnaires, tests and scales.

It is important to note that this research does not evaluate curricula, it evaluates only units of organisation. Curriculum variables are not found among the treatment variables but only among the control variables, so the materials developed by Sections 1 and 3 are not formally evaluated. (2)

The explanation for this appears in the amendment to the school organisation law which provides the legal basis for school experiments and refers only to experimental changes in school organisation and their scientific control. Very soon it became clear, however, that certain organisational changes, such as the experimental development of comprehensive schools, would be impossible without serious curriculum development and evaluation. At first development was limited to achievement tests and modifications in the Lehrplan, then other instructional materials were gradually developed and now attention is increasingly directed towards teaching systems.

Moreover, it would seem that the development of materials, together with the guided implementation of them, is becoming the Centre's most important function, gaining priority over organisational comparisons. The Centre has (unintentionally in a sense) become the first Austrian institution to be concerned with combined teacher and materials development. The Centre is still developing and, partly for this reason, it is handicapped by several problems.

The functions of the advisers to the experimental schools are diverse and virtually incompatible. They are expected to carry out the instructions of the Centre and to provide feedback, as well as advising teachers of three different subjects. The ambiguity of their role as controllers and advisers naturally leads to difficulties, particularly as many are inspectors. The Ministry, on the other hand, sees this dual role as a chance to redefine the role of the inspectorate.

Conditions do not yet provide for an adequate flow of theory into the Centre which, as a governmental research and development institute stands between the universities and the schools. Although it has a close relationship with the latter, contact with the university is rudimentary, (3) in spite of the fact that one of its directors is a university professor. This reflects the traditional distance between the universities and the

---

1) Control schools are selected directly by the Ministry of Education and Arts.

2) There is, however, an informal (subjective) evaluation on the basis of the feedback from the advisers in the experimental schools.

3) Only in Section of the Centre is there any co-operation with university lecturers.

schools, a gap which universities have not been adequately interested in bridging with regard either to subject-matter disciplines or the relevant social sciences. Close links, however, are hoped for with the recently founded School of Educational Sciences at Klagenfurt when this institution is sufficiently developed.

The Centre's two main activities - curriculum development and organisational evaluation - are not well co-ordinated and partially obstruct each other. New developments in the curriculum field complicate or even blur the experimental conditions necessary for the latter activity. Yet if curricula are rigorously controlled for the sake of the experiments, flexibility suffers. This dilemma, a direct result of the legal situation, will probably be resolved by a move in the direction of curriculum development.

2. The Objectives Banking Project

This is a curriculum project for the development and evaluation of materials in selected subjects (1) of secondary vocational schools. In the first phase, instructional objectives which describe the minimum standards of achievement are constructed. Each objective is further interpreted and illustrated by criterion-oriented items. The title of the project has been derived from this phase of its activity. (2)

The second phase is the construction of a collection of criterion-oriented items for each subject, and in the third phase teacher and student materials, in addition to the textbooks in use, are developed.

The project has these functions:

- to offer a basis for rational decisions on instructional objectives, to enable the individual teacher to select objectives more consciously and to enable the Ministry to revise the Lehrplan in a more systematic manner;
- to encourage self-assessment and regular evaluation of instruction amongst teachers and students;
- to facilitate the adaptation of instruction to individual needs.

Each phase of the project is developed separately, presented to all teachers in the form of an experimental edition, and evaluated. Nearly every teacher in vocational secondary education is introduced to the materials in short seminars which are sometimes held in schools.

The Objectives Banking Project is directed and financed by the Department for General and Scientific Educational Matters of the Vocational Education Division in the Ministry. Thirty-five teachers are involved in the project, working in groups of two to six. They were selected by the department, trained in short seminars, and have their teaching load reduced by 50 per cent. They work independently and meet for a full day weekly or fortnightly to discuss and co-ordinate

1) Data processing, Machining, Accounting and Book-keeping for one type, Mathematics and English for three different types of vocational secondary schools.

2) Work started in 1971. In 1972 the first volumes of the experimental edition of Mathematics (Phase 1) were published. In 1973 the first volumes of the experimental editions for the other subjects (so far 13 volumes) were available.

their work. A scientific adviser from a university is attached to each group and takes part in the weekly meetings. He is also responsible for the development of instruments of evaluation and for the preparation of the training seminars in which teachers are introduced to the materials. The seminars are held by members of the development teams. Table 8 demonstrates the organisation of the project.

Like the Centre for School Experiments and School Development, the Objectives Banking Project is under the direct control of the Ministry, and its work is carried out by teachers. There were no precedents in Austria for such ventures, which are both pioneering in a sense.

The Objectives Banking Project has some important problems of organisation:

- it has no institutional basis and no one has full-time professional responsibility for it. It is therefore impossible to prepare and carry out a number of tasks carefully enough, particularly in the areas of evaluation and implementation. The project groups' responsibilities include development, evaluation and teacher training, and the majority of teachers are overburdened by this accumulation of tasks.
- The Scientific advisers have only been "borrowed" from the universities, and their contributions to the project are not integrated with their activities at the universities. This results both from the fact that the project and the universities are not under the same ministry and from the conception which regards developmental activities as non-academic. There are only a few people in Austria scientifically engaged in curriculum development so the field itself is still a novelty to the universities. Both factors increase the difficulties in obtaining able and concerned advisers. (1)

The Development of the Lehrplan

The Lehrplan is laid down by the Ministry of Education and Arts and is compulsory in the sense that teachers may not extend their instruction to other thematic areas. However, they are free to vary emphasis within the thematic areas mentioned in the Lehrplan. The inspectorate is responsible for ensuring that the Lehrplan is observed. Every type of school has its own Lehrplan; the School Organisation Law defines the subjects to be taught and, in general terms, the kind of information any Lehrplan must provide. It includes

- the number of hours per week to be devoted to each subject;
- the general aims of the type of school; (2)
- the aims of instruction in each subject; (3)

---

1) At present 10 groups of teachers are attended by 4 scientific advisers.

2) e.g. "... to prepare students for practical life and their admission to vocational schools..." (from the Lehrplan of the upper primary school).

3) e.g. "... the students should be able to think independently, to take positions, to show positive criticism and unprejudiced thinking..." (from the Lehrplan of the upper primary school).

Table 8

THE ORGANISATION OF THE OBJECTIVES BANKING PROJECT

	Ministry	Development groups	Educational advisers
Selection of developers	x		
Initial training of developers			x
Development of materials		x	
Assistance during development			x
Production of materials	x		
Dissemination of materials	x		
Training seminars for teachers		x	x
Evaluation		x	x
Direction	x		
Finance	x		

- general guidelines for instruction (1): in secondary schools guidelines are provided for each subject;
- the organisation of subject-matter for each subject and grade. (2)

Besides these mandatory elements, the Lehrplan may contain additional information, e.g. the number of written examinations for each year and subject or (for compulsory schools) a survey of the psychological characteristics of the age-group.

Thus the Lehrplan is more than a collection of thematic areas; it is also designed to prescribe the timing and organisation of instruction. For the majority of teachers its influence is indirect, exerted through

1) e.g. "... a precondition for any profound educational effect is an educational community based on confidence, including the authority of the teacher..." (from the Lehrplan of the upper primary school).

2) e.g. "... literature: Lyric poetry and ballads, farces and simple dramatic plays". (From the organisation of subject matter for second grade German; Lehrplan of the upper primary school).

fairly specific syllabuses (of subject matter) which are developed on the basis of the Lehrplan and through textbooks, which are approved only if they carry the requisite subject-matter.

The Lehrplan is not specific enough to act as a direct influence on instruction. Its single most important function is to enforce uniform standards with regard to grade level and type of school. As a result of this standardisation a graduate from one type of school is entitled to move to a more advanced type without examination. (1) All universities are immediately accessible to all graduates from secondary general schools, and there is also full horizontal mobility amongst all schools of one given type.

This is significantly different from the English system, where the syllabus is determined at school level and the standards of individual schools are regularised to some extent by a system of external examinations. In Austria this standardisation is achieved through the Lehrplan. Consequently, adherence to the Lehrplan is used as a criterion in the inspection of instructional materials (see page 148).

The Ministry is responsible for any changes in the Lehrplan, and when a new Lehrplan or modifications are considered necessary for a given type of school the head of the relevant department of the Ministry sets up a commission to develop a draft. He selects the members of the commission, who are usually inspectors, officials of the Ministry and heads of schools. There are no formal procedures laid down for the development of a draft Lehrplan; the individual head of department is free to define them ad hoc. Generally, inspectors, heads of schools, teachers and officials of the Ministry are invited to one or more conferences to work out a draft which is then processed by Ministry officials. When the draft is ready it is passed to the Department of General and Scientific Education where its compatibility with the current Lehrplan is examined.

The draft next goes to the Legal department of the Ministry, where the legal and formal aspects are examined. It is then sent to several social institutions for inspection, as outlined in Table 5. Other institutions which may give opinions on the draft include the representative bodies of labour, trade and industry, the conference of university rectors (for secondary school Lehrplan drafts only) and selected Ministries, depending on the type of school involved. Among these institutions only the Provincial School Councils are authorised by law to give opinions on the draft. All other bodies are consulted by "tradition". Individual schools may receive the draft from the Provincial Authority and be invited to contribute to the official statement of opinion. In some cases local teachers' seminars are organised so as to identify teachers' opinions in a more systematic manner.

The opinions of these bodies are then gathered and considered. (2) The final revision is made by a small working group of Ministry officials and inspectors. The revised draft is then signed by the Minister and published.

The development of a Lehrplan usually takes two or three years, but may vary considerably. In vocational education this means that a

---

1) Some schools - mainly vocational - require students to pass an entrance examination, including a physical examination, so that aptitude for the specialization concerned may be assessed.
2) This formal influence is, of course, often accompanied by informal pressures.

new draft may be launched before its predecessor has come into effect. Development occurs almost exclusively at the central level, no responsibility being delegated to other institutions. Even the Provincial School Authority can only recommend changes, and contributors are chiefly Ministry officials and inspectors. There is no organised theoretical input from the universities either from subject disciplines or schools of education.

In 1966 an Austrian policy maker in education wrote: "As in many other fields, the advances of the school system took place largely unaccompanied by educational theory" (1) and "Once again the teachers, administrators and inspectors had to decide - unsupported by educational research". (2) This situation has not changed so far. Thus the formal input of information in the development process is largely limited to current and older versions of the Lehrplan. As a result the development process itself is rather haphazard without theoretical basis or scientific procedures.

Teacher Development

A curriculum generally has two basic elements: materials and the perceptions of teachers and students with regard to the instruction. (3) Both elements influence the actual instructional situation.

The question posed in this chapter is: how are teachers' perceptions developed and what institutional structures exist for this activity?

Teacher development can occur through a variety of activities:

- by formal pre-service education
- by formal in-service education
- by independent study of materials relevant to instruction
- by reflection on classroom experience; this may be direct or mediated via formal or informal contacts with colleagues or others.

Three institutional structures are of major importance:

1. Pre-service training institutions
2. In-service training institutions
3. Institutional conditions by which formal curriculum development is initiated and supported, such as teachers' working groups, staff meetings, etc.

The most influential structures are the institutions for pre- and in-service training of teachers. Tables 9 and 10 outline their administration and organisation.

---

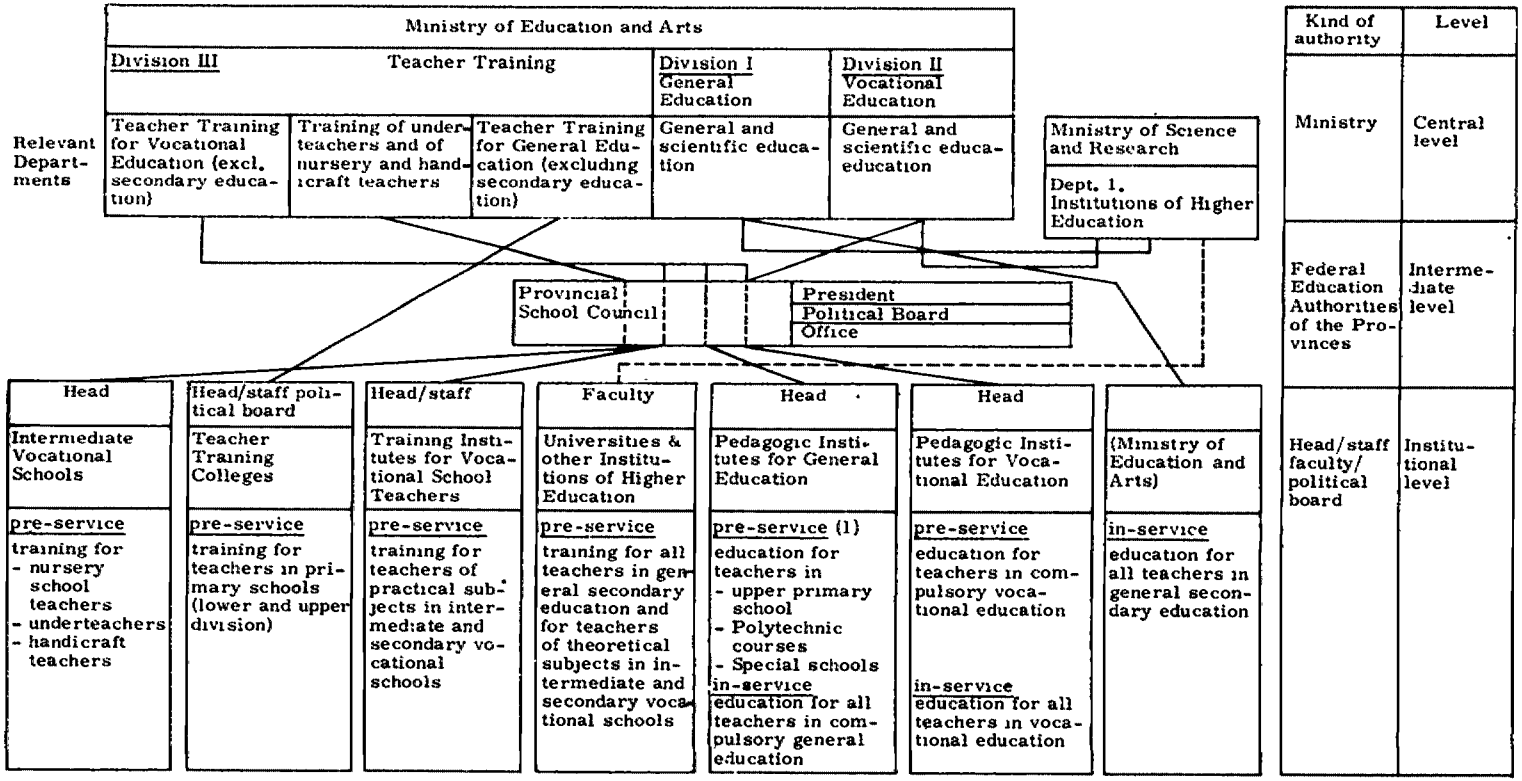
1) Lang, Ludwig, "Die neuen Lehrpläne für die Allgemeinbildenden Pflichtschulen", in L. Land (ed.): Kommentar zum österreichischen Hauptschullehrplan, Wien 1966, page 10.

2) ibid. page 14.

3) The perceptions of students are not dealt with in this study. At present only very little attention is paid to them in the educational system.

Table 9

ADMINISTRATION OF TEACHER TRAINING



1) Only primary school teachers are admitted

____ Lines of communication

Table 10

THE ORGANISATION OF TEACHER TRAINING

Where they are trained / Where they teach	Pre-service teacher training				In-service teacher training		
	Intermediate vocational schools	Teacher training colleges	Training institutes for vocational school teachers	Universities	Pedagogic institutes for general education	Pedagogic institutes for vocational education	Courses by the Ministry of Education and Arts
Primary schools (lower and upper divisions)	x(1)	x			x		
Upper primary schools	x(1)				x(3)		
Polytechnic courses					x(3)		
Compulsory vocational schools						x(3)	
Special schools					x(3)		
Secondary general schools				x			x
Intermediate vocational schools			x(2)	x		x	
Secondary vocational schools			x(2)	x		x	

1) Handicraft teachers

2) For practical subjects

3) Pre-service and in-service education

Table 10 shows that the institution in which teachers are trained depends on the type of school for which they are being trained. The heterogeneity of standards in teacher training is illustrated by the fact that there are three different kinds of institutions training teachers for the 11-14 age-group; for secondary general schools (lower divisions) teachers are trained at universities, for the upper primary schools they are trained in pedagogical institutes which are responsible for in-service training, and for primary schools (upper division) they are trained in teacher training colleges.

Pre-service teacher education

There are two kinds of institutions offering pre-service teacher education: (1) teacher training colleges and universities (including other institutions of university status).

Teacher training colleges are exclusively responsible for the training of teachers for primary schools (lower and upper divisions). The colleges are post-secondary institutions and entrance requirements are the same as for universities, that is, the secondary school leaving diploma. Training lasts for two years. The Lehrplan for the teacher training colleges is laid down by the Ministry of Education and Arts and its development procedure is the same as that for school Lehrpläne. All the subjects included must have theoretical or practical relevance to education, but very little weight is attached to curriculum development as an area of training. Consequently the connection between theoretical subjects and practical teaching is rather weak. Each college is linked with a practice-school and a number of affiliated schools where student teachers can practise teaching and watch classes.

About 10 per cent of the formal instruction time is devoted to these activities. (2) College teachers must have a minimum of five years' teaching experience in primary schools, and a university degree. Their tasks are defined as teaching tasks only, and they are neither expected nor given the opportunity to engage in research and development.

The Centre for School Experiments and School Development has modified the situation somewhat, since college teachers participate in the Centre programme as advisers to the experimental schools.

So far there is no institutionalised co-operation between teacher training colleges and universities. The absence of research and development facilities and stimuli seems to be a serious obstacle.

The universities train all secondary school teachers and most secondary vocational school teachers.

All institutions of university status are involved in teacher education, but their contributions vary considerably. They range from the relatively small contributions of technically and economically oriented institutions to the large contributions of schools of philosophy, 80 per cent of whose graduates enter teaching.

---

1) A third kind of institution (intermediate vocational schools for infant-school teachers, underteachers and handicraft teachers) is not dealt with here. They are, however, a further example of the diversity of standards.

2) In addition, students are required to practise teaching in rural and urban communities for a total of four months.

Studies for the teaching diploma must legally (1) take four to five years, depending on the subject. The legal bases of teacher training colleges and universities differ. Whereas the former are directly subordinate to the Ministry of Education and Arts, the universities are autonomous institutions. "Science and the teaching of science are free" is constitutional law, but in reality this freedom is limited. Overall fields of study and the categorisation of individual subjects are defined by law. (2) More specific regulations dealing with time allocations and the structure of diploma examinations are laid down by the Ministry of Science and Research on this basis. (3) A detailed study plan for each subject must be developed by each university and submitted to the Ministry for approval. The level of specificity of this document corresponds to that of the Lehrplan for teacher training colleges. Until now teacher training in universities has had the following characteristics:

- strict division between the study of subject matter and educational training. The latter accounts for 5-10 per cent of formal instruction. There is no institutional relationship between these two aspects of professional training, which are regarded as distinct fields to be studied separately. Consequently, neither pays enough attention to the professional demands made on the teacher.
- curriculum development, the central professional task of the teacher, is not taught at university level. The educational training is theoretical with the emphasis on historical, philosophical or sociological aspects of education, depending on the university.
- practical teaching is not part of the training programme. Graduates are expected to gain practical experience in a probation year under the guidance of a senior teacher.
- very few research and development projects at university level are related to the school curriculum.

This situation will be modified to some extent by a new law which is expected to provide a new basis for teacher education. The two most important innovations are the introduction of teaching practice and - linked with it - courses in "subject matter didactics". The latter may lead to curriculum development.

Small changes in curriculum are occurring in individual institutions. At the Vienna School of Economics and Commerce, for example, courses are offered in which student groups develop instructional units, including student materials, in their fields of study. These units are then tried out and evaluated by the students, and the relevant theoretical courses in education are in line with this type of advanced project course.

A promising innovation in teacher training is the School of Educational Sciences in Klagenfurt. It was founded in 1970, and the institution was granted a three-year development period in which to select and train personnel and to plan, design and develop... their training programme. (4)

1) The actual average duration is considerably longer.

2) Federal laws on study areas.

3) Study regulations.

4) In-service training courses for teachers, and post-graduate doctoral training have been offered since 1972. The undergraduate training programme commenced in 1973.

Several hopes have been raised by this institution:

- the possibility of overcoming the barriers between subject courses and educational training through a co-operative development of the curricula for teacher training;
- the provision of in-service education for all teachers at university level;
- the bringing together of students and practising teachers in special project-type courses;
- the breaking down of the barrier between universities and schools through large-scale curriculum development in co-operation with the regional educational system.

It is too early to judge how far these expectations have been justified. The School is having considerable difficulties in recruiting qualified staff and in institutionalising co-operation and an interdisciplinary approach. The latter seems a particularly difficult problem.

In-service teacher education

Three institutions offer in-service teacher training: The Pedagogical Institutes for General Education, the Pedagogical Institutes for Vocational Education and the Ministry of Education and Arts (see Table 10). Neither teacher training colleges nor universities offer in-service education, although individual members of these institutions contribute to in-service courses. The three institutions offer self-contained training seminars lasting in general from half a day to a week.

The pedagogical institutes are regional institutions; in most provinces there is one for general and one for vocational education. They are controlled by the Provincial School Authorities and their responsibilities are teacher education and educational research. Except for a few small surveys, however, their contribution to research is negligible, and they are not concerned with the development of materials.

With a few exceptions they are one-person institutes, the director being assisted by a few teachers under part-time contract. The pedagogic institutes function primarily to organise and accommodate in-service training courses. The majority of training courses are planned by other institutions, usually the Ministry and the Provincial School Authority. They mainly consist of lectures, discussion and, in some cases, individual study and group work. There are very few seminars in which teachers develop teaching materials, and the content of a large number of courses (especially for teachers in vocational schools) is confined to subject matter information. The description "curriculum development activities" can only be used with reservation. The courses are planned as isolated events, and there is no provision for follow-up activities.

Participation in in-service training courses is free and voluntary, although the Provincial School Authorities select and invite teachers to attend some courses, and in these cases attendance is quasi-obligatory. There are, however, no legal means of enforcing participation at such courses, and the teacher's career is not formally affected by his attendance.

Apart from in-service training, the pedagogical institutes offer pre-service training for teachers in upper primary schools, special schools and polytechnic courses. These courses are open to primary school teachers, are directed by secondary school teachers, and usually

are limited to subject matter information. (1) They are held in the teachers' spare-time and conclude after two years with an examination based on subject-matter content. (2)

Informal teacher development

Apart from formal training, few institutional structures exist for teacher development. Teacher groups have been established in most schools, and all teachers of a given subject and type of school belong to one of these groups. They are loosely organised and headed by an elected senior teacher. Frequency of meeting ranges from monthly to annually, and their primary task is to discuss the implications of current educational developments and, usually, to give opinions on the drafts of the Lehrplan. Their actual contribution to curriculum development is negligible and limited to the organisation of sporadic lectures by teachers from the pedagogic institutes. Their expenses are partly covered by small grants from the institutes and the Ministry.

Regular staff meetings take place in each school, but although their most important function, legally, is teacher development, in reality they confine themselves to student assessment. The only exceptions are staff meetings at experimental schools associated with the Centre for School Experiments and Development. In these schools the staff meetings have the specific function of discussing and co-ordinating the experimental procedures. (3)

For one of the most important activities in curriculum development - the planning of instruction and the development of materials by the individual classroom teacher - no facilities are provided at school level, neither in terms of space nor library or technical facilities. In addition, there are no compulsory attendance hours for teachers at their school, other than for their lessons, occasional formal teachers' meetings and one conference hour per week. There are no institutional procedures to support co-operative planning, (4) or teacher centres where teachers could study and develop materials. Neither is there any support system whereby continued consultation and advice would be available, nor are formal channels of communication to either colleges or universities open to the individual teacher. Thus the results of his efforts are never manifested and there are few intrinsic (and no extrinsic) incentives motivating teachers to adopt a systematic approach to curriculum development.

SUMMARY

The purpose of this study was to give an overall picture of the structure of the Austrian educational system with reference to curriculum development in this country.

---

1) This does not apply to the training of teachers for special schools.

2) There are moves to shift these courses to the teacher training colleges.

3) Even there, discussion is concentrated on the transfer of students between groups.

4) Except for experimental schools.

1. The educational system and its related service institutions are highly centralised, and this centralisation has several consequences:

a) Co-operative curriculum projects developed outside the control of the Ministry are likely to fail, since they must contend with these major difficulties:

- there are few sources, apart from the Ministry, for finance. There are no educational foundations in Austria;
- it is very difficult to arrange for teachers to participate in development if their teaching load must be reduced for the purpose. Measures of this kind must be approved by two Ministries (of Education and Finance) and the Office of the Head of the Government.
- it is very difficult to evaluate curriculum materials in selected schools since any change in the Lehrplan (subject taught, time allocation, etc.) must be approved by the Ministry. The schools would have to apply for status as experimental schools, (1) to be decided by the Ministry.
- it is almost impossible to implement the developed products for such a project, since only textbooks covering Lehrplan content are approved and provided for students. Other curriculum materials can be made available only to teachers, and if they require organisational or content changes not corresponding to the Lehrplan, teachers are not allowed to use them. In theory such restrictions also apply to curricula developed by the Ministry, but in practice the Ministry also has authority over the inspectorate. It can be expected that it would not obstruct its own developmental activities. Individual initiatives may succeed in overcoming some of these difficulties, but it is very unlikely that they could successfully surmount them all while remaining independent of the Ministry.

b) Projects controlled by the Ministry tend to be large-scale, nationwide and uniform. Small-scale development and multifaceted approaches are unlikely to gain support because they are difficult to control and their prestige-value is lower and difficult to exploit.

c) Curriculum projects dealing with controversial areas are unlikely to be supported; new ideas must be filtered for political reasons.

---

1) There are two kinds of experimental schools. Those connected with the Centre for School Experiments and School Development were legally established in 1971 (see page 131). Apart from these, the School Organisation Law of 1962 made individual school experiments possible.
Individual schools wishing to introduce specific changes must apply for status, and receive neither scientific help nor financial contributions. Experiments are thus limited to changes in the time allocated to specific subjects or the introduction of new subjects. With few exceptions, their influence on the curriculum is insignificant even in the schools concerned.

d) When curriculum elements (whether materials for students or training courses for teachers) have been developed, their evaluation and implementation are facilitated by the elaborate network of communication between the Ministry and the individual school.

2. The individual school is not prepared to initiate and support curriculum development which at school level is at present the private affair of individual teachers.

3. There are no local or regional institutions such as teachers' centres to support formal and informal development activities by teams or individuals. Pedagogical institutes are only concerned with isolated formal training courses, and no attention is paid to continuing informal teacher development.

4. Curriculum development as an aspect of the teacher's role is neither explicit nor well-defined. Initiative on the part of teachers is not valued, and is incompatible with the operations of the centralised system. In addition, there are no established standards of quality for instruction, so there is little incentive for teachers to plan, evaluate and improve their own teaching.

5. There is little scientific input into curriculum development, partly because the universities have only a limited interest in curriculum (including their own), and partly because two different ministries are responsible for educational development (the Ministry of Education and Arts) and educational research and the universities (the Ministry of Science and Research).

As a result, there is a tendency to transfer development tasks straight to teachers and by-pass institutions of higher education. (1)

6. The public interest is not yet directed towards curriculum, but rather towards the more conspicuous organisational problems of the school system. The social pressure groups (see pages 126 and 128) are not sufficiently aware of the necessity and possible strategies for curriculum reform. Lip-service is paid to "internal" school reform, but no pressure exerted.

7. The legal and administrative aspects of the school system are over-emphasized. The structure is oriented towards ensuring a democratic decision-making process on the central and intermediate levels. Neither the individual school nor the individual teacher nor the parents are included in this process. As a result school-based curriculum development and local initiatives are discouraged.

---

1) Up until now this has even been true with respect to the new School of Educational Sciences at Klagenfurt.

II. CURRICULUM IN RELATION TO SOCIETY: A FINNISH VIEW

Societies and the Future

"Society" is a term which cannot be used fruitfully in the abstract, but it is not a practical possibility to analyse every existing society separately. If, however, we decide to analyse societies in groups, we must face the problem that many different societies exist, and may be classified in many different ways. Our criteria in classifying them will be based on a given structure of values and a particular view of society and international relations.

In analysing the relationship between society and the school curriculum, it might be helpful to classify societies according to their orientation to the future. Education is basically concerned with preparation for the future, in terms of preserving and transmitting the cultural heritage and achieving social change. Stress is placed on one or other of these aspects according to the major political stance of the society concerned. Four orientations or approaches towards the future may be considered.

First, a "conservative" orientation takes the past as its model or ideal and attempts both to conserve certain features in its present life and to model a future which retains them. Emphasis is often placed on the idea that consideration of the past guarantees continuity and regulates the pace of change. A second approach is to ignore the future, concentrate on the present and to respond in the short-term to different immediate pressures. Reforms then occur piecemeal in different sectors of society and their interrelations and possible interactions are neither planned nor analysed, there being no clear responsibility for this area in the administrative system.

Two further approaches are directly orientated towards future change. One involves gathering information on different "trends" and on this basis attempting to predict future patterns. When certain probabilities have been calculated, these are regarded as laws, and plans for the future made accordingly. The fourth approach also uses information on present trends to predict the probability of different futures, but then involves making a decision as to the relative desirability of the alternatives. Planning for the future becomes a process of hierarchical decision-making, where decisions concerning the basic principles of planning are made first, and these principles then applied to different sectors of society. The making of decisions can be seen as a turning point between past and future.

This does not mean that individuals and groups can "freely" make plans for the future and realise them. The structure of the society and the organisation of power within it determines not only what kind of plans can be made but whether they can be implemented. If plans for the future do not reflect the major interests of those with the power to direct the resources of the society, they are unlikely to be implemented.

Decision-making and the use of Power: School Textbooks a Case in Point

The making of decisions concerning the curriculum is closely connected with the general processes of decision-making and the use of power in a society. The school system is usually maintained by public

finance, and the most important decisions concerning the school system are made as political decisions. In countries where the political decisions are made through a parliamentary system, educational decisions may be made in the same manner. In this situation it is likely that any defect in the democratic processes of decision-making will be reflected in decisions on educational matters.

Some studies of the relationship between the structure of society and control over the school curriculum have taken a naive view of the social uses of power. Such studies have oversimplified the problem in societies where the political institution does not have "total control" over the educational system by seeing curriculum therefore as being "democratically controlled". No attention has been given to the fact that curricula may be under the control of economic, religious or military institutions.

For example, the production of textbooks in Finland is controlled by both the state and by economic interests. The National Board of Education inspects and approves textbooks, and teachers select from these. Publishers, however, choose the authors, and textbook publishing emphasizes those features of the books which increase sales. In debates on "state textbook publishing" versus "free textbook publishing", it has often been implied that only state (i.e. political) control limits freedom, and little attention has been paid to the control exerted by powerful economic and other interests. New school books do not always aim at the goals laid down in the new curriculum, particularly in the humanities and social studies. Deep-seated attitudes and prejudices in the publishers and authors may hinder change towards a curriculum which seeks to develop a more critical attitude in individuals and foster more democratic forms of government. Although the present system of competitive publishing is seen as creating "freedom of choice" the degree to which it actually produces real alternatives that reflect basically different viewpoints has been little analysed.

The Power Institutions

C. Wright Mills has listed the institutions of Western societies as political, economic, military, familial and religious. (1) According to him, education may be defined as a socialising institution in complex modern societies, while in simpler societies the socialisation process cannot be separated from the activities of the other institutions. Mills describes three interrelated institutions - political, economic et military - as forming a "power triangle" to which the family, church and school system are subordinate. These three subordinate institutions are expected to satisfy the needs and demands of the power triangle.

Institutions are characterised by the following features: they communicate messages about their basic values, goals, and methods of achieving them. They have their own status systems with accompanying role-expectations and methods of sanctioning behaviour with regard to these expectations. They have an interest in the socialisation process, and more or less expect the educational institution to give future citizens the knowledge and skills needed for performing the roles in their status-systems, as well as producing the "right" kind of motivation to seek the goals they set.

1) Mills, C. Wright and Gerth, Hans, Character and Social Structure, Harcourt, Brace and World, Inc., New York, 1953.

In Rokkan's model of society, which describes its activities in two dimensions, we find a decision-making class or group at the centre of the power triangle of political, economic and military institutions, and relatively powerless groups at the periphery in terms of knowledge, social status or geographical location. (1) The centre controls the periphery to protect its own power, so the main problem in educational policy is identifying who belongs to this centre, and how their power can be used to achieve educational objectives.

Power and Conflict in Society

The educational institutions may be subordinated to the dominant institutions of a society, but varying degrees of conflict exist amongst all the institutions. If the relationship between the educational institutions and the "power institutions" at the centre is harmonious, the educational system and the powerless strata of society on the periphery are likely to be in conflict. The democratic control of the power institutions is necessary if we are to establish harmonious relations amongst these institutions, the education system, and the ordinary citizens.

Viewed in these terms, the major problems in educational policy are also those of a whole society - social inequality and the unequal distribution of power. The curriculum is thus socially problematic and must deal with antagonisms between different social groups and institutions. The less control certain social groups have over their own future as expressed in the curriculum, the more problems of the curriculum are in fact social problems.

Interest and Educational Inequality

When a society is characterised by sharp social distinctions and inequality its educational system enables privileged minority groups to give their children a better and higher education than less privileged groups. In the western world the creation of "equal educational opportunities" has been accepted as a sufficient objective of reform, whereas changes in the socialist countries have aimed more profoundly at the removal of educational inequality. It is only recently that countries committed to creating "equal educational opportunities" have begun to analyse the relationship between general social inequality and the inability of certain social groups to take advantage of the proffered "equality of educational opportunity". Educational systems which ignore the educational effects of social stratification have been characterised as "creating equal opportunities for becoming unequal".

The manner in which those already possessing privileges can retain and strengthen them through the educational system becomes clear when we ask who makes decisions about the school system, and what opportunities different groups have of making their voices heard. What chances have those outside the power triangle, i.e. those with little education, women, and young people, of participating in decision-making in education? How far can political parties, employers' unions or trade unions influence decisions?

---

1) Rokkan, Stein, Models and Methods in the Comparative Study of Nation-Building, Gothenburg, 1968. Cf. the disc sion of Schon's centre-periphery model, pp. 31-33 and p. 47 above.

The Role of the Expert

Those responsible for the planning and preparation of curricula and textbooks are generally "experts" and many people believe that experts are above social partiality and can be trusted implicitly when political viewpoints clash. This belief, however, requires closer scrutiny. Experts and researchers might have knowledge which makes it easier for them than for other members of a society to judge the importance of different goals, and to work out the means of reaching the selected goals.

The expert's knowledge gives him power both at the planning level and at the level of implementation. Those who are seen as experts in planning are in a position to decide on suitable goals for the curriculum. It would seem that an individual's level of knowledge, initiative and problem-solving ability are personal characteristics which make it possible for him to have influence and power in society, and these qualities can develop outside formal education. Yet it appears that the opportunities of certain social groups to give their children more education determine from which groups experts are "recruited" and therefore which groups can make their voices heard through "expert power". The mechanism for selecting experts and researchers ensures that certain social strata are unlikely to be represented amongst those who make the most important decisions. A look at how different social classes are distributed in the secondary schools and universities shows this clearly to be the case. The problems of powerless groups, therefore, are unlikely to be given real consideration, particularly where the problems are of such magnitude that profound changes in the power structure would be necessary to solve them. This is also true when the problems are deemed so small (from the standpoint of the decision-makers) that they do not cause serious friction in the running of the institution.

"Social problems" have been defined as those elements in an individual's situation which differentiate his existing condition from a desirable condition, both conditions being seen in terms of his social ideology. For instance, groups with little power are more likely to view problems of education and the curriculum as problems of power than are influential groups.

This definition leads to the conclusion that experts are not necessarily the first to perceive social problems, since those who do perceive them are more likely to occupy a social level in which most of the problems have accumulated, and from which experts are not drawn. Education as a means of social change is a social problem, as well as a pedagogical one, and members of educational institutions are therefore not necessarily the best people to make decisions on this aspect of the educational task. In Finland and elsewhere, most members of curriculum committees are experts in education, and it is possible that their decisions are in conflict with the goals and needs of groups with little or no power.

The Criteria for Change

For the reasons adduced in the preceding section, the direction of change through the educational system is too often seen as unproblematic. Experts must decide on the content as well as the goals of new curricula, and must of necessity select from the pool of existing skills and knowledge. The criteria used in making this selection are often based

on unexamined assumptions about man, society, international relations, and the universe and man's position in it, which remain covert and unexplored sources of influence affecting the criteria in question. Even when it is agreed that the educational system should act as an agent of social change, the direction of change is still problematic, though this is often not realised. Through the schools we can socialise citizens to accept the necessity of certain changes, and to see certain channels of change as legitimate. We ourselves prefer certain ends and means in this process - competition, for instance, may be seen as providing a stronger stimulus towards change than co-operation does - but our reasons for selecting these means and their associated ends are rarely analysed.

In fact, education is only possible if the older generation has the courage to make some selections on behalf of the next generation, and to eliminate some alternatives from their environment. General social advancement may eliminate some "alternatives" - few people now have the opportunity of travelling by pony and trap - but it is hardly meaningful to call such a development "use of power" in the political sense. The fields of knowledge included in and excluded from the curriculum, however, may represent a rather significant "use of power". Pupils form part of their view of society and environment through the curriculum, and power over the curriculum can be power to decide what will be social reality for the new generation.

Knowledge and Power in Society

The knowledge transmitted through the curriculum is only part of the communication of knowledge and information within society, which can be seen as a communications network in which messages pass continuously between individuals and groups. We may ask who, on the whole, decides what information should be disseminated and in what form, so that it can be received by different individuals or groups. History seems to indicate that the ruling classes have rarely encouraged their subordinates to entertain critical views of the social and power structures of a society. This kind of thinking has been labelled "subversive" and the diffusion of this type of message has been restricted or suppressed, particularly by dictators or where one nation has been ruled by another. In the nineteenth century, when Finland was a Grand Duchy under the Russian Czar, the dissemination of information in Finland was limited by law to that dealing with economic matters and the gratification of religious needs. The education of the people was neglected; the Czar did not ratify the bill providing for compulsory education in Finland, and it was not enacted until the 1920s, immediately after the recognition of Finland's independence. The term "non-communication" has been used to describe the restrictions imposed in some countries on the diffusion of knowledge through education. The educational system maintains social divisions because the information required for exercising power in the society is communicated to a small elite and non-communicated to the underprivileged masses. Thus it has been said that "freedom is the freedom to obtain information", and that democracy is "fighting for the free flow of information".

The Diffusion of Knowledge through the Curriculum

The school curriculum, including the content of textbooks and other teaching materials, is a special case of the problems of diffusing information within society. In mass communication the communicant sends messages with relatively little control over their effects. The recipient may accept and assimilate the message but he can also reject or oppose it. The school and the teacher, however, have traditionally had the power by means of various sanctions to ensure that messages are received and assimilated.

Only one aspect of the teacher's power will be dealt with here. The curriculum which reaches the schools has already been selected at the planning stage by experts. Part of this knowledge is such that there is no quarrel concerning its "truth", and part is such that a fairly large measure of agreement can be reached by applying the established rules of knowledge acquisition. Other subject-matter, however, may be susceptible to several different interpretations. For instance, information on our social environment and its development differs according to various basic outlooks and sets of values. The teachers responsible for implementing this section of the curriculum have the power to ensure that "value-bound" knowledge is received and assimilated in the same way as non-disputed knowledge - as fact, not opinion. This raises the question of what opportunities pupils have of conducting critical discussions of such messages in the classroom. Teachers may in different ways markedly restrict both permitted questions and permitted answers. Thus a further unexamined or even unconscious selection from the knowledge available takes place, and only certain items of information or sets of values may be communicated. (1)

The Fragmented Curriculum

A further problem related to the diffusion of knowledge in society has been raised in several countries by students' criticism of the irrelevant and fragmented knowledge offered at university. University research - the production of new knowledge - is so specialised that it has been described as the complete atomisation of human knowledge. Illich points out that the fragmentation and specialisation of knowledge restricts the flow of information within society and ensures that only "specialists" can understand and therefore control certain aspects of our lives. (2) Power is retained in a few hands generally drawn, because of the structure of the school system, from the already powerful classes. In most countries, interdisciplinary approaches to learning have not flourished at the universities, and interdisciplinary research is emerging slowly, if at all.

The need for an integrated curriculum is also felt in primary and secondary schools, as well as in colleges of teacher education. These colleges might function as centres for innovation in the integration of knowledge, but only if they have close and continuous contact with bodies

---

1) This consideration is central to the adoption of teaching strategies in the Schools' Council Humanities Project discussed in Chapter II.

2) Illich, Ivan, Deschooling Society, Harper and Row Publ., 1970, 186 pp.

engaged in research. Teacher education should be concerned to establish those connections amongst fields of knowledge, skills and attitudes which it is hoped will be perpetrated in the schools. At present a vicious circle operates, whereby the fragments of the curriculum - school subjects - determine the fragments in terms of knowledge and skills which are learned by teachers during their training. The "structure" of human knowledge internalised by student teachers thus virtually guarantees that they will be unable to integrate the school curriculum in any meaningful sense.

The division of human knowledge into "subjects" reflects the human mind's attempt to assimilate and understand information by categorising it into discrete units. It is too easy, however, for the relationships between these units to be ignored and for their boundaries to be seen as fixed. Subject teaching can thus become unnecessarily limiting and reductionist. The same problem arises in thinking about the curriculum as a whole. It is essential to organise different aspects into manageable conceptual units, but this can result in concentrating on some limited aspects to the detriment of the overall view and its implications.

The curriculum, in a wide sense, may be defined as a plan to organise all those actions and learning experiences through which the school attempts to achieve its aims. Like the Finnish comprehensive school curriculum, it may include plans for classroom work, out of class activities, school services, the social organisation of the school and the organisation of school work. In Finnish secondary schools, however, the curriculum is interpreted in a more limited way, and is seen only as the selection and organisation of subjects and content, and as a model for solving pedagogical problems.

The Restricted Curriculum

The content of school subjects which describe and explain the social environment is of special interest when dealing with relationships between the curriculum and society, particularly the structure of these subjects - the basic concepts used in each field and their interrelationships. When planning the comprehensive school curriculum the Finnish National Board of Education published a guide to international education as a school subject. The guide lists the basic concepts to be dealt with when giving information about any society:

1. Geographical and ecological environment
2. History
3. Population
4. Culture
5. Politics and legislation
6. Economics and sources of livelihood
7. Education
8. Mass communication and communication systems in general
9. Social planning, social problems and conflicts.

The weakness of this list is the equal emphasis placed on very different types of components, and the fact that the dynamics of the social setting are not mentioned. Concepts which help to explain what is happening in a society - such as power, interest, and the conflict

arising from the relationship between these two - are not listed, so primary influences are difficult to trace and changes difficult to explain or predict. The list, however, does include many aspects of society which are important to the individual and not only society's power institutions, and therefore may be useful to those who select the content of "social studies" in the wide sense. This classification of the "elements" of a society also shows which components have an impact on the curriculum.

Political Interest and the Curriculum

In recent years, interest in Finland has focused on the question of what kind of information about society, its objectives and the use of power within it are communicated to pupils in different sectors and at different levels of the school system. This question has mainly been raised on the initiative of student and pupil organisations. Some empirical content analyses of textbooks has started, but they are restricted because different parties cannot easily find a common starting point from which the investigation could proceed. Finland thus offers an interesting example of how different groups view the curriculum, because some parties are striving to maintain the present economic and social systems and others seek to change them radically. There is no unanimous agreement on the direction of change, but rather a continuous struggle for and against change. The parties on the left, when in power, have since World War II worked for the democratisation of the educational system, and above all for comprehensive schools. The right-wing parties have delayed this reform. All parties are interested in some aspects of the curriculum, and several questions concerning the school curriculum have become political issues. Such issues include the question of religious education, which foreign languages should be given priority, and to what extent pupils should participate in making decisions about the school and their studies.

This last problem concerns the curriculum in the wider sense. When a limited interpretation is placed on the curriculum, planning is confined to the classroom teaching situation, and everything outside this is unplanned and handled as a matter of course. Problems of school organisation are solved according to traditions which have probably grown up within the schools over the years and perhaps date back to the last century - when political and economic circumstances were very different. These traditional rules may bear no relationship to the ideas and values of society outside the school and are unlikely to be suitable for solving problems concerning the social organisation of the school.

Cultural Change and the Curriculum

The cultural changes which have taken place in Finnish society since the last century have been described by Koli. (1) Nineteenth-century society was primarily agrarian, and the uniform Christian culture was dominant. This meant that the world was seen as a world created by God in which human beings should fulfil God's wishes in

1) Koli, Paavo: Opillinen yhtenäiskulttuuri (The Cultural Coherence of Society); Opettaja ja koulu kulttuurielämässä (The Teacher and the School in Cultural Life); Vammalan Kirjapaino Oy, Vammala 1967.

various fields of life. Religion offered a uniform and consistent motivation for human activity. Since the highest goal of life was spiritual, only the Church could know the real object of education, and in accordance with Church doctrine it had an educational responsibility to all members of society. This became an educational right, and the Church's right to educate was never questioned. In modern society there are social groups who would like to maintain the remaining features of the uniform Christian culture or who propose a return to the Christian culture of the past as a solution to today's problems. These groups present the conservative orientation to the problem of planning for the future which was discussed in the first section of this paper.

Towards the end of the last century, however, the uniform Christian culture began to disintegrate. The "rule-governed" society in which the goals of human life were stated and rules for reaching them laid down, was replaced by a culture in which the role of reason and knowledge was emphasised. Knowledge was to be used in a rational manner for the attainment of objectives, but the objectives were not always clearly perceived. The main goal of knowledge became economic growth - later, economic competition between different peoples. The "cold war" which prevailed after World War II meant the intensification and extention of competition to all areas of international interaction. The realisation that knowledge is power led to international competition in education and research to satisfy the needs of national political institutions and the military institutions possibly hidden behind them. For example, it can be said that the teaching of history and geography in nation states has served to create a sense of "national identity". As UNESCO studies have shown, however, history and geography textbooks may be used in pursuit of national identity at the expense of an awareness of the international community and its needs.

Democracy in Educational Decision-Making

The existence of different groups in society, with their different orientations and attitudes to the function of education, makes the extension of democracy in educational decision-making a complex problem. This paper frequently puts forward the view that democracy should be increased in this field, as well as in others, but this extension of democracy cannot be uncritically accepted as a general programme. If experts are needed to provide a basis for decision-making, however, we should be sure that we know to whom we are giving the power to decide on the future of young adults and children. The use of experts will not automatically guarantee reasonable solutions for all members of society and especially not the powerless members. The selection of curricula is a social problem; we may construct a plan for a curriculum which will give students the knowledge and skills needed to "cope" in society. What the required knowledge and skills are, however, is less clear. It could be said that the smaller the possibilities are of controlling the power institutions, and the smaller the groups from which these institutions recruit, the more views concerning "necessary and sufficient knowledge and skills" will differ from each other, and the more problematic the selection of school subjects and their content becomes. If this social problem is ignored in curriculum planning, it will certainly appear in the form of problems and conflicts at the level of curriculum implementation. The social problem will become a pedagogical problem, a teaching situation filled with conflicts and disciplinary problems. It is thus clear that the democratic control of all the central institutions of a

society is necessary for a harmonious relationship between education and all the other components of the society.

The existence and interrelation of certain "power institutions" or "power centres" is not a static situation. A historical process has led to this situation, and there is also transfer of power within the triangle or centre. Democracy can be extended by strengthening it in one institution and widening the legal decision-making power of this institution so that through it democratic control reaches other institutions. The subordinated institutions - like the school system - are important in extending democracy in this way. Educational institutions are particularly valuable in socialising their pupils towards the values and action models of democracy.

Socialisation in the Schools

The extra-classroom activities, school services and the social organisation of the school are significant in the socialisation process. In this connection we may use the term "hidden socialisation" - socialisation which proves relevant under certain circumstances which differ from the situation of overt socialisation. For instance, socialisation to the authority system of school might indicate "hidden socialisation" to an authoritarian political system.

There is a tendency among researchers and authors to see the social organisation of the school as producing a "miniature society". This expression, in fact, tells us more about certain functions of the school than about its real nature. An authoritarian school system is hardly in agreement with many features of a democratic society, and may socialise individuals to such features in society which are more important to the maintenance of the power structure than to individual freedom. There may be a strong emphasis on discipline, authority, and planning directed and executed from above. This hidden socialisation may contradict overt "education in democracy" provided as part of the subject curriculum.

The Curriculum and Society

The main determinants of the curriculum may reveal different points of view. These determinants can be knowledge about society, knowledge about the content of "culture" or the traditional school subjects, or knowledge about the pupils and the process of learning. The curricula may be classified as socially-oriented, subject-oriented or pupil-oriented. The last two types keep the relationship between the curriculum and society implicit, and take as their starting point either school subjects or pupils. The solutions found within their frameworks do exist in terms of social reality, however, and either they are in agreement with the demands of society or they are not. This type of curriculum is mostly produced by educational experts, and may not meet the needs of the powerless groups in society.

The socially-oriented curriculum concentrates on content which is useful and necessary to the pupils as future members of society. The relationship between the curriculum and society is thus explicit, but not unproblematic. In answer to the question what kind of information is useful and necessary to all individuals in society, we may say that it is

knowledge which makes possible an easy adjustment to society, or which produces solutions to social problems no matter what the consequences to the power institutions. There may be, of course, serious conflicts between the two types of knowledge.

Until society as a whole has control over the power institutions, the curriculum is unlikely to reflect its real needs. How can different groups influence the curriculum? Members of the educational institution, in the name of "objectivity" often refrain from stating values and specifying desirable objectives, although members of the power institutions do not hesitate to use their power in this and other ways. Educators, however, have an equal right to express their values and influence the formation of the society's educational goals.

Educators, although they may express the real interests of society more accurately than members of the economic, political and military institutions, are usually drawn from the privileged class which has a certain interest in the content of the curriculum. The educational institution itself, although representative of the people insofar as it is in conflict with the power triangle, will remain unresponsive to many of their needs so long as inequalities remain in society as a whole. The school alone and curriculum changes cannot change society, and reform in the educational system can contribute to social reform only when combined with changes in the other institutions of a society.

III. REFLECTIONS ON CURRICULUM CHANGE: AN AMERICAN VIEW

The period since the early 1950s has been characterised in most industrialised countries by systematic and occasionally massive attempts to change the schools. Sometimes the intent was to update a course - in geography for example. Sometimes the intent was to modify the basic organisation of the school - as by interage grouping. On occasion there has been explicit attention to broad national objectives that were fully identified, and the schools were seen as a major agent in achieving the goals; for example, the move towards comprehensive secondary schools in Europe was often seen as an attempt to achieve greater political and social democracy through education. On other occasions, attempts to modify the school were piecemeal and initiated by teachers without apparent strong attention to the relationship between school programmes and national goals; an example is the strong move towards informal education in certain British primary schools.

In any event there is now more than 20 years of experience in many countries with the planned development of new school structures and programmes. Curriculum development has been a significant part of this reform process. How successful has it been? Are we justified in assuming that curriculum development is a major factor in educational and social change? These questions are being asked in many quarters, partly to provide a base for future policy. The results seem to be mixed; at least there are varying degrees of satisfaction with curriculum development activities. Directors of curriculum projects are frequently disappointed as they observe the use of their new programmes in the schools. A curriculum developer who has created strategies for teaching science inductively often is disheartened as he observes a classroom teacher trying to employ the approaches devised by the project team with children. The more naive observer, on the other hand,

is likely to be impressed by the new ways of talking about the teaching of science. It may seem dramatically different from the science instruction during his own education when independent investigation and experimentation was not featured. Frequently, impressions of success or lack of success must be seen against the broader social outlook and experimental background of the individuals making the evaluation.

It is commonplace in some circles now to decry the major social policy initiatives in many countries of the last decade or two as failing to have modified the society in the ways that were envisioned by those who initiated the programmes. For example, we hear about housing programmes that were expensive, imaginative, and adopted with fanfare and hope - but that destroyed a sense of community. We hear about health care programmes that were accepted by the public at some considerable cost - but that have not demonstratively improved the health of the population. And we hear about educational programmes that were instituted amidst considerable cost and contentiousness - but that did not redress racial inequality or improve reading ability to the degree that was suggested when the programme was established. Evaluation is inextricably entwined with expectations. What were the hopes for the programme initially? If ambitious promises were made when securing the funds to launch a new effort, and the public memory is long, then developers risk considerable disappointment.

Whether one is satisfied or dissatisfied with the results of social action programmes during the past 20 years, informed citizens and professionals alike have become somewhat more realistic about the tractability of social problems in all spheres: transportation, poverty, health, crime, as well as education. Progress in any complex field is seldom achieved by the adoption of new slogans, however important the slogans may be in galvanishing attention. In this period during which it has become important to assess the possibilities of effecting changes in the schools - exactly what kind of changes might be expected, and how might they be achieved most efficiently? - curriculum development has gradually emerged as a field of practice and supporting theory in its own right. As this volume makes clear, there is considerable experience that now can be utilised in developing the beginnings of a systematic analysis of procedures, problems, practices and underlying assumptions in the field of educational development - and on a comparative and cross-national basis. In this chapter, several elements of this analysis are outlined for their potential impact on policy.

Underlying such key educational issues as the locus for decisions about curriculum development (whether they be local or "central") is the question of generalisability of curriculum knowledge. The generalisability question in turn raises the point of the scientific basis for educational practice. If indeed there is firm and predictive knowledge derived from research that suggests techniques as well as purposes of educational activities, then it seems a relatively straightforward if difficult matter to build the best curriculum development approaches possible in consonance with scientific knowledge. If on the other hand scientific knowledge provides a relatively weak first approximation of desirable practices, then attempts must be made to understand the most productive interplay between the practical business of teaching and the knowledge base for this practice, with the emphasis on practice.

The issue of the extent of the scientific basis for educational practice has surfaced partly because of the attraction in large-scale social planning in many industrialised countries to the kind of research and development models that apparently have been successful in weapons

development, airplane design, and the electronics industry. Particularly in the United States, it has become popular to apply managerial techniques developed initially in the military field and in industry, when designing and implementing new social programmes. The first step has been to define the broad objectives of the programme under consideration, then comb the scientific literature or initiate the scientific research necessary to discover the most effective methods of reaching the prespecified goals. Finally, implementation strategies were devised to assure that new practices would be accepted broadly.

If objectives are determined for an entire nation then this general procedure is employed on a broad scale and all schools are expected to institute the practices that have been developed to meet objectives identified as being of highest priority. If the base for educational practice is assumed to be strong, then there is a temptation to press for the establishment of the best available practices everywhere. A trend towards considerable uniformity in school programmes is then accented. There is assumed to be a best way of developing programmes. There is a most effective method by which teachers work with children. While there may be differences in individual teacher and student abilities at least the idealised models to be emulated are clear.

In some industrialised countries, Britain for example, there are strong traditions of local control of educational programmes. In the United States there is a firm statutory basis for local regulation of schools. The presumption of a highly predictive science of curriculum casts considerable doubt over the desirability and wisdom of local initiatives. How applicable then is the research and development model with its strong reliance on generalisable knowledge?

The scientist searches for general principles that have explanatory and predictive power. If the quest is successful the principles identified can be applied in diverse settings. Scientific investigation is replicable; ideally it is parsimonious.

Those people who are sanguine about the power of scientifically derived principles in the field of education are heartened by development and innovation in fields like agriculture and medicine. A procedure is developed in a laboratory setting that reduces pest investation. The procedure seems effective and economical. Crop yield would be increased if farmers were to employ the new practices. The task is to carry the word of the new approaches to the farmer who, after noting the demonstration, will implement the procedure because of the potential profits that will accrue.

Or in medicine, similarly, a therapy is developed to treat a disease. A representative of the pharmaceutical firm carries information about the new therapy to the practising physician. The physician makes a match between the data provided by the parmaceutical representative and the symptoms he sees in his office and prescribes accordingly.

What happens when the agricultural/pharmaceutical model is tried in schools? It is found for example, that youngsters master long division quickly when given rewards immediately after each correct response. The effects are particularly encouraging if small pieces of candy are awarded to the child. The research finding is carried to the classroom teacher who is told that the effectiveness of his teaching will be improved were he to employ the new procedure. But what if the teacher finds such a procedure abhorrent? And what if the teacher senses that such a procedure may have undesirable ramifications because it could lead the learner to expect comparable rewards for other

increments of learning? A point here is that the teacher's personal value system may be at odds with the values that might be inferred by a procedure founded on "research". Just as serious, the teacher may not consider the entire effort to be worth the time it takes to learn and implement the new procedure. What, after all, is the incentive to change?

In addition, research activities in a scientific tradition are unlikely to reveal what is worth doing in schools. It is the question of educational purposes that oftentimes occupies the centre of the stage in educational debates. It is one thing, through research, to demonstrate that talented youngsters do not appear to suffer academically when mixed with students of lesser ability. In fact, such a research finding may loom important to the educational policy maker as a justification for a new practice to be instituted. But no amount of research can demonstrate that comprehensive secondary schools are a desirable form of school organisation for all purposes. That question is one of political and social philosophy as much as it is a question of scientific fact.

This line of inquiry is not to deny that psychological, sociological and anthropological research cannot illuminate the educational setting - and with considerable implication for practice. But it is meant to indicate that the expectations for clear answers to basic questions of educational policy, including curriculum policy, are seldom resolvable through the scientific tradition. The educational researcher may be able to offer suggestions to the curriculum developer about the sequencing of topics in analytic geometry. He cannot tell the school authorities whether or not analytic geometry is more worth teaching than, for example, seventeenth-century literature.

In practice, it is a short step from the scientific tradition to the engineering tradition in instituting new programmes. And the engineering tradition has also enjoyed considerable prominence in the formulation of strategies for educational change. Essentially this tradition when employed in a field of social policy suggests that objectives be identified in as unambiguous a fashion as possible, and then systems designed to meet these objectives effectively and efficiently. Thus when the objective is to teach ten-year-olds to compute at a certain level of sophistication, the task becomes one of outlining the degree of ability desired in operational form, then devising and evaluating a procedure on the basis of how well it reaches the objectives. Such a procedure in the field of education is bedevilled because outcomes are achieved in any educational programme in addition to outcomes identified as objectives. Thus it may prove effective to teach the techniques of sentence structure through a procedure that emphasizes considerable drill. Yet if the procedure militates against the student choosing written expression as a means of communicating ideas, perhaps there is some question about the effectiveness of the programme.

The "side effects" problem is a severe one in any objectives-oriented activity, even in industry. Inventive engineers can and do design vehicles that meet prespecified performance goals. For example, an automobile can be designed to travel at 90 miles per hour, hold six passengers, appeal to a certain customer, and cost less than $4,000. But if the vehicle after it is produced is responsible for carnage on the highways at an unacceptable rate, wanton pollution of the atmosphere, and an unacceptable level of fuel consumption, there is considerable doubt about the success of the design. One person's side effect is another person's main effect.

Part of the problem is that values shift over time, and acceptable results during one period turn out to be unacceptable when consumers are alerted to undesirable outcomes. Social policy spheres are replete with examples of programmes that are designed to improve health care but that seem to do little more than raise the income level of physicians; or programmes that are instituted to enable the poor to play a key role in the development of programmes to ease poverty but turn out to create a new class of exploiters.

In some industrial countries, there is a growing mood that questions the tractability of large social systems and therefore the ability to modify them dramatically, particularly over a short period of time. In many countries, the 1960s represented a period of high optimism about the outcomes of imaginative social action programmes if able people were able to identify major barriers to progress and invent comprehensive programmes to ameliorate them. It was felt that only the will and the money were needed to bring about change. Now there are doubts.

Partly, as has been suggested, it is a matter of the appropriate level of expectations. If a great deal was promised in ameliorating severe racial conflict through the schools by mixing the races, for example, and the expected changes do not occur, there is a tendency to cast doubt about whether or not so apparently inert a system as a nation's schools can indeed be used to achieve broader social goals. Another perspective, however, reveals that some progress is made. In part, it is a question of the rate of reform that is tolerable within any nation's political system wherein competition for public outlays is intense. Claims are made by powerful advocates to secure the necessary funds. Often the claims turn out to have been unrealistic, and new competitors for a larger share of the public purse tend to receive attention from disenchanted political leaders.

In the formulation of educational policy it is perhaps useful for those who have the responsibility for making decisions on allocation of resources to come to grips with the issue of the purpose for outlay of public money. In one view the role of the government is to provide funds for the support of the educational system. Formal education is an enterprise characteristic of civilised societies. For many decades, children have been sent to school on the assumption that the experience is a birthright and that a necessary element of socialisation takes place in the institution. It is further assumed that there are beneficial outcomes from the school experience that transcend those that can be readily described.

In an emergent and contrasting view, the schools exist in order to achieve certain agreed-upon and far reaching personal and political aims. The schools are then held to account according to how well the aims are realised. Specifically, during the past twenty years, the schools have been seen as a force for democratisation. They have also come to be seen as an important element in enabling each person, regardless of accident of birth, to earn a living and thereby fulfill himself - a related aim, of course.

During the 1970s in many industrialised countries, there is a detectable shift in orientation from the second purpose which came to prominence during the 1960s and towards the first. This shift is due partly to disenchantment with the power of schools in redressing severe social problems. It is due also to the realisation that schools serve many purposes other than those that can be readily identified. Several courses of action stem from these realisations. It is suggested by some that governments turn away from schools as a major social institution.

It is asserted that there are alternative methods of achieving educational purposes other than through the maintenance of large and expensive school systems. A more conservative reaction, on the other hand, is to become more reflective about the social outcomes derived from schooling, partly on the assumption that educational systems have evolved over many years and have proved adaptive even if they exhibit some glaring problems.

Perhaps basic educational change is relatively undramatic, at least over short periods of time. "Schools without walls", individually prescribed instructions, and language laboratories came on the scene with much fanfare, but the impact on the total system was modest. Initially, each innovation is heralded. Then it does have its influence, but the influence is seldom as extensive as the initiators of the new programme and their supporters might have hoped.

A central policy theme emerging from the present uncertainties focuses on the question of centralised as against localised responsibilities for curriculum development. Many, though not all, of the curriculum efforts initiated during the 1950s and 1960s represented national attempts to mould local practice. In the present questioning mood about the purposes of governmental activity in education, there is a tendency to examine the potential of locally based curriculum development activities. While few educationists or policy-makers view the issues as clearly dichotomous, it is nevertheless evident that the relationship between local efforts and centralised efforts needs re-examination. If educational practices are not broadly generalisable, and if the schools are not a major instrumentality for effecting broad societal change, and if provision of educational services is as important a feature of educational policy as social problem solving, then the interplay between centralised, often national, actions and school-based or locally based actions might shift towards the local. Indeed this issue may well be the central one in curriculum for the remainder of the 1970s.

At the heart of this question is the capability of schools for internally stimulated reform and the relationship between local aims and talents and national efforts to provide support and stimulation. Traditionally, teachers have not seen themselves as curriculum developers, at least at a conscious level. It is a fact that they have indeed shaped the school programme, but they have tended to view the product of educational publishers or national curriculum plans as the framework in which they have developed local variations in order to achieve desirable results.

In some countries, of course, there have been strong traditions of teacher independence in curriculum building. Britain stands out, particularly the extensive primary school reforms effected in the United Kingdom since the end of World War II. Surely the characteristics of that movement need to be better understood if there are to be policy implications in other countries and indeed in Britain itself.

An emerging force with powerful implications for school-based curriculum development is the organisation of the teaching profession. With the increase in collective action on the part of teachers in most industrialised countries, it is probable that teachers will become more assertive about all matters that affect their work, including the curriculum. While curriculum issues are not yet negotiated between teachers and administrators as part of the general context of professional employment, such a move is not difficult to envision.

If indeed school-based curriculum development is to become increasingly prominent, as is postulated here, then our manner of thinking about educational change must itself undergo some modification.

As has been indicated, the prevalent style for thinking about curriculum development makes heavy use of an engineering metaphor. If school-based curriculum development starts to receive increased attention, and if considerable variation is fostered from place to place, then it will be found useful to employ alternative models and metaphors. A possibly suggestive metaphor to be put in juxtaposition to the one drawn from engineering is one that is based on biological evolution. Such a metaphor suggests that natural variation occurs within a complex system. Some of the variations have powerful adaptive properties. Indeed they would not have occurred unless they fitted some situation well. When one is trying to engineer change, one is concerned with injecting a new procedure into a large system. The reform is often rejected because of unanticipated counter forces. For example, in every school there is a teacher who knows how to manipulate the social system of the school in order to resist change. Frequently there are forces that work in the broader community that also serve to blunt innovation. Sometimes the obstructionist teacher and the resistant community represent desirable protective forces against poorly conceived new programmes. But regardless of the social desirability of them, these forces exist. Thus there are broad contextual factors of a social, political, and personal sort that militate against modifying any social system, with internally and externally valued traditions.

Any metaphor that suggests the examination of natural variations within an existing system implies a more conservative stance than one that identifies shiny new goals and then attempts to implement these goals forcefully. This conservative posture may be unacceptable to some political and educational figures who fear that the importance of schooling is thereby downgraded. However, the evolution metaphor is likely to be found provocative by those policy makers who for a variety of reasons have altered their view of the suppleness of the educational system.

The evolution metaphor suggests that attempts be made to understand the dynamics of change as it actually occurs within existing situations. What are the stimuli for modifying the educational system? How have the existing political and social forces been accommodated? For what reasons have the changes proved adaptive? Then, what element in the appealing variations are suggestive for those individuals in other educational settings who may wish to modify programmes in a similar way?

To provide desirable relationships between national and local efforts, procedures must be developed for identifying attractive modifications in educational programmes, then supporting them. If increased reliance is to be placed on school-based programmes, probably support networks must be established whereby locally-based innovators can receive the assistance of scarce national talent. Furthermore, it is necessary to strengthen national advisory and consultative services in order to highlight the importance of teacher initiated activities.

In addition to the role of supporting personnel, there must be clarification of the roles of the various individuals within the school and community who play a role in development activities: the principal, for example, and the teacher; the parents and the students. The clarification of these roles, the strengthening of support services and the endeavour to understand how curriculum change actually occurs in contemporary society are more modest targets than some which have been pursued in the past. They all need careful consideration in the next phase of curriculum policy-making.

Chapter IV

CONCLUSIONS AND PROSPECTIVES

The preceding chapters do not claim to provide a complete conspectus of curriculum development in Member countries. However, they illustrate the diversity and scope of the movement and several of the crucial issues that have emerged over the past ten years. A decade and more of experience of systematic curriculum development and widespread discussion of curriculum policy have provided perspectives and insights which it has been one of the tasks of this Handbook to analyse and assess for their contribution to thought and action in this field.

However, our knowledge of the processes involved in the systematic renewal of the curriculum is still very incomplete. Furthermore, knowledge is often limited to particulars whereas policy makers frequently need to deal in generalities. Where knowledge only a few years ago appeared to many to be firmly grounded, as for example in the behavioural objectives movement, we are now finding a mounting wave of criticism, some of which tends to undermine the very foundations on which behavioural objectives have been built. This criticism is a healthy sign of intellectual vitality and much of it in fact points to the basic weaknesses in behaviouristic thinking and assumptions of which advocates of the objectives approach should be aware. More generally, these criticisms draw attention to the danger of firm conclusions and unequivocal recommendations. Experience of curriculum development has occurred in widely differing situations: different cultural traditions, educational systems, and conceptions of tasks have all contributed to a diversity and complexity from which it is extremely difficult to make generalisations that will be recognisable to the participants in the different situations. For example, we cannot claim to know which, in the cycle of curriculum development, is the most crucial point of entry - assessment procedures, pupil materials, objectives, teacher education, and so forth.

Readers of the Handbook have had the opportunity to make an assessment of the significance of the modern phase of what is in fact an ancient movement of curriculum change and the efficacy of the different strategies and approaches that have been adopted. They will have formed their own judgments about many of the issues and controversies, about practical action programmes and the validity of constructs in common use amongst developers and theorists. It would be a mistake, therefore, to end this study with a formal list of recommendations. What this concluding chapter attempts is to identify some tentative conclusions and to focus on a number of outstanding issues and problems

which inevitably will come forward for further clarification as curriculum development policies and practices are reviewed and reformulated in member countries.

The Handbook provides abundant evidence that curriculum development is a complex process even where single institutions or groups of schools are concerned. It embraces aspects of education which go well beyond updating the content and organisation of classroom learning, which is how some of the subject teams of a decade or more ago largely viewed their task. Although it has not proved possible to identify and make conclusive judgments about a set of basic styles of curriculum development, we have attempted to assess a variety of techniques and strategies all of which have their roots in and connections with the values and ideologies embedded in the culture. We have drawn attention to the distinctive approaches which are to be found in member countries, e.g. curriculum-making through national advisory committees and specialist groups working in or in close association with Ministries of Education, project teams which may function at the national level but are independent of governmental bodies, and a multiplicity of local, regional and school-based efforts. These approaches need to be understood and carefully assessed by all concerned with curriculum decision making. They are to a considerable extent justified and explained by the particular situations within which they occur, but these situations are themselves changing: in no system is the curriculum static or an object of indifference. Whether modifications made in or proposed for school curricula amount to a fundamental change is another matter.

Despite the cultural roots of curriculum development which we have noted, a technique or an approach which originates in and refers specifically to a particular situation is not subsequently best thought of only as a function of that situation and its needs. Decision-makers are not always sufficiently aware of relevant work in systems other than those for which they are directly responsible. They may be unduly circumscribed, as a consequence, in their assumptions about the kinds of innovation their own systems will tolerate or accept. The diversity of workable approaches to curriculum development and the specificity of the origins is not a reason for failing to make a very careful appraisal of the experience to be found in other situations and redefining one's own role and task in the light of this experience. It has been one of the purposes of CERI's programmes of national and international seminars to encourage cross-national analysis and appraisal, and we think this Handbook has its own contribution to make in this regard.

More regular and systematic exchange of policy thinking, curriculum materials, research findings and experience of particular approaches and problems would be very valuable, particularly for policy decision-makers and teacher educators. This exchange is to some extent provided for through professional literature, the increasing number of informal contacts between curriculum workers in different systems, and professional programmes of seminars and conferences of which the CERI curriculum series is an example. However, these exchanges notwithstanding there is still a strongly felt need for maintaining and continuing what is taken to be the national or even a particular group's way of doing things. It must be recognised that this is essentially a conservative view: certain practices and procedures exist and make sense in particular environments and people are held to need considerable assurance before they substitute for them the alien practices of another system or group. Clearly no system is an unmixed and as unchanging or as uniquely meaningful as the conservative assumption might suggest. The position which posits some essence of a tradition

or a procedure and ascribes unique value to it, overlooks the reality of changing events and relationships. The social meaning and significance of the school curriculum is constantly changing as other systems and institutions in society change and grow. As a consequence, methods and procedures for modifying the curriculum cannot be assumed to be stable any more than content, roles and institutions. The uncertainty as to both ends and means which these changes give rise to underlines the value of cross national comparisons and guidelines. This general instability and uncertainty is well illustrated by the changing meaning of the term curriculum itself, as is pointed out in Chapter I.

Curriculum development started haphazardly and in none of the educational settings discussed in this report has it reached the stage where adequate support is provided, linkages between teachers, project workers, policy makers, teacher trainers and other interested parties have been adequately established, or adequate efforts made to maintain a continuity of growth and development of the curriculum. These problems are not only the problems of funding but also of monitoring development and seeking to understand and control it. The very complexity of curriculum development processes means that continuity of support is extremely difficult to establish. It is by no means certain that we have identified, in any Member country, the key elements from which the greatest returns for supportive action could be anticipated. This is not surprising when we consider that curriculum change entails changes in human relationships and institutions and not merely in the content and methodology of teaching.

The ultimate justification of curriculum development is improved conditions of learning and teaching, yet in all countries studied there is evidence of doubts in the teaching profession about the practical results of the curriculum development movement. While these doubts are legitimate in as much as they refer to the relatively limited results of substantial investments of public and private money in curriculum reform, they should not give rise to the variant of conservation already noted, or to scepticism about the quest for planned change. This would be tantamount to plumping for the tried and trusted methods of the past, which cannot be a satisfactory solution to our problems.

Continuing social and cultural change is characteristic of industrialised societies. These societies will be far more decisively affected by recent drastic changes in the energy balance than non-industrialised societies. In the light of these changes, the content of the curriculum, methods of teaching and the context of inter-personal relationships that are commonly found in schools, and indeed the very concept of schooling itself, will have to be dramatically revised. Industrialised societies have shown themselves capable of rapid adaptation and planned flexible development. There is thus both a greater need than ever before for critical and systematic approaches to the curriculum and a capacity to make them. The conservative response is simply irrelevant. Countries, furthermore, should be extending their procedures for monitoring and assessing curriculum and other educational changes and disseminating their findings within their own systems as well as to one another. Only thus can there be that gain in knowledge without which curriculum development will remain the prescriptive and even speculative enterprise it often is now. More than ever before, in the years immediately ahead, national policy makers in education are going to need information, skill and sensitivity to contemporary issues in their approach to curriculum and related educational concerns.

The foregoing point raises one of the most crucial problems in curriculum thinking, namely the role of values and ideologies. The curriculum is a map or a chart of experience. It crystallises and summarises, and then states in a learnable form what decision-makers in educational and other social institutions believe is appropriate for communication in schools. These beliefs reflect and enshrine political decision and value judgments. When proposals are made for modifying what has previously been transmitted, further value-laden decisions must be taken. More far-reaching proposals in some Member countries for making the curriculum a kind of continuously adapting system also imply value preferences. These choices presuppose the rights of certain individuals and groups to take decisions on behalf of others, i.e. the decisions taken for pupils by teachers and educational policy-makers who claim to be representing the educational interests of society at large, and are vested with varying degrees of authority to express these interests. This is a simplified version of an elaborate structure of responsibilities, rights and powers but put in this way it raises the question of legitimate participation in curriculum making. It is clear from the surveys carried out in the course of preparing the Handbook that patterns of participation involving teachers, parents, administrators, other members of the adult community and the pupils themselves are changing. The rights and responsibilities of these various groups have not always been clearly defined and the effort to analyse them closely raises the most fundamental questions of democratic theory. The broader definition of curriculum used in this Handbook precludes a narrow professionalism. Thus it is a mistake to suppose, as some educationists are still inclined to do, that curriculum decisions are the prerogative of the corps of trained professional teachers. How these decisions are made, what they presuppose and what interests are served in their making are questions which require detailed investigation if the debate about changing responsibilities and rights is to be an informed one. Chapter III of this Handbook draws attention to some of these problems and suggests lines of further inquiry.

Mention has been made already of the variety of strategies and approaches to curriculum development that are to be found in Member countries. Piecemeal change favours and is favoured by project-based curriculum development and in all countries where this approach is used curriculum change has been only partial and irregular. This is inevitable when the project strategy is adopted and perhaps helps to explain why this often is the chosen method. It is sometimes assumed that a comprehensive strategy for curriculum development involving a variety of approaches and functioning at all levels from national to local depends on tight central control through a traditional bureaucracy. There is no such dependence, and those who assert it may be confusing control with support, or overlooking the diversity and regionalisation of administration in many societies. We have noted in the foregoing chapters that fixed centre control is lessening and is being replaced by a variety of procedures which give greater opportunities and responsibilities to regional and local bodies. There are some signs, more conspicious in certain societies than others, of serious attempts to harmonise and co-ordinate the work of the various institutions and agencies engaged in curriculum development. The problem of harmonisation is obviously much greater in those systems where by law and custom the responsibilities for the curriculum are exercised by local authorities and by the schools themselves. It is in these societies that the need for energetic and creative schemes of harmonisation is greatest. Correspondingly, there is some temptation in these societies to rationalise a multiplicity of ad hoc approaches and to defend them as a necessary

feature of a pluralistic society. Where this defence is attempted it is important to ask in what particular ways the pluralism of values and institutions affects the opportunities, work styles and life conditions of the participants in the educative process.

One of the most difficult of the emerging problems in Member countries where greater freedom is being given to schools arises from just this question of pluralism. School-based curriculum development has a great appeal not least because it confers considerable responsibility upon class-room teachers. Yet it can give rise to serious difficulties when one of its consequences is a great diversity of the curriculum and teaching and learning methods. In highly mobile societies with families quite likely to move from one region to another there are obvious advantages in a more uniform curriculum. It has also been argued that the goals of social consensus and equality are better served by at least a common core of studies.

The growing movement of school-based curriculum development raises most acutely the need for linkages to be well articulated amongst the various elements in the system: schools, advisory services, ministry, examiners and examining boards, teacher trainers, curriculum developers and so forth. One of the consequences of turning school-based curriculum development from an attractive sounding slogan into a meaningful set of procedures is that its simplicity has been replaced by a recognition of the intricate social substructures that are necessary to support it. For example, the questions of funding and accountability for expenditure of funds are more difficult where schools have a greater responsibility for their own curriculum decisions than when they are simply transmitting through the agreed syllabus the decisions of the national ministry. The appointment of curriculum development specialists to the various branches of the administration of the educational service will be necessary to build up and maintain linkage.

The problem of preparing and supporting teachers as curriculum developers is brought out acutely by the school-based movement. In addition to the inclusion, in courses of initial training, of programmes designed to prepare prospective teachers as curriculum developers, there is need for a widespread growth of post-experience courses. In many Member countries there has been a rapid growth in training institutions of courses in curriculum theory and development. To be effective, these courses should focus not only on the individual teacher but also on the organisation and the community of which he is a part. The concepts of community and organisational development are pertinent to contemporary curriculum development and may be expressed through, for example, on-the-job programmes which take place within the school or in local teachers' centres, and involve wider groups than teachers. So far there has been relatively little of this kind of activity on any appreciable scale. In its next phase curriculum development should broaden its concerns to include more comprehensive and imaginative training programmes. These local corporate activities should not take the place of more established forms of post-experience training where individual teachers freely take part in full and part-time courses. Both approaches should be adopted and each provides the means of relating curriculum development to in-service education, traditionally two separate domains.

The training programmes will be insufficient unless an array of support structures is developed. A structure of institutions seems to be required which embraces the following: school-based teachers' centres built largely on the principle of self-help and providing

opportunities for teachers and other interested parties to work in a very concrete way on the curriculum problems of local schools, local teachers' centres containing such resources as reprographic facilities and collections of project materials and providing meeting places for groups of co-operating schools; advisory services including local and national inspectorates, regional structures including advisers and teacher training institutions; national bodies including ministries, universities, development groups and professional associations; and international bodies which facilitate the exchange of experience and ideas and promote development in regions where there is no established tradition of this kind.

One major difficulty arising from the variety of local and regional initiative is that of setting and maintaining standards. The traditional views of standards of attainment and performance, based on highly stratified intellectual and social systems, are no longer adequate. One thing that curriculum development has done is to make educationists aware of the relativity of educational standards: new projects have meant new forms of assessment and the performance of the pupils is not strictly comparable when they have been engaged on quite different learning tasks. Hence the peculiar difficulty of evaluating curriculum development. However, there has been something of a backlash, and in a number of countries serious disquiet is being expressed about the educational consequences of some of the curriculum changes that have taken place. The redefinition of acceptable standards cannot be carried out except in relation to objectives, criteria, and underlying values. It is a task which increasingly requires attention in an age of mass education and it would benefit from a continuing exchange among member countries. For this purpose international descriptive studies are valuable but they are by no means sufficient. They are the starting point rather than an end point of enquiry. Curriculum studies have already claimed a large part of the funds available for educational research in some countries. But there is need for much more research if some of the important questions that have been raised by recent developments are to be answered.

It is tempting to suppose that the models of action-based or problem-solving research focused on the felt needs of schools and teachers would be adequate. Reflection on the nature of curriculum theory shows that a multiplicity of approaches to research and enquiry is needed. Curriculum theory is an amalgam which closely reflects the intimate relationships in teaching amongst value judgments, general concepts of content and methodology, and the concrete, highly specific facts of the learning situation as perceived by various participants. It is a theory which gives strong emphasis to practical judgments, which draws on the planning and field experience of teachers and curriculum developers, on empirical research especially in concept development and classroom interaction, and on various related branches of educational and social science theory. It is important to note that curriculum theory is synthetic and integrated in character: it seeks to unify, and hold together in a single frame of reference, constructs and experience from the different specialisms into which the study of education is increasingly divided. It is not concerned only with explaining the interrelated phenomena of the curriculum, although this is one of its tasks; it is a prescriptive or ideological theory. Substantive curriculum theories, which include for example the American common core curriculum theory or the Soviet theory of polytechnical education, do not resemble the theories of science, history and philosophy so much as political and social movements; that is, specific curriculum theories prescribe courses of action, they unite groups of professional workers, they

crystallise ideas around possible courses of action and interrelate values and empirical data which many of the theories of science and phisolophy seek to separate. The research which is an integral part of curriculum theorising is not, therefore, reducible to straightforward investigations of the effects of certain forms of intervention. It has not been the task of this Handbook to make a systematic analysis of the research findings in the curriculum field. It may be, however, that one of the roles which CERI might perform is to make a series of critical and comparative studies of the variety of research programmes in the curriculum and to make these available to Member countries, especially those interested in developing new approaches.

In passing, it should be noted that one of the functions of the seminar series starting with the seminar in Kassel, Germany, in 1970 has been to examine and to interpret some of the research findings that have a bearing on curriculum decisions.

There are many policy makers and administrators who feel that after many years of research and development the time has now come to focus on implementation and adoption. The policy makers, the administrators and the public at large doubtless want to see results and are impatient of academic preoccupation with enquiry and scepticism. But it should be clear from the work reviewed in this Handbook that curriculum development including research is an ongoing process and that it is no longer possible to hold the view that first one undertakes a programme of research and development and then one implements it over a long period of time. Social situations, policies and institutions are changing too rapidly, the limitations of research and the need for feedback in planned development are such that this would hardly be a meaningful procedure. But what is undeniable is that curriculum research has not been sufficiently related to decision-taking: new approaches and designs are needed.

What we have noted in our enquiry is a patchwork wherein some Member countries have achieved a great deal at least in some aspects of their educational systems and others have achieved, as yet, relatively little. Thus the attractively clear-cut recommendation to get on with the business of implementation will not do. The nature of the curriculum and indeed the role of the school in society are becoming more problematic and controversial rather than less and only those systems which maintain a high degree of flexibility and build up a capacity for monitoring and adjusting their curriculum - and indeed their fundamental social policies - are likely to succeed, educationally, in the very difficult years that lie ahead.

It is sometimes rather comfortably assumed that where curriculum development is under the control of central ministries, comprehensive change strategies and systematic procedures for monitoring and adjusting school curriculum will be adopted. As the preceding chapters have shown, no clear pattern emerges wherein centrally or locally controlled curriculum systems have any particular advantage in this regard. In centrally controlled systems, administrative and organisational constraints may inhibit the experimentation that is necessary if new approaches are to be introduced and properly tested. There is no guarantee that the requirements of curriculum development will be well understood in centrally dominated systems. On the other hand, there is no evidence that local administrations have any clear advantage. Flexible and open administration, including the readiness to learn from other systems and to try new approaches, rather than rigid bureaucracy, whether central or local, is a prerequisite of widespread and continuing planned change.

It should go without saying that expert staff are required, but it is not always the case that responsible specialists are assigned to work of curriculum development at either national ministry or local level. This is not just a problem of lack of understanding of what the processes of curriculum development entail, it is connected with the increasing demands that are being made on scarce resources by all branches of the social services.

One question which all Member countries will be asking is whether they can maintain present and recent rates of spending on the educational sector. Curriculum development, as we have seen, is expensive in resources, energy, skill and time. It frequently takes much longer for a change in the curriculum to take effect than project budgets allow for or administrators had calculated. The whole question of funding and supporting, especially in relation to the adoption and diffusion of innovation, needs to be further examined in the light of experience in those countries where both private foundations and governments have provided support. This is a problem for the resolution of which research findings will clearly be important and yet insufficient in themselves. The question of returns for curriculum development expenditure raises issues which will not be decided on educational grounds alone.

What has been emphasized throughout this report is that curriculum development is not a process of change which can be isolated from other types of educational reform. The more general questions of curriculum policy, especially those which relate curriculum to society, are those which are most easily shirked as being too abstract or irrelevant or obscure as far as the work of the participants in the process is concerned. There is a common tendency to concentrate on specific issues of substance or technique, to invest in limited, low-risk programmes, and to dichotomise questions of principle and matters of practice. Far too many projects, funded at considerable cost, have been merely parochial and supportive of the status quo.

Curriculum theory as both a contributer to and an instrument of social policy demands much more attention that it has so far received, in the plethora of projects and reform measures. The objectives of curriculum policy raise questions and issues of profound social and political significance. Some Member countries recognise this explicitly whereas in others such recognition is awkward, so the interests and values of certain groups are maintained and transmitted through the school curriculum without public scrutiny and discussion. Separate elements of the curriculum system have received substantial and detailed attention in some countries but the important relationships and connections between schooling and public policy are frequently neglected. Thus curriculum development is often viewed as a purely technical or procedural matter best left to certain kinds of experts armed with models of innovation. A more open examination is needed of the relationship of curriculum development to social policy and the cultural goals and purposes which are being served by curriculum practices. This examination will be facilitated by intensive studies of how, in fact, curriculum changes and changes in policy are brought about. If the cultural significance of the school curriculum is thereby brought into focus the ensuing discussion and debate will enlist the interest of much wider social groups than have been involved in curriculum thinking in the past. We may expect from this more controversy but perhaps also the replacement of the limited concept of schooling as a socially reproductive function by the far more fruitful one of schooling and hence curriculum as culturally reconstructive.

SELECTED BIBLIOGRAPHY

ABERCROMBIE, M. L. J. (1969), The Anatomy of Judgment. Harmondsworth, Middlesex, Penguin Books.

ALLEN, D. W. and RYAN, K. A. (1969), Micro-teaching, Reading, Mass., Addison Wesley.

ASHTON-WARNER, Sylvia (1963), Teacher. London, Secker and Warburg.

ATKIN, J. M. (1968), Behavioural objectives in curriculum design: a cautionary note. Science Teacher, 35, May, 27-30.

BENNIS, W. G., BENNE, K. D. and CHIN, R. (eds.) (1969), The Planning of Change. New York, Holt, Rinehart and Winston, (2nd ed.).

BLOOM, B. S. (1966), The role of the educational sciences in curriculum development. International Journal of Educational Sciences, 1, 5-66.

BLOOM, B. S. et al. (1956), Taxonomy of Educational Objectives, David McKay Co., New York.

BLOOM, B. S. et al. (1971), Handbook on Formative and Summative Evaluation of Student Learning. New York, McGraw Hill.

BORG, W. R. et al. (1970), The Minicourse: a microteaching approach to teacher education. London, Collier-Macmillan.

BROUDY, H. S. (1970), The philosophical foundations of educational objectives. Educational Theory, 20, 1, Winter, 3-21.

BROUDY, H. S. (1970), Can Research escape the dogma of behavioural objectives? School Review, 79, 1, Nov. 43-56.

BROUDY, H. S. (1972), A critique of performance-based teacher education. Washington, D.C., American Association of Colleges for Teacher Education. May.

BROUDY, H. S., SMITH, B. O. and BURNETT, W., (1964), Democracy and Excellence in American Secondary Education. Chicago, Rand McNally.

BRUNER, J. S. (1966), Toward a Theory of Instruction. Cambridge, Mass., Harvai Univ. Press.

COPE, Edith (1971), School Experience in Teacher Education. University of Bristol.

CHANAN, G. (ed.) (1972), Research Forum on Teacher Education. Slough, Bucks, The National Foundation for Educational Research.

CORBETT, P. (1965), Ideologies. London, Hutchinson.

DEPARTMENT OF EDUCATION AND SCIENCE (1972), Teacher Education and Training (James Report), London, Her Majesty's Stationery Office.

DERRICOTT, R. and HALL, G. (1971), "Teachers and curriculum development", The New Era. 52, 5, May. 531-535.

DEWEY, J. (1916), Democracy and Education. New York, Macmillan.

EISNER, E. W. (ed.) (1971), Confronting Curriculum Reform. Boston, Little Brown and Co.

FLANDERS, N. ('970), Analysing Teaching Behaviour. Addison Wesley.

FORD, C. and PUGNO, L. (eds.) (1964), Structure of Knowledge and the Curriculum. Chicago, Rand McNally.

GAGE, N. (ed.) (1963), Handbook of Research on Teaching. New York, Rand McNally.

GRIBBLE, J. W. (1970), "Pandora's Box: the affective domain of educational objectives." Jnl. of Curriculum Studies, 11, 1, May.

GROSS, N., GIACQUINTA, J. B. and BERNSTEIN, M. (1971), Implementing Organizational Innovations. New York, Harper and Row.

GUTTCHEN, R. S. and BANDMAN, B. (eds.) (1969), Philosophical Essays on Curriculum. New York, J. B. Lippincott and Co.

HARLEN, Wynne (1971), "Some practical points in favour of curriculum evaluation", Journal of Curriculum Studies. 3, 2.

HAVELOCK, R. G. (1970), "The utilization of educational research and development", British Journal of Educational Technology. 2, 2, 84-98.

HAVELOCK, R. G., Planning for Innovation, Final Report, U.S. Office of Education Research Contract, OEC 3 7-070028-2193. Ann Arbor, University of Michigan, 1969 (ED 029 171).

HAVELOCK, R. G., Janet HUBER and Shaindel ZIMMERMAN, (March 1969), Major Works on Change in Education: An annotated Bibliography and Subject Index, Ann Arbor, Michigan, Center for Research on Utilization of Scientific Knowledge, University of Michigan.

HIRST, P. H. and PETERS, R. S. (1970), The Logic of Education. London, Routledge and Kegan Paul.

HOOPER, R. (ed.) (1971), The Curriculum: Context, Design and Development. London, Oliver and Boyd, (Open University Reader).

HOYLE, E. (1969), "How does the Curriculum Change?", Journal of Curriculum Studies, 1, May, 132-141 and 1, Nov., 230-239.

IDEAS, Journal of the Curriculum Laboratory, Goldsmiths College, London.

ILLICH, Ivan, De-Schooling Society, New York, Harper and Row, 1971, 116 pp.

KLASSEN, F. H., IMIG, D. and COLLIER, J. L. (eds.) (1972), Innovation in Teacher Education: an International Perspective. Washington, D.C., International Council on Education for Teaching.

KOMISAR, B. P. (1966), "The non-science of learning", The School Review. Autumn, 74, 3, 249-264.

KOMISAR, B. P. and McCLELLAN, J., Content Analysis of Curriculum Theory. Temple University, Mimeo. (undated)

KRATHWOHL, D. R., BLOOM, B. S., MASIA, B. B. (1964). Taxonomy of Educational Objectives: the Classification of Educational Goals. Handbook II Affective Domain. New York, David McKay Co.

LOMAX, D. (ed.) (1972), The Education of Teachers in Britain. London, Wiley.

McALEESE, W. R. and UNWIN, D. "A simulated teaching environment as part of a teacher training programme", Packham, D. et al. Aspects of Educational Technology. 5, London, Pitman.

MacDONALD, B. and RUDDUCK, J. (1971), "Curriculum research and development projects: barriers to success", British Journal of Educational Psychology. 41, 2, June.

MacDONALD, J. B. et al. (eds.) (1965), Strategies of Curriculum Development, Columbus, Ohio, Charles E. Merril Books.

McKNIGHT, P. C. (1971), "Micro-teaching in teacher training: a review of research." Research in Education. 6, Nov. 24-38.

MacMILLAN, C. B. J. and NELSON, T. W. (eds.) (1968), Concepts of Teaching: Philosophical Essays. Chicago, Rand McNally and Co.

MACLURE, J. S. (1968), Curriculum Innovation in Practice. London. Her Majesty's Stationery Office.

MILLS, C. Wright, and GERTH, Hans (1953), Character and Social Structure, Harcourt, Brace & World Inc., New York.

MORRIS, B. S. (1972), Objectives and Perspectives in Education, London, Routledge and Kegan Paul.

MORRISON, A. and McINTYRE, D. (1969), Teachers and Teaching, Harmondsworth, Middlesex, Penguin Books.

OPEN UNIVERSITY (1972), Course units for E283: The curriculum context, design and development. Bletchey, Bucks.

ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (1972), The Nature of the Curriculum for the Eighties and Onwards. Paris. OECD/CERI. (See also other OECD/CERI publications on curriculum).

PEPPER, R. (1972), "Inservice training and the Thomas Carlton School, Peckham". Forum. 14, 2, Spring.

POPHAM, W. J. et al. (1969), Instructional Objectives. American Educational Research Association Monograph Series on Curriculum Evaluation, Chicago, Rand McNally.

PRING, R. (1971), "Bloom's taxonomy - a philosophical critique". (2) Cambridge Journal of Education, 2, Easter.

ROGERS, Everett M., "Developing a Strategy for Planned Change", Paper presented at the Symposium on the Application of System Analysis and Management Techniques to Educational Planning in California, California, June 1967.

ROGERS, Everett M., and Lynne Svenning, "Change in Small Schools", Paper presented at the National Working Conference on Solving

Educational Problems in Sparsely Populated Areas, Denver, Colorado, March 1969.

ROKKAN, Stein, (1968), Models and Methods in the Comparative Study of Nation-building, Gothenburg.

SCHOOLS COUNCIL (London), Dialogue (and other publications e. g. Curriculum Bulletins and Working Papers).

SMITH, B. O. (ed.) (1971), Research in Teacher Education: a Symposium, Englewood-Cliffs, New Jersey, Prentice Hall.

SMITH, B. O., STANLEY, W. O. and SHORES, J. H. (1957), Fundamentals of Curriculum Development. New York. Harcourt Brace and World. (rev. ed.).

SOCKETT, H., (1971), "Bloom's taxonomy: a philosophical critique" (1). Cambridge Journal of Education. 1, Lent.

SOCKETT, H., (1972), "Curriculum aims and objectives: taking a means to an end", Proceedings of the Philosophy of Education Society (G. B.). VI, 1, January.

SPRINGER, U. K., (1969), Recent Curriculum Developments in France, West Germany and Italy: a study of trends at the middle level of education, New York. Teachers College Press.

TABA, H., (1962), Curriculum Development. N. Y., Harcourt, Brace and World.

TAYLOR, P. H., (1970), How Teachers Plan Their Courses. Slough, Bucks. National Foundation for Educational Research.

TAYLOR, W., (1969), Society and the Education of Teachers. London, Faber.

TAYLOR, W., (ed.), (1969), Towards a Policy for the Education of Teachers. London, Butterworth.

TIBBLE, J. W. (ed.), (1966), The Study of Education. London, Routledge and Kegan Paul.

TYLER, R. W., (1949), Basic Principles of Curriculum and Instruction. Chicago. University of Chicago Press.

TYLER, R. W., GAGNE, R. M., and SCRIVEN, M., (1967), Perspectives of Curriculum Evaluation. Chicago, Rand McNally. (American Educational Research Association Monograph Series on Curriculum Evaluation, No. 1).

WALTON, J. (ed.) (1971), Curriculum Organization and Design. Ward Lock.

YOUNG, F. D. (ed.), (1971), Knowledge and Control, London, Collier-MacMillan Publ.

OECD SALES AGENTS
DEPOSITAIRES DES PUBLICATIONS DE L'OCDE

ARGENTINA – ARGENTINE
Carlos Hirsch S R L
Florida 165, BUENOS AIRES
☎ 33 1787 2391 Y 30-7122

AUSTRALIA – AUSTRALIE
B C N Agencies Pty. Ltd.
161 Sturt St., South MELBOURNE Vic 3205
☎ 69 7601
658 Pittwater Road BROOKVALE NSW 2100
☎ 938 2267

AUSTRIA – AUTRICHE
Gerold and Co., Graben 31 WIEN I
☎ 52 22 35

BELGIUM – BELGIQUE
Librairie des Sciences
Coudenberg 76-78, B 1000 BRUXELLES I
☎ 13 37 36/12 05 60

BRAZIL – BRESIL
Mestre Jou S.A. Rua Guaipa 518,
Caixa Post l 2090, 05089 SAO PAULO 10
☎ 2 274, 2[illegible]-1609
Rua Ivanov D [illegible]tas 19 s/205-6 RIO DE JANE[illegible]RO B ☎ 232-07 32

CANADA
Information Canada
171 Slater, OTTAWA K1A 0S9
☎ (613) 992 9738

DENMARK – DANEMARK
Munksgaards Boghandel
Nørregade 6, 1165 KØBENHAVN K
☎ (01) 12 69 70

FINLAND – FINLANDE
Akateeminen Kirjakauppa
Keskuskatu 1, 00100 HELSINKI 10 ☎ 625 901

FRANCE
Bureau des Publications de l OCDE
2 rue André Pascal, 75775 PARIS CEDEX 16
☎ 524 81 67
Principaux correspondants
13602 AIX EN PROVENCE Librairie de l'Université ☎ 26 18 08
38000 GRENOBLE B Arthaud ☎ 87 25 11
31000 TOULOUSE Privat ☎ 21 09 26

GERMANY – ALLEMAGNE
Verlag Weltarchiv G m b H
D 2000 HAMBURG 36 Neuer Jungfernstieg 21
☎ 040-35-62-501

GREECE – GRECE
Librairie Kauffmann 28 rue du Stade,
ATHENES 132 ☎ 322 21 60

ICELAND – ISLANDE
Snaebjorn Jonsson and Co h f
Hafnarstraeti 4 and 9, P O B 1131
REYKJAVIK ☎ 13133/14281/11936

INDIA – INDE
Oxford Book and Stationery Co
NEW DELHI Scindia House ☎ 47388
CALCUTTA, 17 Park Street ☎ 24083

IRELAND – IRLANDE
Eason and Son, 40 Lower O Connell Street,
P O B 42, DUBLIN 1 ☎ 01 41161

ISRAEL
Emanuel Brown
35 Allenby Road, TEL AVIV ☎ 51049/54082
also at
9 Shlomzion Hamalka Street JERUSALEM
☎ 234807
48 Nahlath Benjamin Street TEL AVIV
☎ 53276

ITALY – ITALIE
Libreria Commissionaria Sansoni
Via Lamarmora 45 50121 FIRENZE ☎ 579751
Via Bartolini 29, 20155 MILANO ☎ 365083
Sous-dépositaires
Editrice e Libreria Herder,
Piazza Montecitorio 120 00186 ROMA
☎ 674628
Libreria Hoepli, Via Hoepli 5, 20121 MILANO
☎ 865446
Libreria Lattes Via Garibaldi 3, 10122 TORINO
☎ 519274
La diffusione delle edizioni OCDE è inoltre assicurata dalle migliori librerie nelle città più importanti

JAPAN – JAPON
OECD Publications Centre,
Akasaka Park Building,
2-3-4 Akasaka,
Minato-ku
TOKYO 107 ☎ 586-2016
Maruzen Company Ltd.,
6 Tori-Nichome Nihonbashi TOKYO 103,
P O B 5050 Tokyo International 100-31
☎ 272 7211

LEBANON – LIBAN
Documenta Scientifica/Redico
Edison Building, Bliss Street
P O Box 5641 BEIRUT ☎ 354429 – 344425

THE NETHERLANDS – PAYS-BAS
W P Van Stockum
Buitenhof 36, DEN HAAG ☎ 070-65 68 08

NEW ZEALAND – NOUVELLE-ZELANDE
The Publications Officer
Government Printing Office
Mulgrave Street (Private Bag)
WELLINGTON. ☎ 46 807
and Government Bookshops at
AUCKLAND (P O B 5344) ☎ 32 919
CHRISTCHURCH (P O B 1721) ☎ 50 331
HAMILTON (P O B 857) ☎ 80 103
DUNEDIN (P O B 1104) ☎ 78 294

NORWAY – NORVEGE
Johan Grundt Tanums Bokhandel
Karl Johansgate 41/43 OSLO 1 ☎ 02-332980

PAKISTAN
Mirza Book Agency, 65 Shahrah Quaid E Azam,
LAHORE 3 ☎ 66839

PHILIPPINES
R M Garcia Publishing House,
903 Quezon Blvd Ext., QUEZON CITY
P C Box 1860 – MANILA ☎ 99 98 47

PORTUGAL
Livraria Portugal,
Rua do Carmo 70-74 LISBOA 2 ☎ 360582/3

SPAIN – ESPAGNE
Librería Mundi Prensa
Castello 37, MADRID-1 ☎ 275 46 55
Librería Bastinos
Pelayo 52 BARCELONA 1 ☎ 222 06 00

SWEDEN – SUEDE
Fritzes Kungl Hovbokhandel
Fredsgatan 2 11152 STOCKHOLM 16
☎ 08 23 89 00

SWITZERLAND – SUISSE
Librairie Payot 6 rue Grenus, 1211 GENEVE 11
☎ 022-31 89 50

TAIWAN
Books and Scientific Supplies Services, Ltd
P O B 83, TAIPEI

TURKEY – TURQUIE
Librairie Hachette
469 Istiklal Caddesi,
Beyoglu ISTANBUL ☎ 44 94 70
et 14 E Ziya Gokalp Caddesi
ANKARA ☎ 12 10 80

UNITED KINGDOM – ROYAUME-UNI
H M Stationery Office P O B 569, LONDON
SE1 9 NH ☎ 01 928-6977 Ext 410
or
49 High Holborn
LONDON WC1V 6HB (personal callers)
Branches at EDINBURGH BIRMINGHAM,
BRISTOL MANCHESTER, CARDIFF
BELFAST

UNITED STATES OF AMERICA
OECD Publications Center Suite 1207,
1750 Pennsylvania Ave N W
WASHINGTON D C 20006 ☎ (202)298-8755

VENEZUELA
Librería del Este Avda F Miranda 52,
Edificio Galipán, Apdo 60 337 CARACAS 106
☎ 32 23 01/33 26 04/33 24 73

YUGOSLAVIA – YOUGOSLAVIE
Jugoslovenska Knjiga, Terazije 27, P O B 36,
BEOGRAD ☎ 621-992

Les commandes provenant de pays où l OCDE n a pas encore désigné de dépositaire peuvent être adressées à
OCDE, Bureau des Publications, 2 rue André-Pascal, 75775 Paris CEDEX 16
Orders and inquiries from countries where sales agents have not yet been appointed may be sent to
OECD, Publications Office, 2 rue André-Pascal, 75775 Paris CEDEX 16

OECD PUBLICATIONS, 2, rue André-Pascal, 75775 Paris Cedex 16 - No. 33.693 1975

PRINTED IN FRANCE