Materials for learning and teaching

Commonwealth Secretariat

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Report of the Commonwealth conference held at Wellington, New Zealand, 22nd September – 3 October 1975

Commonwealth Secretariat

COMMONWEALTH SECRETARIAT

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THE GREETING

Spoken by Tilly Reedy at the opening
of the Conference on 22 September 1975

Whakataka to hau ki te uru	Cease oh winds from the west
Whakataka to hau ki te tonga	Cease oh winds from the south
Kia mākinakina ki uta	Let gentle breezes blow o'er the lands
Kia mātaratara ki tai	Let calm seas flow o'er the oceans
E hī ake ana te apakura	Let the red-tipped dawn come with a sharpened air
He huka, he tio, he hau hū	A touch of frost and the promise of a glorious day
Tihei Mauriora!	Behold 'tis life! I live!

THE COVER PICTURE

The cover picture shows a part of a nineteenth century totara wood carving in the Maori meeting house Te-Hau-Ki-Turanga at Gisborne, North Island. It was supplied by the School Publications Branch, Department of Education, Wellington.

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INTRODUCTION

The developmental requirements of modern times have made ever-increasing demands on the educational systems of Commonwealth countries, both in terms of the number of people to be educated and the ever-widening range of knowledge that people need to possess. A growing realization that traditional processes of instruction were inadequate to meet these demands led to the decision to hold a Commonwealth Conference on Materials for Learning and Teaching at Wellington, New Zealand, from 22 September to 3 October 1975.

One of the matters emphasized at the Conference was that educational materials are not important in themselves unless they are an integral part of the curriculum. Another was that countries desiring any form of social change should ensure that all agencies of change, including education, worked in close collaboration, and that governments should allocate sufficient resources to enable the changes to be implemented. A third - and certainly the most significant in day-to-day classroom terms - was that of the importance of teacher-made materials, even in those countries that can afford to provide a wide range of commercial equipment for schools. Examples of materials made by teachers, and by pupils, were among the most impressive features of the display that formed the first item on the conference agenda. One of the most valuable services that education officers and inspectors can perform is that of encouraging teachers to prepare their own teaching aids and of carrying news about the best of them from school to school.

Identifying ways of Commonwealth co-operation is always one of the objectives of Commonwealth conferences. This Conference has made a number of important recommendations affecting education authorities and governments as well as the Commonwealth Secretariat, and it is hoped that these recommendations will result in practical programmes and projects that will assist Commonwealth countries in making their educational programmes more effective.

The Commonwealth Secretariat wishes to acknowledge its gratitude to the Government of New Zealand for making the arrangements for the conference and to all those who contributed to the conference and offered hospitality to the delegates. Special thanks are due to members of the working party, to the Co-Secretary of the conference (Mr P. R. Miles), and the Administration Secretary (Mr W. S. Edginton) as well as to other staff seconded by the New Zealand Government.

CONFERENCE RECOMMENDATIONS

1. Educational authorities should ensure that:

(a) The development of learning materials evolves from the aims and objectives of education, and from the requirements of the curriculum and the needs of the learner.

(b) There is close interaction and co-operation between teachers and those who are developing new curricula and educational materials for use in schools.

(c) Teachers receive, as an integral part of pre-service and in-service training, whatever instruction they need to enable them to take full advantage of the equipment and materials that may be available to assist them in their work.

(d) When budgets for the purchase of new equipment are being prepared, or contracts are being awarded, long-term considerations of supply and support should be borne in mind as well as short-time financial benefits. Qualities of durability and simplicity are often preferable to ideal standards of refinement and sophistication.

(e) Selection committees for textbooks and other educational materials are fully representative of all those groups that can contribute to the selection process.

(f) Procedures for supplying textbooks and other school materials should be designed to alleviate financial strain on parents.

(g) Consideration is given to setting up audio-visual advisory groups to investigate and make recommendations for the technical standards, purchase, storage and utilization of equipment and materials.

(h) Any equipment for use in schools is accompanied by operation and service manuals plus an adequate range of spare parts and accessories.

(i) Mobile maintenance units are provided where other arrangements for servicing and repairing equipment are unsatisfactory.

(j) Well-staffed advisory services are available to support teachers in their work, particularly in educational systems that are being expanded and developed rapidly.

(k) Financial and other forms of assistance are available to support local initiatives in the provision of materials for formal and non-formal education.

(l) Information about appropriate practices and materials associated with educational technology is widely disseminated.

2. Governments are urged to:

(a) Conduct a survey of learning and teaching resources available in their schools with a view to co-ordinating and making the most effective use of them.

(b) Pay particular attention to, and provide adequate human and material resources for, the production of learning and teaching resources developed from easily-available and inexpensive local materials.

(c) Provide appropriate support for personnel involved in curriculum development, materials production, and in-service training.

(d) Establish tape copying and exchange services as a necessary support to educational broadcasting.

(e) Make special provision of teaching materials for the teaching and learning needs of handicapped children.

(f) Ensure that aid programmes are directed to meeting priority needs of recipient countries, and that the follow-up implications are determined at the initial planning stage.

(g) Encourage teaching about the Commonwealth by providing master sets of material about their own country for use by others on a copyright-free basis, where necessary with assistance from the Commonwealth Secretariat.

3. The Commonwealth Secretariat (in association with other agencies and international organizations where appropriate) should consider:

(a) Disseminating as widely as possible among member countries, information on developments in educational equipment, educational materials, and related teaching and learning procedures.

(b) Establishing a clearing house which would assist Commonwealth countries to obtain reproduction rights for educational materials among member countries.

(c) Reaching agreement on a common system of cataloguing non-book materials.

(d) Investigating the design of equipment, including unsophisticated equipment, which meets the educational needs of member countries, and disseminating the results of the investigation.

(e) Assisting member countries in evaluating educational equipment and materials, in a manner that takes into account their costs and their benefits.

(f) Assisting the interchange of educators between Commonwealth countries for short periods so as to enable them to gain insights into teaching practices and the preparation and

provision of educational materials.

(g) Collecting and disseminating information on the experience gained by Commonwealth countries in various forms of individualized and group learning procedures.

(h) Setting up regional centres for initiating educational research and development and for improving communications between the Secretariat and member countries.

(i) Encouraging and providing assistance for national and regional programmes relating to educational materials.

(j) Consulting with appropriate organizations about the qualities required of educational equipment and materials to be used and stored in regions of climatic difficulty.

(k) Encourage research into ways in which schools can make use of materials that are normally discarded.

4. Commmonwealth countries with similar problems in the preparation and provision of educational materials should endeavour to pool their experience.

5. Countries at different levels of development should endeavour to co-operate in the design, production and exchange of educational materials on a bilateral and regional basis.

SUMMARY OF CONFERENCE DELIBERATIONS

The Variety and Potential of Educational Materials

1. The variety of materials produced for educational purposes was represented in a large and comprehensive exhibition mounted in all four of the conference rooms. Within the exhibition there were examples of some of the equipment available to the teacher - such as video cassette recorders, cassette tape recorders, movie projectors and other items of "hardware", along with the accompanying "software" (films, slides, tapes, cassettes and the like). But much more space and attention was devoted to displays of those kinds of school-made materials which have a longer tradition and which, because they come into being in response to specific classroom needs, lie at, or close to, the heart of the educational process. To comprehend everything represented in the exhibition, and focus the mind on the essential qualities that each item possessed, the conference classified the materials in four categories.

2. Category 1 comprised the items that teachers and pupils could easily make themselves. Some, such as feltboards or flannelboards, were extensions of the chalkboard - itself the most widely-used medium of instruction. The chalkboard has the advantages of cheapness, convenience, immediacy, and adaptability from one kind of lesson to another. It provides the teacher with opportunities for building a lesson step by step, of emphasizing key points, and of adding a visual component to aural communication. The effective use of the chalkboard enhances the prestige of the teacher and provides a focus of attention in the classroom. Where financial resources are slender, the chalkboard is often the only teaching aid in a classroom. Surprisingly, in view of its unique importance and its universality, it is often used ineffectively. Moreover, feltboards and flannelboards are seldom used at all. There was general agreement that more could be done to improve the quality of chalkboard instruction and extend the range of its possibilities in every country, no matter what stage of development it has reached.

3. Other simple and highly effective materials in this category are those that emerge from the children's art work - namely puppets, paintings, collages, and other illustrations. The opportunities for involvement in media making are important in this category.

4. Category 2 comprised those aids produced outside the school that require a basically simple production technology. Characteristically, they are easy to use even by those teachers who lack the confidence to handle more sophisticated equipment. The most readily available are photographs and enlarged pictures, posters, charts and maps - whether designed specifically for educational purposes or not. They are inexpensive, versatile, easily displayed, and open-ended. Among the best commercially-produced materials are educational toys - building blocks, shape trays, spirographs and the like - which support the growth of intellectual, imaginative, manipulative and constructional skills.

5. Category 3 items were more rigid in their requirements in that they depended on an external source of power. Examples are film strips and slides, radios, television sets, movie projectors, and audio- and video-tape recorders. Though their potential contribution to education is immeasurable, they require a degree of organization that many schools cannot provide, and a degree of self-confidence among the users that many teachers do not possess and cannot be expected to possess

with present levels of training.

6. Category 4 consisted of printed materials, some of which were self-contained and bore no direct relationship to other media, and others which were designed to contribute to a multi-media approach to teaching and learning. To be of real value, both kinds have to be prepared in relation to the social and cultural values and the educational goals of the country in which they are to be used.

7. Though these four categories effectively embraced the range of manufactured materials, a fifth category of traditional and environmental media was also identified. Because the essence of this category lies in personal experience, its characteristics are hard to define. But its importance is undeniable. The qualities of some cultures cannot be adequately represented by any of the manufactured media. A Maori marae, for example, has at the very least to be experienced, perhaps even participated in, before its meaning can be properly understood. The suburban centres of the world - termed "over-developed regions" by the keynote speaker - may have lost more than they have gained by creating for themselves a culture that has become divorced from the roots of folk experience. For this reason, where traditional culture still exists it should be fostered, not so much by the provision of equipment as by the development of expertise in mime and drama and dance, and by engendering a feeling of self-confidence among the participants.

8. As for the environment, it affects education in two ways. First it exists as a study resource - perhaps even a media resource - in its own right. As such it provides the only real-life situation that children can examine; offers opportunities to teach techniques of enquiry; and enables contact to be made with innumerable resource persons of all ages, occupations, and personal characteristics. Second, its influence penetrates every aspect of the classroom and affects both the teacher's and the children's response to the media resources available in school. Thus to the many millions of children in the world who watch television at home for upwards of 25 hours a week, the events and personalities portrayed on the screen are a major component of the environment in which they live. For them the TV lesson is a natural extension of experience. But for children with a different home environment, there could be a conscious or unconscious rejection of the passivity which watching an ETV presentation may engender. This is but one example of the need to match the media with the user, and the conference drew attention to the danger of attempting to impose centrally-produced materials on a diverse audience. Materials should, instead, be either derived from the society in which they are to be used or adapted to it.

9. In any case, self-confidence in the use of the media rather than the presence, or even availability, of the total range was considered to be the key that turned the lock. Accordingly, little distinction was drawn between developed and developing countries as far as the problem of the use of educational materials is concerned. In both groups of countries there are some teachers who possess, and some who lack, sufficient confidence to make effective use of the resources at their disposal. Wherever confidence is lacking, measures should be taken to create it, and various kinds of pre-service and in-service teacher training programmes were suggested for this purpose. Such programmes should acquaint teachers with the range and potential of the materials available to them, and provide whatever practical experience and technical knowledge is necessary to operate equipment. Some of this "basic tool training" as one of the speakers termed it, could itself be given by means of the new media. For example, broadcasting had already proved its capability of reaching a wide audience of teachers at a relatively low cost. In addition to teacher training, teacher participation in the development and in the evaluation of materials was regarded as essential. Teachers' centres have a valuable role to play in all these functions, particularly if they act in an integrating capacity in curriculum development and the design, production, and use of teaching materials.

10. The need to provide technician services to repair and maintain equipment was also emphasized, and it was felt that technician training should form an intrinsic part of any country's aid programme which involves a gift of audio-visual equipment. Such training might be supplemented, on request, by regular technical visits. A further possibility was that of undertaking maintenance on a regional basis. Some frustration was expressed at the inability of countries to secure internationally-standardized optical and radio eqipment, tape recorders, TV sets, and other commercially-produced items. As a result, repairs and servicing are difficult and expensive to undertake. Recipient countries should therefore be given a say in the choice of equipment given to them. Another outcome of international standardization is the opportunity for easy interchange of media.

11. Whenever consideration is being given to the widespread introduction of new media in a society, three factors need to be taken into account. One is that they should fit easily and smoothly into the existing educational process, accommodating whatever levels of sophistication are known to exist. In other words, they should be neither too far in advance of, nor too far behind, the level of development of the society. Another is the necessity to scrutinize their cost-effectiveness and teacher-time effectiveness, and the third is to ensure that the new media serve as a support to the total educational process and in no way as a substitute for essential learning skills. The primary purpose of educational materials is to stimulate and motivate learning, not to attempt to replace it.

The Design and Production of Educational Materials

12. As some of the delegates stressed, the very diversity of the countries represented at the conference made any kind of generalization difficult. Thus a system that works well in island territories such as Tokelau - where populations are numbered in hundreds - is unlikely to be applicable to a sub-continental land mass such as India which contains nearly 600 million people.

13. Nevertheless, though educational practice differs from one part of the Commonwealth to another, it is possible to identify some common principles. One of these is that learning materials intended for use in school should evolve from the requirements of the curriculum rather than from the available hardware or software. The conference believed that the application of this principle was essential because it would ensure that fundamental decisions affecting children's education were based on educational considerations. Once the principle was enunciated, however, it raised the question of how curriculum decisions should be made, and who should make them. The answer was that contributions to curriculum change could come from several sources. One of the most important is the local community and the school, for it is at this level that the curriculum has to operate and be effective. Another source is the university where new subject matter and new insights into children's learning are generated and investigated. Socio-political influences are also sometimes apparent, particularly in former colonies that are creating a new national identity for themselves and in any country that is endeavouring to carry out rapid social change. Examination authorities exert a strong influence, and, especially where they set syllabuses and papers for candidates in overseas countries, their effect on the curriculum was the subject of some sharp criticism by a number of delegates. This criticism was extended to those textbook publishers who rush into print as soon as a new examination syllabus is issued so as to capture the market. Professional and teachers' organizations, curriculum specialists and other individuals, the business community and religious groups also play an important role in initiating curriculum change in many countries.

14. The initial process, however, is relatively simple compared with the tasks that come next. In an ideal situation, these were outlined by the lead speaker on the subject as being planning, writing and designing the curriculum materials needed to implement the proposed changes; testing and revising the materials in pilot projects;

producing, disseminating and using them in the school system; and, finally, evaluating them to see if they need revising, supplementing or replacing. The Open University in Britain is an example of a highly complex operation which has had to establish a balance of this kind. At each stage there are implications that one dare not ignore. These include the context in which the materials will be used, the system of organization in the schools, the level of teacher training, and the facilities and resources available for production. The pace of curriculum development can falter unless a balance is maintained in all these areas.

15. Some of the factors that affect product design and development are essentially political (e.g. central as opposed to local control), professional (e.g. the lack of advisory support for teachers, and the conflict of assessment and advisory roles of inspectors), personal (e.g. promotion to other branches of government service), and economic. Many delegates reported difficulties in persuading governments to accord a sufficiently high priority to the provision of an adequate quantity and variety of educational materials. Occasionally in such circumstances, the sharing of facilities and costs with another organization can help to alleviate the problem. Thus the Australian "Schools of the Air" project makes use of the same two-way radio communications network set up originally for the flying doctor service.

16. In endeavouring to meet the requirements of many different teaching and learning situations in many different countries, and to compete with one another in world markets, manufacturers have produced such a wide range of equipment designed to such different standards that its very diversity can provide a barrier to the successful introduction of new materials in some countries. Although some central purchasing organizations exist which examine the specifications of equipment and select what is needed on a rational basis, a vast amount of equipment is being sold directly to individual teachers and others in the educational system who lack expert knowledge and are consequently at the mercy of persuasive salesmanship. As a result, much of the equipment reaching the classroom is ill-fitted for its purpose, and the provision of replacement parts is much more difficult than when some degree of standardization exists from school to school.

17. Though national advisory bodies may be reluctant to make public their assessments of commercial products, they can perform a valuable function by publishing the requirements of users in such a way that manufacturers would be ill-advised to ignore them. Thus the Council for Educational Technology in Britain obtains a consensus of user opinion through its Working Party on Standards and Specifications for Educational and Training Equipment. It also gives the users a check-list of facilities and performance capabilities they should look for when purchasing equipment, ensures that equipment is evaluated in relation to user specifications, transmits user requirements to manufacturers, and presents a concerted opinion to British standardizing committees and, through them, to international committees. Every specification deals with one piece of equipment, specifying acceptable requirements that will ensure safe and easy handling by inexperienced personnel. They are revised about every two years (or earlier if there are important developments or variations) and issued free to users, purchasing officers, and manufacturers. Extensions of this approach currently being pursued are the examination of the possibility of developing equipment where nothing suitable is available at a reasonable cost, and the preparation of codes of practice so that interchangeability of software can become more feasible.

18. The approach is equally applicable to basic and sophisticated equipment. What matters is that manufacturers should produce the equipment that does the job that teachers want it to do - no matter whether the equipment is a simple chalkboard or a complex closed circuit television system. Hopes were expressed by delegates that this kind of work could be further developed on a regional or even a Commonwealth scale so that specifications could be exchanged and a store of copyright-free materials assembled.

19. It was recommended that the Commonwealth Secretariat should hold consultations with appropriate organizations about the qualities that educational equipment and materials (including books) should possess when they are to be used and stored in extreme climatic conditions, and that research should be undertaken into the possibility of recycling materials (e.g. waste paper) in a school system where the task of collection can be undertaken at little or no cost.

20. Special equipment, and materials of various kinds, are of particular importance in the education of handicapped learners, and the conference recommended that governments should give special consideration to their selection and provision so that handicapped children could, where desired, be educated with normal children and be more closely integrated with the society in which they live.

21. In the development of printed curriculum materials, examples were quoted of projects in which professional expertise was associated with a high degree of teacher involvement - which had in itself contributed to the improvement of teaching. In general, formative evaluation was found to be valuable, and the presence of special field evaluators helpful. Though final production could occasionally be undertaken on a small scale, cost factors usually make it necessary to print large quantities of the materials at any one time.

22. New materials inevitably place the teacher in a new situation and can even change his role. In such circumstances it is important that the change is of a positive and not a negative character. Some countries had inadvisedly attempted to carry out curriculum innovation by means of teacher-proof materials. These had not been as successful as had once been hoped. What is needed instead is a system that supports teachers in the use of those materials that have to be centrally produced, and encourages them to add supplementary materials of their own making. Advisory services in one form or another exist everywhere, but they vary widely in their effectiveness and applicability. To be fully supportive they need to work very closely with the teachers, and the establishment of advisory services at a local level is therefore desirable. Teachers' centres and media resource centres are also of considerable value, particularly where personnel possessing technical expertise are attached to them. A further form of stimulus and support is provided by in-service courses for teachers which the keynote address suggested might have to be made compulsory, and which in some countries are, in fact, compulsory. In general, the greater degree of sophistication of the equipment, the greater is the need to assist teachers in its use.

23. Though the conference recognized the universal need to provide schools with educational materials, the methods of organizing their supply, distribution and management differ from country to country. To begin with, there are fundamental differences attributable to geographical, historical, political and economic circumstances. Thus, developed countries can take for granted the fact that they are able to produce all their print and non-print requirements. For them, imports are a matter of choice. For some developing countries, however, despite their aim of becoming self-sufficient, imports of educational materials are a matter of necessity. Many such imported materials have been originally prepared for another society with different educational needs. Their indiscriminate use can result in a failure to achieve educational goals, and countries should evaluate them carefully to ascertain whether modifications in their design and use are needed to enable them to fit properly into the educational system.

24. Other differences from one country to another are more of an operational character, arising mainly out of the quantity and variety of materials available for education; and further differences are discernible between the supply and management of printed materials on the one hand, and non-print materials on the other. Thus, in the case of printed materials, some countries have set up government-financed units to produce all the textbooks in all the languages used in the school

system. Other countries have left the publication of books to commercial publishers who make their own decisions about relating their books to curriculum and examination needs. As for supplying books to schools, some countries make arrangements to send them to pupils free of charge, others have rental schemes, and still others rely on parental purchases. To add to the variety, some countries encourage a mixture of state and private educational publishing, and employ all three modes of supply.

25. Though alternative choices are always a potential source of strength in an educational system and in an individual school, they raise the problem of selection, and the conference noted that to provide assistance in this matter the Commonwealth Secretariat had prepared and issued a list of criteria for textbook selection intended for use by textbook selection committees and schools. Among the ways of helping teachers to make good use of textbooks and other materials are the provision of teachers' guides and, to a lesser extent, pre-service and in-service courses. A further form of assistance is the provision of background materials, such as library books and similar materials. To support them in their work, teachers need the greatest possible range of these materials, and training in the best ways of organizing those they have and putting them to good use.

26. In addition to the fact that the supply of materials in schools in some developing countries is only a fraction of that in developed countries, many developing countries depend to a much greater extent on books in general - and on textbooks in particular - in their classrooms. In the case of those non-book materials that teachers themselves can make, the two main problems in developing countries are, first, the lack of storage space, and second, the lack of knowledge among teachers of what the materials can accomplish and how they can best be made. In this respect the training given in pre-service and in-service courses is not always as practical as it might be. Moreover, a distinction has to be made between items of equipment that teachers can justly be expected to make and those they cannot. Examples were given by delegates where the use of improvised science equipment by inexpert teachers had led to the wrong results.

27. With regard to the provision of more sophisticated equipment, several distinct problems were identified. As was to be expected, one of these was sheer cost. To some extent this can be alleviated by sensible choice, and governments were urged when recommending purchases or awarding contracts to take into account qualities of durability and simplicity in preference to ideal standards of refinement and sophistication. A very helpful practice is the provision of lists of commercial hardware available for use in school in which each item is critically evaluated. The conference noted with approval that imports of educational equipment are generally admitted into countries duty-free.

28. Another problem is that the supply of software is often insufficient to enable the hardware to be used effectively. For this reason, when purchases of hardware are being considered, the long-term requirements of accompanying software should be taken into account when drawing up a budget. Where software is supplied to schools on loan, a safe and rapid delivery and recovery system is required. Where large stocks of materials have to be stored - whether in a central depot or a school - the provision of suitable storage units and the preparation of an appropriate filing system are among the best ways of ensuring that software can be maintained properly and located quickly whenever it is wanted. The management of software on a day-to-day basis can often be undertaken by auxiliary school personnel, volunteer parents and student assistants.

29. The problem of servicing is particularly acute in tropical countries where the effects of dust, damp and heat are added to normal wear and tear. To preserve the life of equipment, teachers should be made aware of the basic precautions they should carry out. A simple maintenance check-list for teachers has been found to be

effective in one country and has helped to bring about financial saving. In addition, training courses are of help to teachers in carrying out simple repairs, and, equally important, in enabling them to distinguish between the sorts of jobs that they themselves can do and those that require the skill of an expert.

30. The provision of an adequately-stocked and well-staffed service for supplying replacement items and spare parts, and for carrying out repairs, is essential. As in the case of the supply of software, funds for this service should be taken into account when budgetary provision for the purchase of new equipment is being made.

31. In evaluating educational equipment and materials, both the cost of providing them and the benefits to be obtained from their use have to be taken into account.

The Use of Educational Materials in Teaching and Learning Situations

32. Within the overall theme of the use of educational materials in teaching and learning situation, the conference identified the following four topics of special interest: individualized learning, group teaching, mass delivery systems, and non-formal education. Though each of these topics was found to have its own particular characteristics and to present its own problems, there were also some areas of overlap and some points of common concern.

Individualized Learning

33. Before any effective individualized learning programme can be planned, it is necessary to have precise information on the abilities and attainments of the individuals who will take the course, an equally precise and realistic statement of the educational objectives to be achieved by the students, and a process by which the learner's progress can be continually assessed. This progress should be measured in its own terms and not in comparison with that of other students. Once these pre-conditions are met, individualized learning provides unrivalled opportunities for pupils to learn in their own way and at their own pace from whatever media and materials are available to them.

34. Programmes for individualized learning sometimes involve the building of specialized plant and the purchase of specialized equipment, and they usually require the assistance of teacher aides, resource personnel, and specialists such as librarians and technical experts. In addition, the range of materials required by the learner necessitates the provision of adequate storage units and retrieval systems.

35. The successful development of individualized learning depends to a great extent on the sensitivity of the personnel administering the system. Those at the centre, who may not themselves be educators, have to be aware of the range of factors, including costs and organizational changes, that the system requires. Those in school have to be capable of meeting the demands of continuous professional interaction with their colleagues, because individualized learning is ill-suited to the traditional isolation of the classroom teacher. They also have to be able to diagnose the particular learning needs of individual pupils, and to know what methods and materials they should employ to meet those needs. This is an essential professional skill which should be developed when teachers are being trained. As for supervisors and inspectors, they have a vital role to play in the initiation, development, and dissemination of systems of individualized learning. They should therefore be knowledgeable about research developments in the field, and participate in teacher education programmes.

Group Teaching

36. The conference identified four kinds of group teaching. The first of these is team teaching in which a team of teachers, usually working in the same subject area,

plan the instructional programme together. Each major presentation is given by one of the team to a large number of students (perhaps over a hundred) in a lecture room equipped with a wide variety of aids, after which the students and teachers meet in small groups to follow up the presentation. Some of the advantages of the system are that even in large schools all the students can be taught by the teacher best suited to the occasion, that the most appropriate media are available, and that there is scope for in-depth follow-up work in small groups. Some of the disadvantages are that the presentation is often a passive experience, that students have to be able to write fluently, that the demands on teacher time are considerable, that it is difficult to make allowance for individual pupil differences, and that detailed advance planning and administrative procedures have to be undertaken.

37. The second, syndicate teaching is essentially a method by which groups of teachers meet to organize planning, instruction, and evaluation: hence it is intended more for the development of teachers than pupils. It can be of particular benefit to new entrants to the profession. Co-operative teaching differs in that it concentrates on teachers interacting inside, rather than outside, the classroom, and on flexible grouping and active discovery-type learning for the pupils.

38. The fourth kind of group teaching, remedial teaching, entails firstly identifying children who need a particular form of instruction to overcome a particular learning difficulty, secondly, constructing a teaching programme to suit their needs, and thirdly making arrangements to withdraw the children from the class for brief periods so as to teach them in small groups until they can be reintegrated into the class as a whole. Though the need for remedial teaching is apparent in every school, its success depends on selecting the right teachers with the right skills, and on sufficient time being available to them to do the work.

39. Though in some countries excellent group projects have been carried out where the environment is the only resource, other countries have been able to support group teaching with specially-designed buildings and a wide range of equipment and materials. Teachers need to be trained in the techniques of group teaching, and, when this has been done, they need the active support of parents, the community in general, and the head teacher in particular in order for the benefits of their training to be put into effect.

40. Certain other requirements for successful group teaching were also identified by the conference. One of these is that pupils should understand not only the purpose for which groups have been created but also the roles of the individual members within the groups. Another is that a teacher should prepare materials well in advance, and organize groups in such a way that he can readily assist them whenever the necessity arises. Because small group teaching is only one of a number of ways of organizing instruction, it should be used with discretion and not as a replacement for individual instruction.

Mass Delivery Systems

41. Mass delivery systems are often practised in the context of distance learning; nevertheless they are distinct concepts. Distance learning implies the separation in space and/or time of teacher and learner. Mass delivery systems involve the use of the same basic media by large numbers of learners. Broadcasting and correspondence education often combine them, though the latter does not always utilize a mass delivery system.

42. Educational objectives should be paramount in deciding whether to set up mass delivery systems, and which system to use. For most educational situations the means of enabling individual learning to take place has to be incorporated within the mass delivery system (e.g. through personal tutors in correspondence education or the provision of support materials for teachers and pupils). The separation of

teacher and learner means that special arrangements have to be made to ensure adequate feedback and evaluation.

43. Because of the scale and complexity of the operation, team work is essential. The composition of the team and the relative responsibilities of its members may differ in different circumstances. In "instructional" television, for example, those with teaching experience may take precedence, whilst in "enrichment" programmes those with production experience will usually have the greater responsibility. In general, good classroom teachers become good distance teachers, no matter whether they go into radio, television, or correspondence education. What they often lack on transfer is a career structure which enables them to move easily into, within, and out of the service. Where this failing exists, it should be remedied.

44. From the point of view of cost effectiveness, mass delivery systems normally require large audiences. However, in special circumstances (e.g. the education of small groups of key people such as teachers and doctors or isolated people such as farmers) social need should be accepted as the paramount consideration.

45. The training of teachers in the classroom use of mass delivery systems is essential if they are to be used effectively. This instruction is best integrated into teachers' general professional education rather than in courses restricted to the use of such systems. The necessary pre-service and in-service training should be a normal employment expectation for all teachers who might use mass delivery systems.

Non-Formal Learning

46. Countries need both formal and non-formal educational growth; with the balance between them varying considerably from country to country. Although non-formal education is characterized by a lack of rigidity in style and content, it requires educational decisions, design and planning. The less structured the approach, the more thought, planning and initiative are needed for successful implementation. Though approaches to non-formal education vary from country to country, the aim everywhere is to provide learning opportunities for those for whom school-based formal learning is inappropriate or inaccessible. It is often developed to meet the needs of a local community, and is heavily dependent on the human and material resources of that community.

47. During the conference many examples were given of non-formal systems which have developed because formal education has not been able to reach people in remote or economically poor areas. Often in these communities there is a tendency for a negative attitude to exist towards formal education. One successful approach in these circumstances has been to initiate an economically beneficial work activity, and gradually introduce an educational content until the people reach a level at which they can, if they choose, re-enter the formal educational system. For example, after initiators of one particular programme in India had held meetings with members of a community to ascertain their needs, learning experiences were centred on the planting and growing of wheat, on making pottery from local clay, on stitching clothes, and on producing saleable articles from local materials. Emanating as they do from community needs, programmes of this kind help to weld communities into stronger and more integrated social units.

48. If programmes of non-formal education are to be effective, considerable motivation, initiative and personal leadership are required from within the community. Sometimes the most helpful input from outside consists of leadership training.

49. Another factor that has been found to contribute to success is the active co-operation of people employed in different government agencies, such as education,

health, agriculture, and social welfare. Quite often this can be obtained at the operational level even when national budgets stipulate that financial support can be provided from only one source. Even so, it is best when the programme forms an integral part of the national development plan and is financed accordingly. Where it can be achieved, the co-operation of voluntary organizations - such as youth groups and religious organizations - is valuable and should be encouraged, as community leaders often emerge from these bodies. The provision of materials is essential to the programme: many can be obtained from diverse sources; some have to be specially and expertly prepared.

50. Problems of administration are linked to problems of finance. One of the tasks of administrators is to provide the stimulus for full community-based development involving a good deal of self-help on the part of the participants. Provided that inspectors and advisers act in support of this principle, they can serve as important a function in non-formal as they do in formal education in evaluating projects and determining whether government funds are being spent wisely.

Programmes of Training and Supervision for the Efficient Use of Educational Materials

51. In order to ensure that educational materials are put to best advantage, teachers have to be able to select, organize and use them well. Unfortunately, many teachers have not discovered, or been made aware of, the potential of the materials that are at their disposal. More teacher preparation is required in the form of pre-service and in-service courses which themselves should be more closely linked than they often are at present. Both types should aim at generating competence and confidence in all who take them, and be practical and realistic in content. They should include some training in the preparation and use of equipment; they should concentrate on procedures that are directly transferable to the classroom; and, where appropriate, they should involve teachers at different levels and with different kinds of experience. All those people who staff the courses should make full and frequent use of the educational materials that are available to them. Audio-visual tutors can serve as advisers, co-ordinators and consultants to staff and students.

52. In organizing courses, different arrangements have to be devised to meet different circumstances. District training centres are appropriate where populations are concentrated, mobile services where they are reasonably dispersed. Radio and satellite communication may prove to be the most effective method for very large, densely populated countries, and for small, scattered island communities.

53. Strategies for ensuring that teachers attend the courses also vary according to circumstance. Voluntary attendance during vacations or for evening sessions is perhaps the most desirable and least costly procedure, but it is not always effective in reaching the teachers who most need to be trained. At the other extreme, releasing teachers from classroom duties can ensure full attendance, but at the cost of disrupting school organization. Other possible incentives include salary increments and crossing efficiency bars. In practice, compromises of one kind or another are common. New possibilities should be considered, as, for example, seconding those teachers who can contribute particularly valuable classroom experience to training institutions for short periods of time.

54. The dissemination of knowledge about the use of educational materials is linked with teacher training in that any teachers who have undertaken a course are potential sources of information in their schools. Other forms of information dissemination also exist. For example, in some places correspondence courses have helped to establish a theoretical base for the organization and selection of teaching materials. In others, manufacturers of equipment conduct courses and issue publications with a view to promoting their products. Generally, those

disseminating information within the education system (e.g. education authorities and teachers' organizations) should endeavour to use existing channels of communication and encourage involvement and interaction at all levels of the educational service.

Commonwealth Co-operation in the Manufacture, Supply and Use of Educational Materials

55. One of the tasks of the Commonwealth Secretariat is to encourage and foster regional co-operation among member countries in the field of education - identifying trends and responding to expressed needs. Four of the main ways in which this is done are organizing conferences, seminars and workshops; carrying out research; collecting and disseminating information; and supporting training courses. The Commonwealth Secretariat is in close touch with many international organizations and agencies, and, in order to prevent duplication of effort, often works in association with them.

56. In addition, the Commonwealth Secretariat keeps in close touch with professional associations and teachers' organizations, particularly in their task of fostering educational development not only on a national basis but also among Commonwealth countries.

57. Commonwealth countries are also linked through bilateral educational programmes. These form a very valuable complement to programmes involving multilateral aid.

58. In order to strengthen an understanding of the modern Commonwealth, the conference urged member countries to include teaching about the Commonwealth as part of their school curriculum. In addition, hopes were expressed that member countries would prepare and provide master sets of material about themselves for use by others on a copyright-free basis, with assistance, where necessary, from the Commonwealth Secretariat.

59. Recommendations for Commonwealth co-operation in the field of learning materials included investigating the design of, and disseminating information on, educational equipment; assisting the interchange of educators between Commonwealth countries so as to enable them to gain insight into teaching practices and the preparation and provision of educational materials; and encouraging and providing assistance for national and regional programmes relating to educational materials.

CONFERENCE SPEECHES AND PAPERS

OPENING SPEECHES

His Excellency Shridath Ramphal
Commonwealth Secretary-General

I wish to begin by welcoming most warmly all of you assembled today as delegates and observers to this conference whether you come from within or from outside the Commonwealth.

The happy advent of the independence of Papua New Guinea gave me an excuse for doing a number of things that were very close to my heart - principal among them, of course, being a visit to the South Pacific - and that circumstance gave me the very pleasant opportunity of being here with you at the opening of this important education conference. I am sure you would wish me, in the very first instance, in these early days of the independence of the 35th member state of the Commonwealth, to extend from this first formal meeting of Commonwealth countries that the State of Papua New Guinea will be participating in, the warmest congratulations to our colleagues from Papua New Guinea who are here with us, and through them to their countrymen and Government and the people of the region of which Papua New Guinea is a part.

This specialist conference on Materials for Learning and Teaching represents, I believe, the very essence of Commonwealth co-operation. There is a variety of fields in which Commonwealth consultation and co-operation and action proceeds. Some of them are at the wide international level, the great political and economic issues that concern all of mankind, that Commonwealth Presidents and Prime Ministers consult about when they meet at their annual and biennial meetings. But, beyond those wide issues there is a constant flow of co-operation between Commonwealth countries in a variety of functional fields and this represents the very life-blood of the Commonwealth association. Among these, work done in the field of education in the Commonwealth has always had a pre-eminent place.

You as educators within the Commonwealth will be familiar with the series of education conferences that have been held from time to time beginning with the Commonwealth Conference on Education at Oxford in 1959 and continuing thereafter at roughly three-yearly periods. There have been up to now six such Ministerial Conferences - at New Delhi in 1962, at Ottawa in 1964, at Lagos in 1968, at Canberra in 1971 and more recently at Jamaica in June of 1974. The details of the programmes which Commonwealth Ministers agree upon at their Ministerial Conferences are, of course, worked out by the Education Division of the Commonwealth Secretariat and are handled with the advice of the Commonwealth Education Liaision Committee, which as you know functions with the assistance of High Commissions in London, and all of this under the very able and distinguished leadership of my colleague Dr Cookey who is with us today.

Financial support for these programmes is an essential element of their functioning: it is what makes them possible at all. It comes very largely from the Commonwealth Fund for Technical Co-operation, a fund, I am sure you are all familiar with and which represents perhaps one of the most effective and least

controversial of all the programmes anywhere in the world. Certainly, as I think is now generally agreed, it is the best value for money anywhere in terms of co-operation in development. And this is a programme that is essentially a co-operative endeavour between Commonwealth countries. Developed and developing, rich and poor - all contribute to the fund in varying degrees according to their resources, and this pool of financial resources is then made the basis for the exchange of technical assistance and expertise and financial funding for programmes such as the present conference. It is very much to the work of the Commonwealth Fund that we owe the possibility of meetings of this kind.

There have been a number of them, and I think their variety is itself testimony to the practicality of the work that is done in this particular field of co-operation within the Commonwealth. There have been specialist conferences on the Teaching of English as a Second Language at Makerere, Uganda in 1961, on School Science Teaching in Peradeniya, Sri Lanka in 1963, on the Education and Training of Technicians at Huddersfield, England in 1966, on Mathematics at Port of Spain, Trinidad in 1968, on Education in Rural Areas at Accra, Ghana in 1970 and on Teacher Education in a Changing Society at Nairobi, Kenya in 1973. I don't suppose, given your own specialities, that many of you would have been at many of those earlier specialist conferences. But it does point to the range and the depth of the work that has been done within the Commonwealth through these processes of co-operation over the years. And these are, of course, not the only occasions on which Commonwealth educators meet and work together. The Secretariat has organized a series of regional seminars and workshops, some of which you will be familiar with. The two most recent have been the Commonwealth African Book Development Seminar held at Ibadan in February, 1975 and the Regional Seminar-Workshop in Educational Administration and Supervision held at Kuala Lumpur in May.

Those are some of the things that the Secretariat has been endeavouring to do in discharge of its responsibility to the people of the Commonwealth, but we cannot do it adequately - in some respects, we cannot do it at all - without the ongoing co-operation and assistance of Commonwealth countries. Our meeting here in New Zealand was made possible by the generosity of the Government of New Zealand in extending the invitation to have this conference held in Wellington. I am sure you would wish me, on your behalf and on behalf of the Secretariat, to extend to the Government and the people of New Zealand our gratitude and thanks for their generosity and for the care with which this conference has been prepared. I spent a few moments on my way in with the Minister looking at the exhibition of materials that has been mounted and displayed with such skill. But for this type of enlightened and dedicated help and assistance, conferences of this kind can never take place. I would like, Mr Minister, on behalf of the entire conference to invite you to convey our thanks and our gratitude to the Government of New Zealand.

May I take this opportunity to extend from all of us in the Commonwealth a very special word of welcome to Professor Dan Dicko, the Secretary-General of the Agence de Co-operation Culturelle et Technique. It is a great pleasure and privilege for us to have the distinguished Secretary-General participate and observe the proceedings of this meeting. His presence represents to us an important link between as essentially English-speaking Commonwealth and the organization which increasingly links the French-speaking peoples of the world. It is, I believe, an indication of the outward looking character of the Commonwealth and it is, I am sure, an area of co-operation with those outside the Commonwealth that we shall see more of in the years ahead.

And now, Mr Minister, it gives me the greatest pleasure to invite you as Minister of Education of New Zealand officially to declare open this conference of Commonwealth representatives.

Hon. P. A. Amos
Minister of Education, New Zealand Government

Without any doubt New Zealand is a committed Commonwealth country. Recognizing from the beginning the value a Commonwealth association would have, New Zealand, in fact, was a foundation member. The Commonwealth has advantages which no other international institution can match. At the simplest level it enables political leaders, government administrators, professional men and women, and technical experts to meet and talk together without inhibition and with the minimum of preliminaries.

There is the advantage of a common language and the common institutions of the law, government and administration. But perhaps the greatest value of Commonwealth membership stems from its diversity. We are a Commonwealth made up of countries at every stage of economic development, from all geographic regions and encompassing a variety of cultures.

Of course contact through the Commonwealth is of great value at the political level. It is of equal importance at the specialist and technician levels. But most important of all it provides a unique way of keeping in touch with people of other regions of the world. This contact is important not only to be aware of what is happening in other countries but to know what people are thinking and how they are reacting to changing circumstances.

The establishment in 1965 of the Commonwealth Secretariat greatly facilitated the development of a framework for expanded functional co-operation among all countries of the Commonwealth. It has been our experience in New Zealand that the Commonwealth's value has deepened and it has evolved over the years to become a most useful association in practical terms.

First of all, I should like to welcome Your Excellency Shridath Ramphal, Secretary-General of the Commonwealth, and in doing so I should like on behalf of the Government of New Zealand to congratulate you on your appointment and express the hope that the common bonds which unite the Commonwealth will be further developed during your term of office. I would also welcome Dr Cookey, the Conference Secretary who has been and will be responsible for a great deal of the organization and planning.

May I extend a warm welcome to the heads of delegations of the 30 countries represented here today. I would also like to congratulate the High Commissioner for Papua New Guinea as this is the first international conference at which Papua New Guinea is represented since gaining full independence. I warmly welcome, too, the distinguished visitors from overseas who have been invited to present papers to the conference as well as all the participants and guests.

As many of you will be aware, this conference has been organized because of the growing interest shown in successive Commonwealth Education Conferences to the investigation of the increasingly wide range of teaching aids being developed. The sophisticated educational media of radio and television were well known and publicized. But it was felt there was a whole range of educational materials, some of them more appropriate to the resources of the majority of users in developing countries, which should be examined more carefully as to their supply and use for learning and teaching. As you know, New Zealand offered to be the host country for this conference and to hold it so that it would immediately precede a complementary conference on educational broadcasting in Sydney. We hope these conferences together will provide a comprehensive review of the role of all media in the education process.

Our theme for this conference is "The Development, Supply, Use and Management of Educational Materials". Over the next nine days we will be meeting to

consider the current and potential use and methods by which educational materials can be most effectively developed to fulfil objectives. We hope also to determine ways of improving Commonwealth co-operation in the flow and use of these materials. You will be examining the role of teachers, instructors and community workers in the development and use of educational materials and considering the implications for teacher education of innovative strategies of teaching based upon new teaching materials.

The conference programme in general will include an exhibition displaying the variety and potential of educational materials. Included in this exhibition will be selected case studies illustrating the innovative application of educational materials to solve specific educational problems. In addition, there will be demonstrations conducted in a number of institutions representing all levels of education to show how educational materials in general are being used in New Zealand. There will be eleven plenary sessions when particular issues in the development, evaluation, supply, use and management of educational materials can be discussed. I understand also, innovative methods will be demonstrated at some of the conference sessions so that delegates can personally experience the relevance of the matters under consideration.

I know we will all gain through participating in this conference. One important aspect I would like to stress at the outset is that no matter how sophisticated or simple the media may be, all educational materials are based firmly on teachers and students. The materials directly serve the needs of these two groups, and we must not forget this relationship at a conference of this nature. While we would all agree to strive for high standards of presentation whatever the medium, we must not raise these standards so that they form barriers between the learners and their needs. The New Zealand experience in the use of visual materials leads us to an interesting point. While there must be a systematic approach to the supply of educational materials, equally there must be full opportunities for teachers and students to modify material for their own educational purposes. By personally carrying out these modifications, both students and teachers become directly involved with the materials they are using. The learning process is enhanced as their motivation increases and their personal satisfaction grows. These modifications come from the need for teachers and students to communicate with each other. As you will see, when they are doing this and looking for the most appropriate materials, they turn instinctively to bright colours, to a variety of forms and to a wide range of textures. By doing this their message become unselfconsciously direct and to the point. There are a number of factors involved in this - creativity - craftsmanship - and need. In need lies the motivation and through creativity and craftsmanship come joy and satisfaction. If there is no satisfaction and joy there has probably been no education.

It is to stimulate this satisfaction and joy in students of all ages and cultures that we are here for these two weeks. Indeed, it is the very basis of education which we are studying. The benefits we shall gain through participating in this conference will illustrate the value of the practical co-operation and consultation which our Commonwealth engenders.

Dr S. J. Cookey
Director, Education Division, Commonwealth Secretariat

I am honoured and pleased to reply to the opening address by the Honourable Minister of Education on behalf of the Commonwealth Secretary-General whom we are fortunate to have at this meeting and who is attending his first Commonwealth specialist conference. I am sure that representatives of other Commonwealth countries here present will share the pleasure of the Commonwealth Secretariat in learning from the Honourable Minister's speech that it has been the "experience in New Zealand that the Commonwealth's value has deepened as it has evolved over the years to become a most useful association in practical terms". This is certainly a great encouragement

to all of us who in our various ways are trying to promote Commonwealth co-operation in every field of endeavour. New Zealand continues to demonstrate this confidence in the Commonwealth through its commitment to Commonwealth programmes and projects.

A few days ago I was asked at a television interview whether the present conference was not going to be another international conference leading to nothing more significant than a report. I hope that I was successful in convincing the questioner by the various examples I gave that Commonwealth conferences endeavour to arrive at practical recommendations which result in national or regional or even international activities. In his report for 1975, the former Commonwealth Secretary-General, Mr Arnold Smith, pointed out that it was the policy of the Commonwealth Secretariat to ensure that the Secretariat's programmes of functional co-operation should above all be directed towards activities which enable member countries to make the best use of their own resources, whether natural, financial or human. This philosophy has guided the programmes of all divisions and sections of the Commonwealth Secretariat and has influenced the form and content of Commonwealth meetings organized by it.

Commonwealth countries have always welcomed opportunities for consultation and co-operation. Consultation takes various forms: it can take the form of visits to various Commonwealth countries, of exchange of personnel, or of conferences.

There are three main types of educational conferences organized by the Commonwealth Secretariat. At the highest level is what is known as the Commonwealth Education Conference, a meeting of Commonwealth Ministers of Education which reviews the educational programmes of the Commonwealth Secretariat and makes proposals for future activities. Another type of meeting is what is known as a "specialist conference". This kind of conference takes place between Ministers' conferences and involves specialists in a selected field of education. Thus, we have had specialist conferences on topics like technical education, education in rural areas and teacher education. The present conference is a specialist conference whose main aim is to examine the use of the media in education.

The Fifth Commonwealth Education Conference which took place in Canberra in 1971 set up a special committee on curriculum development and educational media, and I had the honour of being the Chairman of that committee. The committee considered the importance of curriculum development in ensuring relevance in education, the need to develop educational materials in supporting curriculum renewal projects, and the difficulties in the way of effective use of materials for education. It emphasized that Commonwealth co-operation in this area was necessary, especially in view of the high cost of introducing the use of the media. The conference supported the committee's recommendation that the Commonwealth Secretariat, in co-operation with the Centre for Educational Development Overseas, should conduct surveys in Commonwealth countries to obtain and widely disseminate information about the needs and facilities available for the use of educational media. That recommendation led to the joint publication of a book entitled "New Media in Education in the Commonwealth", copies of which have been widely distributed in Commonwealth countries.

The Sixth Commonwealth Education Conference, in obvious agreement with Canberra on the importance of this topic, recommended that a conference should be held on the use of the media. In order to ensure that every aspect of the media was examined, it was agreed that the specialist conference in New Zealand should consider in general terms the development, supply, use and management of educational materials and that a complementary conference following soon afterwards in Australia should consider specifically the use of radio and television in education.

All educationists will realize the importance of this conference. Nearly all countries, especially developing countries, have of late been engaged in the exercise of reviewing their education systems. Many developing countries are concerned about making their educational systems relevant to the needs of their society. Over the years they have tried to review their curricula but have not always been successful. Part of the reason for this lack of success is no doubt due to the absence of suitable teaching materials and the heavy reliance on imported textbooks and teaching materials, all of which are expensive and some of which do not bear relevance to the needs of the importing countries.

The working party which planned this conference was quite firm about not turning it into a forum for the display of available audio-visual equipment. Emphasis will be on general principles and guidelines for the development of teaching materials so that individual countries can start the local manufacture of as many items as possible, thus greatly reducing the number of items to be imported. This accounts for the highly practical content of this conference.

New Zealand has kindly mounted an exhibition to show the variety and range of teaching materials, and has produced a national paper, along with Canada and Britain, to indicate special areas of education in which these materials have proved useful. Various authors who have provided lead papers have tried to link their papers to practical experiences in their own countries and one of our consultants will present, not a learned paper on the use of educational materials, but a step by step approach to the design, manufacture and use of materials.

It is our hope that the contacts and discussions initiated in this conference will lead to exchanges of visits and personnel, and to training programmes. Thanks to the Commonwealth Fund for Technical Co-operation the Commonwealth Secretariat has been able to provide a grant to enable some participants who wish to do so to visit other Commonwealth countries on their way home to observe developments in various areas of education.

I should now like to end by thanking the Government of New Zealand for offering to play host to this conference. Playing host to a Commonwealth conference is a most exacting job. It engages a large number of people in many months of planning and work, apart from the expense involved. I should like to pay particular tribute to the Director-General of Education and his staff who have done such an excellent job of preparing for the conference at this end. We are very pleased to note the meticulous care that has gone into the planning. I have no doubt that with the support and co-operation of the large number of staff that the Department of Education has seconded to the Conference Secretariat we should have a really successful conference.

New Zealand is a truly lovely country with its beautiful mountains and lakes and beaches, the winds of Wellington notwithstanding. Its people are friendly, and a study of the programme of social events shows how wonderfully hospitable they can be. Some of us who arrived earlier have already sampled this friendliness and hospitality. Although we shall be very busy in the next ten days, I sincerely hope that as many delegates as possible will find time to enjoy the charms of Wellington and its environs.

Finally, on behalf of the Secretary-General, I wish to express our sincere and deep thanks to you, Honourable Minister, for coming to launch our conference. There will be an election in November, and the next few weeks will naturally be a busy time for Members of Parliament. But you have found the time to come and open our conference. I am particularly happy to note that you were at one time deeply involved yourself in education as a teacher, an involvement that is clearly reflected in the excellent opening address which we have had the pleasure of listening to. Thank you very much indeed.

SPEECHES BY OBSERVERS

Professor Dan Dicko
Secretary-General, Agence de Co-operation Culturelle et Technique

I apologise for having to address this august assembly in French but it certainly is the best way for me to make myself understood.

Mr Chairman, in the two years since I have been at the head of the Agence de Co-operation Culturelle et Technique (ACCT), I have been happy to be associated with the creation of links of co-operation and friendship with one of the greatest international organizations in cultural matters, namely the Commonwealth Secretariat. Hence it was with real pleasure that we have received in Paris a delegation of your organization having as its head Mr Arnold Smith. Taking into consideration our common objectives, ideals, and programmes, this vist laid the foundations for co-operation between the two organizations. A few months later, it was our turn to go to London at the invitation of the Commonwealth Secretariat, to propose concrete actions within the framework of our programmes. Two examples were the participation of the Commonwealth Secretariat in the "Benin Village" scheme by granting scholarships to teachers from Ghana, Liberia, the Gambia, Nigeria, and Sierra Leone, for either a refresher or training course in French at Lome (Republic of Togo), and the participation of the Secretariat in the creation of a bi-lingual institute in Port Louis, Mauritius.

This desire to co-operate, Mr Chairman is the basis of my presence at your conference. It is also for us the proof that culture does not know linguistic barriers. Culture in these circumstances is a universal fact, culture of man for man in his own future, in the future of mankind. This is why, Mr Chairman, we must go beyond the linguistic and political barriers and create a true cultural co-operation towards a mutual enrichment, in which everybody will participate while respecting his identity and his personality. At a time when economic co-operation becomes a dividing factor between the so-called rich countries and those which are not, between the so-called developed countries and those which are not, between the countries rich in raw materials and those which are not, co-operation in the field of culture can be a unifying factor to the extent that it is voluntarily accepted by everybody as an indispensable element for peace and mutual understanding among the peoples of the world.

Mr Chairman, allow me to take this opportunity to recall briefly the structure of our organization, its objectives and its means. The ACCT groups together the majority of francophone states. The French language is considered in these states as the mother tongue, the national language or official language or, in general, the language of communication. The supreme body of the ACCT is the General Conference which will hold its next meeting in November 1975 at Port Louis, Mauritius. The Commonwealth Secretariat has been cordially invited; every member state will be represented either by the Minister of Culture or of Education or by the Minister for Co-operation. The General Conference which meets every second year adopts the programmes and the budget of ACCT on the proposal of the Council of Administration. The latter meets once every year and controls both the execution of the programmes and the financial management of the General Secretariat. The General Secretariat, elected by the General Conference for a period of four years, is responsible for the execution of the programmes adopted by the General Conference. It is assisted in its task by the Committee of Programmes and by the Administration and Financial Committee. It can equally be aided by experts whom it brings together either in the form of meetings or seminars.

The essential objectives of ACCT can be summarized thus: development of cultures and national languages of member states; economic and social development; exchange of information and co-operation in the fields of science and technology; and

mutual understanding through the exchanges of young persons and technical assistance on a multi-lateral basis.

As regards the means at the disposal of ACCT, they are derived essentially from the contributions of member states and are fixed by the General Conference. So, although the structures of our two organizations differ somewhat, it is nonetheless true that the objectives are similar. It is for this reason that co-operation seems not only desirable but absolutely necessary, especially when we recall that some of us are also members of the Commonwealth and ACCT (Mauritius, Canada) or else bi-lingual (e.g. Cameroon, Libya). That is why I have stressed the importance of this "Benin Village" scheme, where we welcome every year 280-300 young students and French teachers from the neighbouring anglophone countries (Libera, Sierra Leone, Nigeria, the Gambia) who come to perfect their French in the Republic of Togo. It is also why ACCT will not relax its efforts to get the participation of the Commonwealth Secretariat in the creation of the Bi-Lingual Institute which will soon be opened in Mauritius. These two examples, reviewed in such a brief manner, show how fruitful and beneficial our co-operation can be to the states of the Commonwealth as well as to those of ACCT, especially in cultural matters.

Mr Chairman, I should like to end by thanking the Government of New Zealand for the warm welcome which it has extended to us. At the same time I should like to convey to the Secretary-General of the Commonwealth Secretariat our brotherly and sincere thanks for having answered our desire to co-operate in the fields which are common to both of us. Finally, I should like to say that I have no doubt that your conference decisions will be important both for the Commonwealth and the ACCT.

Dr Yoichi Nishimoto
Specialist in Educational Technology, UNESCO Regional Office for Education in Asia, Bangkok

In recent years there have been marked trends as to the use of educational media to improve educational practices to meet the need of national developmental goals. Many innovative attempts have been made both in formal and non-formal education to provide more economical means of achieving instructional objectives than were available 20 years ago. As many of you have already realized, the types of problems for which educational media are being sought to provide solutions are both quantitative and qualitative. Scarcity of resources in developing countries has created urgent quantitative problems both at the primary and secondary level. There are also qualitative problems which beset not only the developing countries but also the more developed countries, of making education more relevant to the changing needs of the society.

I will confine myself to some of the activities that UNESCO is carrying out in the field of educational media. I shall present to you some innovative approaches to the use of media in Africa, Asia and Europe. These are by no means the only examples but I would like to point out that there are scores of innovative uses of media now being practised all over the world.

Let me begin with the African Region. A striking example is the educational reform based on an educational television system currently underway in the Ivory Coast, with technical and financial assistance from the governments of France and Canada, and UNESCO. The problems facing this particular region are manifold - regional imbalance in the levels of school enrolment favouring the coastal areas, outmoded curriculum, low quality and insufficient numbers of teachers, and the high rate of drop-out being only a few. The Government of the Ivory Coast decided to launch a programme of educational television which would also include curriculum development and would provide materials for both pupils and teachers, and new teacher training institutions. This commenced in 1971 reaching more than 20,000

first grade pupils, and by 1974 the coverage was well over 100,000 pupils up to the third grade.

Another example of the application of educational media, this time in a developed country is the Open University in the United Kingdom. This nation-wide project has drawn more interest in higher educational circles, both in developed and developing countries, than perhaps any other single national endeavour during recent years. Here, UNESCO's role is essentially one of a clearing-house, of studying its system and making available relevant information to interested member states.

The third example I would like to present is to be seen in Asia. The Third Regional Conference of Ministers of Education in Asia, held in Singapore in June 1971, recommended the establishment of a regional network to stimulate innovative practices in the field of education in the Asian region. The proposal made here was a new type of technical assistance programme based on the provision of self-help and international co-operation. International co-operation should be a two-way traffic, giving and receiving on both sides. In this connection, I would like to point out that many assistance projects in the past did not take root in the environment for which they were designed precisely because they were not fully integrated in national developmental plans. Taking this thought a little further I should also like to say that a conventional approach to education can no longer provide the solutions needed to achieve a break-through in the qualitative and quantitative problems of education.

It is in this context that 17 member states of Asia, with the assistance of UNESCO, designed the co-operative Asian Programme Educational Innovation for Development (APEID) which became operational in 1974. In contrast to the traditional foreign aid approach, APEID is attempting to build on national and local innovation which is already taking place in the Asian region. More precisely the framework consists of a network of national institutions or local projects which have a clear and direct link with national or local socio-economic development. It is also the aim that the innovative projects identified with APEID should have some transferrable value between the countries in the region.

In order to carry out the activities of the Asian Programme a special unit has been created in UNESCO's Regional Office for Education in Asia, located in Bangkok. It is called the Asian Centre of Educational Innovation for Development (ACEID) and has six programme areas - new orientation and structures in education, educational management, educational technology, curriculum development, teacher education and science education. The unique feature of this innovation network project in education is to link national centres of various kinds located in countries in Asia. Through the network of national centres linked with ACEID, the exchange of experiences in regard to educational innovations is beginning to improve the quality of educational practices in Asia.

In summary, UNESCO's role in this particular programme falls into three categories: (a) to assist individual countries to develop programmes of educational innovation; (b) to pool information and experience; and (c) to foster co-operative action between countries.

The final project I would like to draw your attention to has direct relevance to the dissemination of information in the field of education. The International Educational Reporting Services (IERS) was created by UNESCO's International Bureau of Education in Geneva. The IERS came into being in July 1975 with financial assistance from a consortium of sponsors. It is intended to build a body of knowledge about educational innovation, covering methods and techniques, materials and evaluation. It should be mentioned that IERS is a network for international sharing of information on educational innovation through which any interested

individuals or parties have easy access to the kinds of information they would like to receive on educational innovation. Four UNESCO regional offices in Bangkok, Beirut, Dakar and Santiago, are to play an important role in collecting and disseminating necessary information on educational innovation at the regional level. The network links 60 documentation centres - 40 in developed countries and 20 in developing countries.

There are only a few projects in which UNESCO is actively involved in the field of educational media. I have not touched upon any projects going on in North and South America. However, I hope I have been able to indicate something of UNESCO's role in the use of media in education.

In conclusion I should like to emphasize UNESCO's interest in this Commonwealth Conference and I should like to assure you that its recommendations will receive the greatest attention of our organization. UNESCO wishes to maintain its collaboration with the Commonwealth Secretariat now and in the future.

Miss H. J. Anderson
World Confederation of Organizations of the Teaching Profession

WCOTP is a teacher's service organization with 4½ million members from 130 teacher organizations representing 90 countries. Twenty-five of these countries are members of the Commonwealth. WCOTP has its headquarters in Morges, Switzerland and is supported by a full-time secretariat. It has been accorded 'A' Class consultant status with UNESCO and it works in co-operation with a large number of international bodies, for example, ILO, OECD, EEC, the UN Environmental Programme and the International Union for Conservation of Nature and Natural Resources. Affiliations of this nature make WCOTP a teacher's service organization in the very widest sense of the word.

The following are the aims of the organization. First, to foster a concept of education directed towards promotion of international understanding with a view to safeguarding peace, freedom and human dignity. Second, to improve teaching methods, educational organization and the training of teachers, so as to equip them to better serve the needs of youth. Third, to define the rights and moral interests of the teaching profession; and fourth, to promote close relationships between teachers and teaching organizations on an international basis. WCOTP is funded by the subscriptions of member organizations and it reaches towards the objectives and works for the realization through a two-fold approach. It is concerned with: (a) the professional development of teachers; and (b) the promotion of their economic welfare, including better working conditions. The extent to which individual countries can concentrate their efforts, more particularly on teacher development, is influenced largely by the quality of economic welfare which pertains.

Each year WCOTP holds a world assembly. Such assemblies are conducted in four languages - English, French, Spanish and Japanese. The assemblies centre on a theme, and the recommendations which are the outcome of the plenary sessions are for action and implementation at whatever level is practical in individual member countries. Some of the more recent themes have been: the qualities of the professional teacher; equal opportunity through education; the articulation of primary, secondary and higher education; education for peace; pressures for educational change, and teachers and the political process. Representatives from member organizations base their discussions on papers contributed by a selection of representatives chosen to give a truly international viewpoint.

A second major phase of activity is the staging of regional seminars which are also held each year. These are attended by representatives from a particular region and concentrate on a theme, developing recommendations of particular

pertinence to the countries involved.

The Commonwealth Secretariat has given good support to teacher organizations in Commonwealth countries. The Secretariat has convened two conferences in conjunction with the WCOTP world assemblies to discuss matters of mutual concern. The first of these conferences was held in 1972 in Cambridge, England, and in 1974 a further conference was held in Kuala Lumpur.

The direction of the WCOTP's development is guided by an elected executive. Though there is no regional representation as such, the members of the executive have tended to reflect the international basis of WCOTP. Some of the present office holders are the President - Wilhelm Ebert of Germany and the two Vice Presidents - Mrs Fay Saunders of Jamaica and Mr Motofumi Makieda of Japan. The executive of WCOTP has four members from Commonwealth countries - Ambrose Adongo from Kenya, Murray Haines from Australia, James Killeen from Canada and John Smith from New Zealand.

KEYNOTE ADDRESS

EDUCATIONAL MATERIALS: THEIR DEVELOPMENT, SUPPLY, USE AND MANAGEMENT

L. C. Taylor

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

> September 27th. The Dalton Plan is being introduced at our school. It's a system under which the teachers do nothing and the pupils have to find out everything for themselves. At least, that's what it looks like to me. There will be no more classes, and the pupils will merely be given "tasks". These will be handed out a month in advance, and may be prepared either at home or in school, and when your "task" is finished you get examined at the lab...
>
> October 1st. The Dalton Plan has begun. All the desks have been crammed into one room, which will be the lecture hall. Instead of desks we'll have long benches and tables. Vanka Petukov and I loafed all day about these labs, and I felt silly. Even the teachers don't seem very clear how to go about this Dalton business. As usual, Nikopetozh turned out to be the most sensible among them. He simply walked in and gave the usual class, except that we have benches instead of desks.
>
> October 3rd. The Dalton thing is a wash-out. No one can understand a thing, not even the teachers. The teachers discuss it every evening amongst themselves. The only novelty so far is that we have to sit on benches and have no place to put our books... The boys say that this plan was invented by some Lord Dalton, of bourgeois stock. Now I wonder what the devil we need this bourgeois plan for?

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

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

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

LEAD PAPERS

GUIDE TO EXHIBITION

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VISITS

The visits are intended to show delegates examples of the range of educational media that we have not included in the static displays. In many cases the work has been provided by teachers who have developed specialized applications of media from their own interests and enthusiasms and for their own curriculum purposes.

It is hoped that delegates will visit in small groups so that informal contacts will be made and there will be chances for interaction between the visitors and their hosts.

1. Hutt Valley Memorial Technical College, North Street, Petone

Mr Tony Donovan, has been responsible for making Super 8mm movies for the last five years. Some of the work is his own but a large proportion is undertaken by students. A number of cheap cameras, together with a range of editing and splicing equipment is readily available for children interested in film making. Animation work is currently being developed.

This school also operates a radio station that broadcasts throughout the school by means of a system of speakers wired to a first-class central console. A prefabricated classroom has been modified to meet the demands of using and storing audio-visual equipment.

2. Hutt Valley High School, Woburn Road, Lower Hutt

At this school an independent closed circuit television system has been developed over the last fifteen years. A variety of equipment is incorporated into this system and staff and students co-operate in making teaching programmes for replay. The teacher in charge is Mr Keith Elsom.

3. Technical Correspondence Institute, Wyndrum Avenue, Lower Hutt

Delegates may find the organization, management and technical facilities of this large tertiary correspondence institution of particular interest. The Institute's principal is Mr A. E. Kinsella, a former Minister of Education.

4. Wellington Teachers College, Donald Street, Karori

Resource Centre. This is a recent development under the guidance of Mr Peter Duncan which provides a central media-making service and loan pool for both staff and students. Three-quarter-inch VCR (Video Cassette Recording) television equipment is part of the centre. The college also has a Polynesian Studies Programme of imaginative quality led by Mr Steve O'Regan.

5. Karori Normal School, Donald Street, Karori

Delegates who visit Wellington Teachers College may also be interested in visiting the adjacent Karori Normal School. Included in the building complex is an experimental open plan classroom occupied by the new entrant children in the junior school. A wide range of audio-visual media is used extensively at senior levels. A teacher who uses audio-visual equipment extensively, Mr Doug Hales, will be at the Materials Conference for the first few days.

6. Upper Hutt College, Moonshine Road, Upper Hutt

An experimental language laboratory using Sony cassette recording equipment was installed at this school by the Department of Education two years ago. Mrs Phillipa Doig is the acting teacher in charge of the language laboratory.

7. Department of Agriculture and Fisheries, Featherson Street, Wellington

The Information Service Division has a highly sophisticated recording studio and excellent resources for the production of graphics. Supervisor of Information Services, Mr Geoff Moss.

8. Epuni School, Waiwhetu Road, Lower Hutt

There are two Ricoh Synchrofaxes being used for study at this school. They are under the supervision of the Principal, Mr Stan Butcher, who is also a member of the NZEI audio-visual media committee.

9. Maeraroa School, Driver Street, Porirua

Mr Ashley Blair has developed a wide range of multi-media work which students can use independently or in groups. Some examples are included in the displays at the Materials Conference. Another teacher, Mrs Hill, has developed maths assignments using listening posts (i.e. areas in the classroom where children can plug in audio equipment and listen to taped lessons).

10. Raroa Intermediate, Haumia Street, Johnsonville

Mrs Adrienne Burleigh will be demonstrating super 8 film-making at this school. Another teacher, Mrs Rhodes, also uses a wide variety of audio-visual media. Principal, Mr Pollitt.

11. Taita Intermediate, High Street, Lower Hutt

A wide variety of language units and work with the social studies kits has been developed at this school under the guidance of the Principal, Mr L. Sissons.

12. Waitangarua Intermediate, Warspite Street, Porirua

With support from the Education Department, teachers are providing pupils with a range of stories read on to cassette for development of reading and language work. The school also operates a lively outdoor education programme. Principal: Mr Ron Gray.

13. Wellington Girls College, Pipitea Street, Wellington

This school is an example of a single sex school where a tower block development helps overcome the difficulties of a small site. Teachers here are involved in working with recent developments in social studies and science. Miss Elizabeth Shaw, a liaison officer for the Materials Conference, is the head of the school's

science department.

14. Naenae College, High Street, Lower Hutt

Mr Timms, a liaison officer for the Materials Conference, has developed programmes at the college with social studies resource kits.

15. Miramar North, Weka Street, Wellington

The Principal of this school, Mr John Anderson, is a liaison officer for the Materials Conference. He has been successfully making 16mm movies in recent years.

16. Wellington Polytechnic, Wallace Street, Wellington

Peacesat. Tony Hanley, a tutor in the PETE (Physics, Electronics Telecommunications and Engineering) department has developed a radio communication link with countries of the Pacific. This sophisticated installation could be of considerable interest to delegates.

School of Industrial Design. Under the direction of Mr J. Coe, this department provides diploma courses in design and photography. One specialism of particular interest will be the ergonomics laboratory.

Language Laboratory. These facilities are available for a wide range of tertiary education work under the direction of Mr Johnson, Deputy Head of the Language Department.

General Studies. This department, under Mr Peter Chinnery is involved in setting up a resource centre of considerable potential.

17. Tawa College, Duncan Street, Tawa

Social studies kits are used to the full at this school which has also recently invested in television equipment. Principal: Mr E. Flaws.

18. Corinna School, Kalingo Street, Porirua East

Here, VTR equipment is used for a variety of activities and there has been a development of work that explores socio-dramatic play and its value in the classroom under the guidance of Mr Richard Joel.

19. Government Printer, Mulgrave Street, Wellington

The majority of the work for the Department of Education is printed here. The personnel officer will be able to arrange visits for any interested delegates.

20. Broadcasts to Schools, Aurora House, The Terrace, Wellington

Radio New Zealand, at present under the supervision of Mr Don Allen, has been broadcasting material for educational purposes for many years. Study of this system could be advantageous for delegates who will be attending the Commonwealth Broadcasting Conference.

21. Television One, Avalon, Hutt Valley

A visit to the television studios at Avalon can be arranged if delegates require. These studio facilities have only recently been completed and have the reputation of

being the most sophisticated in the Southern Hemisphere.

DEPARTMENTAL VISITS

Delegates may wish to visit the four organizations listed below, which cater separately for various media supplies to school systems. These would be informal visits which delegates may wish to make in their own time. Contacts may be made directly, or though the Co-secretary.

1. Visual Production Visit, 115 Lambton Quay,

Under the supervision of the Production Officer Mr John Peacock, this unit provides filmstrips, OHPs (overhead projection transparencies) wall pictures, slides, photos and other visual material for schools.

2. National Film Library, AMP Chambers, Featherston Street, Wellington

The Film Library provides a borrowing service for schools for 16mm films and gramophone records. There is also a tape duplication service. Manager, Mr George Peart.

3. School Publications Branch, Head Office, Department of Education

This branch of the Department of Education has been producing publications for schools since the early 1900s and has a fine reputation in the field of educational publishing. Chief Editor, Mr Pat Earle.

4. School Library Service, 125 Thorndon Quay, Wellington

This is a part of the National Library of New Zealand and provides an advisory and loan service to schools. Assistant Director, Extension Division (Schools), Mrs Laura Rosier.

DISPLAY MATERIALS

The basic purpose of the selection was to provide examples of the full range of media as requested by the Commonwealth Secretariat. This has been done as far as possible. In addition the Secretariat suggested that the displays should be incorporated as an active agent within the curriculum of the conference. This suggestion is a central one but it obviously will be at the discretion of individual delegates.

There is some need to explain the motivation of the display organizers but at this point a tribute should be paid to those people who have supplied material for the displays. A further tribute, and a most important one, is due to the Art and Craft Advisers of the Wellington Education Board. Final choices and arrangements have been executed in a fashion which, I am sure you will agree, is of an excellent standard.

Research throughout New Zealand showed that media were being applied in endless variety. The difficulty was to find media that could stand independently of their curriculum purpose. A factor which became evident was that the strongest work was developed by teachers and students as they worked for a common purpose. The need to communicate, to inform, and to educate acted as a powerful motivator. When this need is coupled with the joy of doing or creating, then there is available a force indeed! This feeling is, I must confess, a personal one. Probably it is most clearly indicated in one of the background slide-tape

presentations. This programme shows the classroom environment created by Lester Flockton and his students at Waldronville School, Dunedin.

Social Studies Resource Kits

Twelve multi-media kitsets are being produced. Each kitset will comprise a selection of filmstrips, wall pictures and charts, overhead projector transparency masters and class sets of printed materials in a variety of forms. All kits will have a set of resource cards referring to other print and non-print resources. Some kits will also have study prints for group work, background material for teachers and occasionally a tape cassette. A back-up service is provided by the National Film Library to provide appropriate films for the kits and by the School Library Service to provide appropriate books.

The kitsets that are being produced are indicated in the following chart. Those marked with an asterisk are available for inspection.

Form	Age Group	Theme	Kitset	Production, as at September 1975
1	11-12 yrs	Cultural Difference	*Starter Kit	In schools 1974
			19th Century London	In schools 1975
			*Thailand	In schools 1975
2	12-13 yrs	Interaction	*Starter Kit	In schools 1974
			Maori/Pakeha in New Zealand. Stage 4B of development and production.	
			Australia - Stage 5A of production.	
3	13-14 yrs	Social Control	Starter Kit	In schools 1974
			Society - Stage 4B.	
			Malaysia, Singapore, and Brunei - Stage 3B.	
4	14-15 yrs	Social Change	Starter Kit	In schools 1974
			Mass Media	In schools 1974
			*Women	In schools 1974

Education for Living

Country Paper 26 contains a full description of this subject which the Ministry of Education of Singapore introduced on 24 June 1973. A selection of the photographs used as part of the media supply to assist schools is displayed.

Reading Materials

The materials on display are concerned with reading and language development. The items include the following:

Early Reading In-Service Course (ERIC). See New Zealand Country Paper 22B for details. This programme is available on a Caramate but, as the commentary indicates, ERIC has been developed for use only with a tape recorder and a slide viewer.

Treatment of one book, "Two Can, Toucan". Miss Angela Farrell of Sunnybrae Normal School, Auckland has provided an enlarged book, a set of six books to be used with an accompanying tape recording, a wall story, and a transparency set of the story. This display includes the use of a variety of audio-visual equipment. Considerable help was gained in the preparation of this and similar books by involving parents. It should be noted that this is only one portion of the reading environment that is created by the teacher who is dealing with children whose ages range from 5-8. (A set of enlarged books that have been developed commercially are also provided for comparison.)

Overhead projection transparencies, Sumner School for the Deaf, Christchurch. Like its counterpart in Auckland, this Department of Education School has developed a strong resource centre. Clear and colourful graphics are part of the media requirement for assisting deaf children. Two sets of transparencies are available. The topics covered are two stories, "Little Red Riding Hood" and "Dick Whittington and his Cat".

School Publications Branch, Department of Education. This retrospective display illustrates the growth, the range and the editorial expertise that has been part and parcel of this group since its establishment in the early 1900s.

The New Zealand Educational Institute's National Committee on Reading produced a publication entitled "Year Book of Education No. 1: Perspectives in the Teaching of Reading". This was followed up by a slide-tape presentation which illustrates reading environments and activities in New Zealand classrooms. Its purpose is to provide information for teachers as part of their continuing education.

Photography and Language development. The work undertaken by Mrs Florence Bowie of Sunnybrae Normal School is self explanatory and exemplary. The impact of this, its wide ranging possibilities and its charm are clear.

Models

Three relatively sophisticated display models have been included in the exhibition. They are entitled as follows: "Forecaster" provided by John Oudshorn of St Peter's College; "Puha or Penicillin" provided by Phyllida Cotton, Wendy Walker and Karen Wilkie of Auckland Girls Grammar; and "The Art of Taxidermy" provided by David Crawford of Waiuku College.

All of these models were made by individual secondary school students who submitted entries to the Auckland Science Exhibition. They show that individuals and groups working independently can produce material that is both highly visual and concisely informative. The place of models, whether sophisticated or not, has been a part of the armoury of any culture as it has passed on its mores from generation to generation.

A fourth model of a Malaysian kampong constructed by pupils at Sumner School for the Deaf is a less elaborate piece of work.

Our Environment

Besides illustrating the use of a magnet board, this environment game illustrates an important (and perhaps debatable) principle, that of co-operation between business firms and educational institutions. This principle is further illustrated by a small group of cards, supplied by a commercial organization, which can be made into models. Model making is also illustrated at this display by the work from Sumner School for the Deaf.

Multi Media Kits

There is a selection of the commercially-produced multi-media kits that are currently under preview by Curriculum Development Unit officers of the Department of Education, New Zealand. These are available in addition to materials supplied by Commonwealth countries for this conference.

Other displays include teacher development of individual study materials (telephone and tape recorder) and a variety of teacher/adviser-developed equipment for audio-visual media. This may be contrasted with photographic evidence concerning locally-produced materials. The following multi-media kits have been made available by the Ministry of Education, Ontario, Canada: "Le Tempe de Fetes"; "10 Years in a Box"; "O'Canada Kits"; "Teaching on Venereal Disease"; "Indians of Canada"; "Drugs and the Human Body"; "Environmental Protection"; "Manowan"; "Atlantic Canada Series".

Audio Material

The following tapes or records are available:

1. Ministry of Education, Ontario, Canada: "Canadian Public Figures on Tape" - tape; "Canadian Poets on Tape" - tape; "Russian for Canadians" - tape; "Cheznous" - record; "Beginning in September" - audio tape; "Average Speed", "Displacement", "The Idea of Speed No. 1", "Free Fall", "Measure of Time", "Types of Motion", "B and D Mine", "Animated Face", "Farm Animals", "Dressing", "Silhouettes No. 1", and "Drawing: Cat Face" - all cassettes.

2. National Film Library, Department of Education, Wellington. A number of records, reel tapes and cassette tapes have been made available from this organization.

3. Eastern Caribbean: Caribbean Maths project - cassette tape, reel tape, and filmstrip. The 16mm film associated with the material will form part of an evening film programme.

4. South Australian Department of Education. A selection of material is also available from this state.

Photographic Display

A small display illustrating contemporary New Zealand education has been mounted for the conference. It raises an important question, namely, can photography both document and contribute to contemporary education? Can its proper use cause specialists and the public alike to see more deeply into the effects and nature of education? Really good photographs may not gratify; they are rarely impartial and they are not accidental. They are taken by people who have become sensitized in many aspects of their human and technical structure and who choose to work with cameras. Essentially, an exhibition on contemporary education will only be as good as the perceptions brought to bear on it.

Although we do not have the international reputation of American and European photographers, we are becoming increasingly aware of the strength of our own photographic heritage and we are convinced that we have photographers of international class.

Because time was short, just one way of presenting has been chosen. It is probable that an education system is most successful when it manages to convey society's beliefs and standards to the widest range of pupils, and encourages them to keep those beliefs and standards under constant and thoughtful revision. In other words it attempts to transmit itself through the recognition of individual difference using kindness and truth. Somehow, this has to be given photographic form. It lacks the obvious drama of war, famine, or rioting. It lacks even the passion of injustice - or it should - but it should not lack the passion of human involvement.

The reasons for photography given by Carnell Capa and Lewis Hine apply as much to this project as the ones they had in mind. Capa said he photographed: "Because I want to be a witness to my time. I want to participate in the events shaping our lives. I want to record my subjective view of it through which future generations will know what it was all about". And long before him, Lewis Hine wrote something that has become the credo of the Concerned Photography Fund: "There are two things I wanted to do. I wanted to show the things that had to be corrected. I wanted to show the things that had to be appreciated".

Chick Rearing

These record of observations taken during chick-rearing experiments by children in the Auckland area show clearly the value of graphics and the use that can be made of them by children who range in age from five to eleven.

Museum Cases

This display is indicative of the educational services available from museums. The value of this type of service in the educational process is inestimable. The difficulty lies only in devising satsifactory ways of making this service more widely available.

Architectural Study

The place of large wall photographs is well illustrated in the work of Mr Don Campbell. One problem that delegates may wish to consider is the expense of quality print runs of this type of material. This problem is further illustrated by the grouping entitled "Environmental Studies".

Use of Scrap Materials and "Kites".

Visual Experience Recording

Imaginative art work and the associated language tells its own story. The sequence could well be compared with both the single slender panel entitled Language and Art and the large panel, "The Sunflower Girl".

Teacher activity at in-service courses is well illustrated by photographs supplied by the Art and Crafts Branch, Wellington.

Puppets

Two representative samples are included from New Zealand and other Commonwealth

countries.

Media Services

The varied groups in the Department of Education, New Zealand, providing media for schools include the National Film Library, the Schools Library Service, the School Publications Branch and the Visual Production Unit. Their inclusion in the display areas will provide delegates with a partial view of the organization and activities of these specialized agencies. The fact that these groups exist in a co-operative yet independent relationship may be of interest to delegates.

Correspondence Education

Three of the organizations providing correspondence education to New Zealanders are represented in the displays are the Correspondence School, Massey University Department of Extra-Mural Studies, and the Technical Correspondence Institute.

(The principals of the Institute and the Correspondence School, together with the Director of Extra-Mural Studies, will be present during the plenary session concerned with the use of educational materials in the teaching/learning situation.)

Charts and Posters

These have been supplied in various forms by the Commonwealth Secretariat and originate from CEDO, the National Food and Nutrition Commission, Zambia, the South Australian Department of Education, the Ministry of Health, Jamaica, the Ministry of Education, Barbados, the Ministry of Transport, New Zealand, the Metric Advisory Board, New Zealand and the Visual Production Unit. Teacher-made posters relating to mathematics and language are also available.

Flannelgraph

The specific topic of irrigation is the theme of this group of flannelgraph cutouts provided by India.

Magnet Boards

A demonstration of the use of magnet boards has been arranged by Pencarrow School. In addition, a commercial firm has made available some combination magnetic white boards. Delegates, it is hoped, will take the opportunity to experiment with this form of media.

Equipment

A wide range of photographs from a number of Commonwealth countries illustrates for delegates the importance of locally-produced equipment.

A number of the above displays together with the large stitchcraft mural, the Young Person's View of Life and its associated stained glass windows, further examples of photography and language, Maori motifs and language, examples of two and three dimensional secondary school art will also be available for inspection.

Takitimu Legend

This work was provided by Miss Alison Tuff of Karori Normal School and is the work of her pupils. The initial stimulus for this work was providied by contact with an Art and Crafts Adviser of the Wellington Education Board.

PRODUCING LEARNING MATERIALS FOR AN EDUCATION SERVICE

P. Weiss
Media Resources Centre, Inner London Education Authority

We take it as a basic principle that consideration of the use of educational resources, including learning materials, should be based on the requirements of the changing curriculum – and not vice versa, as is too often the case. The changing patterns of education, both in the content of the courses and in the approach to the learner must dictate the kinds of materials to be produced.

CHANGING CONTENT

A scheme of materials can help the teacher (as, traditionally, text books have done) to define the framework of a new course; particularly important where teachers with specialised knowledge are scarce.

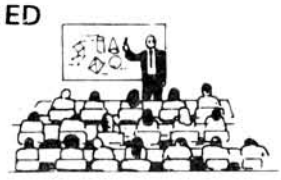
CHANGING APPROACH

Our knowledge of how children develop and learn is leading to changes of organisation and method in the classroom: more individualised, enquiry-orientated and activity-based learning patterns need supporting with new materials.

THE ROLES OF TEACHER AND LEARNER

Learning materials can be used in two basically different modes:

TEACHER CENTRED



The traditional mode: attention of the whole class is focused on material presented and intepreted by the teacher. Blackboard, charts or projected aids are usually supported by students texts or workbooks.

LEARNER CENTRED

Pupils tend to be working individually or in small groups on different, sometimes self-chosen, tasks. Materials need to communicate directly and to be varied to allow flexibility and choice.

A MOVE TOWARDS MORE RESOURCE BASED LEARNING CAN FREE TEACHERS FROM CONTINUAL CLASS INSTRUCTION TO ALLOW MORE PERSONAL INTERACTION WITH PUPILS. BUT THIS DEMANDS CHANGES OF ROLE AND ATTITUDE FROM BOTH TEACHER AND LEARNER, AND CHANGES IN THE ORGANISATION OF SUPPORTING MATERIALS.

THE INNOVATION PROCESS

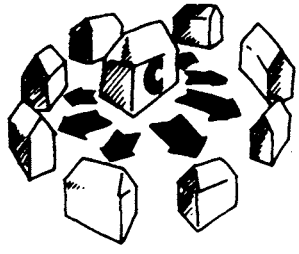
New learning materials are only one part of a strategy for educational innovation.

CURRICULUM PLANNING	DEVELOPMENT OF MATERIALS	EDUCATION OF TEACHERS
Is this happening centrally, at national curriculum committees, or more locally, in schools? What are the links between the two? And what kind of assessment or examination is required?	How far can practising teachers be involved in the devising, preparation, and trial of the materials?	What needs to be done to motivate the teachers to adopt a new approach? Teachers need to identify with the new aims and discuss the teaching and learning problems involved.

Curriculum planning and media production teams need to include people responsible for inservice teacher education. This must be a central part of the thinking and practical effort, not something tacked on afterwards. This is where many projects have fallen flat: a team of experts has thought out a programme curriculum scheme, prepared materials to implement it, and there their work has stopped; too often the material has stayed in cupboards unused. At least as much – if not more – effort is needed to help teachers understand and use new curriculum materials as goes into its production.

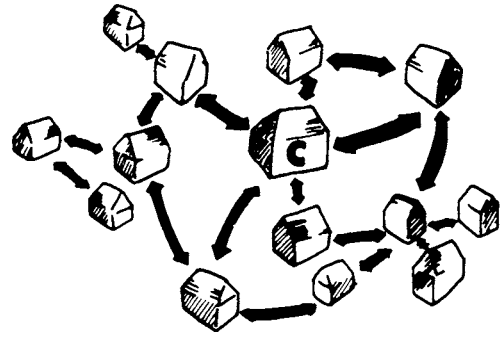
TWO APPROACHES TO INNOVATION STRATEGY

CENTRE-PERIPHERY



In this model, changes are decided by a central authority and then disseminated to the peripheral schools. One way of doing this is in the form of centrally produced materials. Such a system tends to suit a centrally directed education service where changes can be prescribed.

NETWORK



Here innovation is seen as arising from the initiative and efforts of groups of particularly active teachers developing new approaches in some of the schools. This can only happen in a system where curriculum decisions are, at least in part, made locally. The role of central production services is then to act as communicating, linking agencies, helping to spread through the network.

These contrasted models are discussed by Donald Shon in his book *A Stable State*. Readers may also be interested to study Ronald Havelock's three main models for the dissemination and utilisation of knowledge (see sheet 8, DISSEMINATION).

ON THEIR OWN, NEW LEARNING MATERIALS ARE UNLIKELY TO WORK EFFECTIVELY AS AGENTS FOR CHANGE: IT IS ONLY WHEN THEY ARISE FROM THE CHANGING CURRICULUM AND ARE ASSOCIATED WITH THE WIDESPREAD INVOLVEMENT OF TEACHERS IN DEVELOPING NEW APPROACHES, THAT REAL PROGRESS IS MADE.

AGENCIES FOR THE DEVELOPMENT OF MATERIALS

Where and by whom should new curriculum materials best be produced? This depends on the answers to a number of questions. Where are curriculum decisions made, centrally or by each region or individual school? How is the inservice education of teachers organised? What centres of expertise are there? What facilities are available?

In this context, it may be useful to identify three levels for the production of materials: national, regonal and local. An oversimplification, perhaps, but it provides a framework within which to consider what is appropriate, both *educationally* and *economically*, at each level.

NATIONAL	**REGIONAL**	**LOCAL**
CURRICULUM CENTRES	REGIONAL CENTRES	TEACHERS' CENTRES
PUBLISHERS/ BROADCASTERS	REGIONAL BROADCASTS	SCHOOLS
UNIVERSITIES	COLLEGES OF EDUCATION	LOCAL COMMUNITY
elaborate resources	limited facilities	simple material
national experts	inspectors/teachers	local teacher
general aims	regional needs	specific, personal
long term	shorter term	immediate
Comprehensive schemes of materials, often using elaborate facilities (including television), demand a great investment of resources and expertise which is only feasible on a national scale, for widespread use. They can form part of the national plans for educational development.	Materials can have a regional context, reflect the needs of minorities (eg. language problems) and involve groups of teachers. Production facilities can be part of the regional administration of the education service and closely linked to the provision of inservice teacher education.	Locally made material is unlikely to be highly sophisticated in presentation or format and may often be ephemeral. But it can match the specific course or lesson, the particular class and teacher, and it can be in time for next week's or even tomorrow's lesson. Perhaps the main point is the teacher's own personal involvement.

PRODUCTION SERVICES NEED TO BECOME AN INTEGRATED PART OF THE EDUCATION SERVICE, WORKING TO THE CURRICULUM PLANNERS AND CLOSELY LINKED WITH THE INSERVICE EDUCATION OF TEACHERS.

SUPPORT FOR THE USE OF LEARNING RESOURCES

Before embarking upon the production of new materials, it might be useful to consider briefly the organisation of central support for the use of learning materials and the equipment associated with them. The purpose of such support services is to make sure that, as far as possible, appropriate materials are available where and when they are needed by teachers and learners, and to encourage the optimum use of the more expensive or scarce facilities.

The various kinds of central services which might be provided are usually of three main kinds:

EQUIPMENT SERVICES	LIBRARY SERVICES	PRODUCTION SERVICES
SUPPLY	INFORMATION (reference collections, exhibitions)	PRINT
MAINTENANCE	SUPPLY ordering, cataloguing, processing	AUDIOVISUAL MATERIALS
LOAN	LOAN books and materials 16mm film audio & videotape museum artefacts	RADIO/TELEVISION
FAMILIARISATION		SUPPORT FOR LOCAL WORK reprography slide duplication audiotape copying

It may not be appropriate or necessary to develop all these services centrally; some may best be provided locally or within the schools.

There is sometimes a tendency, when support services for audiovisual materials are set up, to develop these separately from the more traditional library services for books. This seems to be a mistake: wherever practical, library services should be extended to provide both books and other materials.

Similarly, the production of educational radio and television is usually developed separately from production through other media. Experience shows that the use of broadcasting needs to be associated with materials in simpler forms, and be closely linked with curriculum planning and inservice education.

IT IS IMPORTANT TO CONSIDER THE ORGANISATION OF AVAILABLE RESOURCES, RATHER THAN START WITH RESOURCES CENTRES, THOUGH SUCH CENTRES MAY MAKE A MAJOR CONTRIBUTION TO A RESOURCES SUPPORT NETWORK.

AIMS AND EVALUATION

Before setting up a production project you need to clarify what problem it is trying to solve and to have some way of finding out how far you have solved it. This is by no means as simple as it sounds, approaches to this problem differ markedly.

At one extreme, there are the educational technology hardliners. They hold that it is essential to analyse and specify precisely how the learner should be changed by working through the course or materials. These terminal aims need to be expressed in terms of specific, behavioural objectives (changes in behaviour which can be observed and measured) rather than the commoner, more or less vague, aims. Without this kind of clear cut analysis, it is argued, we cannot know what we are trying to do or whether it is being achieved.

At the other pole are those who take education and learning to be holistic, organic processes of personal growth and development, not amenable to simple behavioural analysis. Their emphasis tends to be on the value of personal interpretation, creativity and the open-ended process of enquiry and imaginative exploration: the journey, not the arrival, matters. To try to specify anything but the broadest curriculum aims is seen as limiting and sterile.

Usually, what is appropriate falls somewhere between these extremes. There are clearly areas, particularly those concerned with training in readily identifiable skills, where a 'programmed', tightly structured approach is practical and effective. But more often our educational aims are broad, complex, overlapping and not easily defined. Certainly, some clear thinking about these is necessary – without it, teaching easily descends to wishful thinking. For example, we often imagine we are 'teaching for understanding' when in fact the learners' achievement is still at the level of memorising facts.

1.	KNOWLEDGE:	remembering previously learned facts or theories, the lowest level of learning.
2.	COMPREHENSION:	grasping the meaning of material, the first level of understanding.
3.	APPLICATION:	using learned material in new and concrete situations.
4.	ANALYSIS:	breaking down material into parts, understanding its structure.
5.	SYNTHESIS:	putting parts together to form a new whole.
6.	EVALUATION:	judging the value of material for a particular purpose.

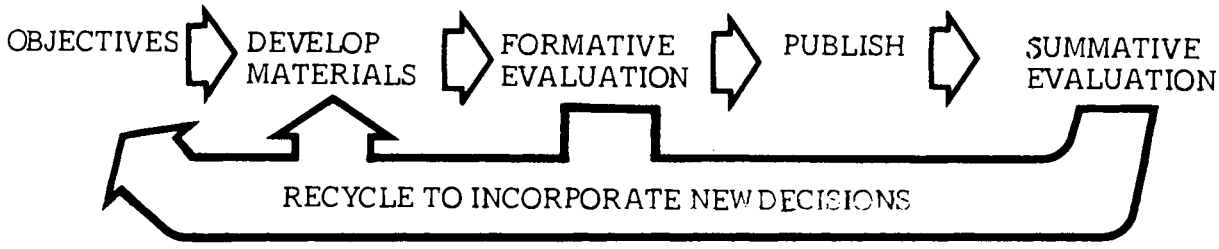
These are the major categories in the cognitive domain, as defined in Blooms *Taxonomy of Educational Objectives.* There are, of course, other equally important objectives which are not cognitive: for example, those concerned with attitudes, interests and appreciation of values.

But, although the logical place to begin curriculum planning and the development of material is with the analysis of aims and objectives, life within an education service is not always like that. If we wish to involve practising teachers, we must start where the teachers are: and they are already involved with teaching and material. One seldom starts with a clean slate; new curriculum ideas develop from older ones. They contain a whole complex of aims, usually implicit rather than explicit, based on tradition, the needs of the pupil, the teacher, the school and the demands of the society we live in. If we always insist on reducing these to a simple set of objectives, there is a danger that we may limit our teaching to those low level skills which are most easily specified.

THINKING OF CURRICULUM IN TERMS OF OBJECTIVES, RATHER THAN A SYLLABUS, FOCUSES ATTENTION WHERE IT SHOULD BE: ON THE DEVELOPMENT OF THE LEARNER.

EVALUATION

Evaluation is an important element in any systematic development of materials. As producers, we are here concerned with formative evaluation, which is part of the development process, rather than the summative, retrospective evaluation of curricula and materials to measure their effect after a long period of use – though this can, in turn, be formative for future production.



FORMATIVE EVALUATION

There are two kinds of formative evaluation: intrinsic and extrinsic. Intrinsic 'armchair' evaluation is based on constructive criticism, first of ideas and later of draft materials by members of the production team and teachers or other 'authorities' who need to be consulted. This should start as soon as the project is discussed to monitor aims, level, consistency, assessment, and so on.

Extrinsic evaluation involves testing in schools. This developmental testing can be pursued in a variety of ways, from the small-scale piloting of sample materials, to the full-scale trial of a complete scheme. At the least, there is usually a need to try out the superficial practicality of the materials: to see whether the format is acceptable to teachers and learners, whether the language and visual communication can be understood, and to check that practical learning activities actually work in the classroom. Often it is valuable to take this small-scale evaluation in greater depth. A useful method is the 'tutorial interview' in which the curriculum developer works through draft material with a small, but reasonably representative sample of pupils. This can be supported by interviews with teachers.

Large scale 'objective' evaluation, usually based on questionnaires, involves a wide spread of schools which should be representative of the target population. The advantage of this type of evaluation is that it seems convincing. It may also have a publicity/dissemination function for the schools involved. The disadvantage is that it is time-consuming and expensive for the evaluators, and time-consuming and often troublesome for teachers in trial schools. Finally, there is a real question as to whether the amount of data generated can be used.

ASSESSMENT

In all types of evaluation, the assessment of the pupils must be considered from the start. Does the course work to:

(a) its internal assessment procedures;
(b) a tailor-made, externally moderated, examination;
(c) an external, pre-existing examination?

SUMMATIVE EVALUATION

After the production and publication of a first edition, it is usually possible to collect information so that later the materials can be revised and improved in the light of the practical experience of the users. But an attempt to evaluate the learning which has resulted brings us back to the analysing of the aims and objectives. Indeed, some projects have found that the role of an evaluator has primarily been to help clarify the aims and focus the materials on them, rather than report on their achievement.

EVALUATION NEEDS TO BE PLANNED FROM THE START AS AN INTEGRAL PART OF A PRODUCTION PROJECT.

THE LEARNING SITUATION

Perhaps the most important factors to consider when discussing the aims of a production project relate to the teaching/learning situation it is designed to support. What is the role of the new materials to be: are they central, the basis for a course, or are they additional, to be used as an extension to other work? What kind of educational and organisational structure must the materials fit into? Are they for teacher presentation or more independent work? What amount of time is likely to be allocated to their use? What equipment, if any, is available and are teachers and pupils accustomed to its use? What books and other resources are there?

There is the practical consideration of the cost. Is the material to be distributed free of charge? If not, who pays it – the school or the pupil? What sort of cost would be acceptable? Can the materials be shared? Can they be used repeatedly?

Then there are questions about the learners. What range of age, abilities, interests and experience needs to be catered for? What kind of approach is likely to be successful? Are there likely to be problems of communication, language level or lack of other prerequisite skills? How might these be overcome? To provide flexibility, how can a range of learning activities be provided for pupils with different abilities,interests and needs?

And there are questions about the teachers: what knowledge and experience can be presumed? What kind of teacher-pupil relationship is expected? How can the teacher organise the learning activities and keep track of individual progress?

STRUCTURE

A key problem in planning the central production of learning materials is to reconcile mass media with individual development. How far should the structure of a course be prescribed by the materials and how far should they allow for flexibility and choice of use by the teacher and, perhaps, the learner? The answers can vary from the totally structured package, where the teacher's role (if any) is strictly specified and the pupils work through a predetermined process, to the supply of items and 'raw' material, which teachers will select, adapt and combine to suit their own lessons, and to suit individual pupils.

The appropriate kind of structure depends on a number of factors: the degree of central control of the curriculum, the teachers' degree of autonomy, their knowledge and experience, the traditional teaching patterns and the problems of the pupils. There is little point in offering materials designed to support an open-ended, enquiry-oriented approach for pupils if the prevailing social customs are such that young people are brought up to expect authoritative, didactic teaching and are not encouraged to ask questions. On the other hand, in a system giving teachers (and sometimes pupils) independence and choice, they are unlikely to welcome too prescriptive an approach.

If the purpose of the material is to provide the basis for a new course in an area with which the teacher is unfamiliar, a clear structure is necessary. Often the best approach is to develop a system of materials with a clearly structured basic core, but a more flexible periphery, allowing and perhaps demanding a great deal of involvement, choice and adaptation on the part of the teacher and learner.

FOR REAL EDUCATIONAL PROGRESS, WE MUST TRY TO BUILD UP, RATHER THAN DIMINISH, THE INVOLVEMENT, RESPONSIBILITY, KNOWLEDGE AND COMPETENCE OF THE TEACHERS.

PLANNING

As every producer of materials has to learn – sometimes to his cost – the success of a production project, however inspired, can depend to a surprisingly large extent on good planning and organisation. At the outset a time schedule needs to be set, staff assigned, facilities and services found and booked (they are usually not available at the last minute!), budgets allocated, estimates for reproduction costs obtained, publicity and dissemination activities planned. The governing factors are usually time and cost.

TIME

The planner has to decide (or be told) a publication or transmission date. This date will depend on a number of factors: how urgently the material is needed; whether it is linked to a specific course or, perhaps, to some other scheduled transmission; the availability of staff and whether the original compilers of the material can be kept to a schedule; and on the availability of production facilities.

These, or related, factors will decide whether the planner works back from a fixed publication date – such as the beginning of a school term – or works forward, allowing time for each of the desired stages in a development process.

1.	PROPOSAL STAGE:	discussion of aims and purpose; formulation of project.
2.	EDITORIAL STAGE:	planning, format, costing, scheduling; researching, writing, compiling, photography, filming; discussion, criticism, piloting of draft materials; sub-editing, marking up final copy; checking.
3.	DESIGN AND PRODUCTION:	design roughs; artwork, typesetting, paste-up; recording, editing; checking.
4.	REPRODUCTION:	printing, duplication of slides or tapes; finishing, collating, packing.
5.	DISSEMINATION:	publicity and information; distribution; familiarisation, inservice education.

These stages do not always simply follow in order. They tend to overlap. For example, design roughs may be needed early in the editorial stage, both for costing and to give a framework for the writing and compiling. Almost inevitably, the format will be changed or items added, necessitating new costing. If the materials are to be pilot-tested in any way, this will involve design and artwork and some reproduction; while a full-scale trial would be an extra stage, after which several stages need to be repeated. Several media multiply, quite literally, the problems of planning. Work in each medium, which probably has its own problems and rate of progress, must eventually synchronise.

THERE IS AN IDEAL BALANCE IN PLANNING LEARNING MATERIALS. ON THE ONE HAND RESOURCES ARE USED WITH OPTIMAL EFFICIENCY; ON THE OTHER, CREATIVITY SURVIVES THE RIGOURS OF COSTING AND SCHEDULING. IT IS NOT AS EASY BALANCE TO ACHIEVE.

ORIGINATION COSTS

These are often divided into two parts:

EXTERNAL (above line)

These may include fees for: writers, performers, copyright; freelance design, graphics, photography; materials, film stock, etc.; hire of equipment, facilities, studio; travel.

INTERNAL (below line)

Share of fixed overheads such as staff salaries and the cost of in-house production facilities.

Although convenient in many ways, there is a danger in dividing the costs in this way. Producers, given limited external budgets, may be tempted to misuse internal facilities which appear to them to be free. A total costing system gets around this, but may not always be practical, since the internal facilities need to be fully utilised.

There are, though, many ways in which the planner can reduce costs. Most obviously, he will aim for efficient use of the in-house resources which are under his control – whether television studios, outside broadcast vans, sound studios, typesetting or printing. It is more difficult, but often even more rewarding in terms of cost, to make optimal use of outside facilities. This might, for example, mean arranging a schedule to fit those times when actors were between stage productions; allowing illustrators time to work between more urgent commissions; recording in commercial studios at off-peak times; and so on. Often concessions will be made for educational work – but the planner must, of course, be prepared to concede something in return. A successful schedule will be an intricate balancing act between the demands of time, cost, and contributors' goodwill.

REPRODUCTION COSTS

The costs of reproduction must also be considered at the outset of a project. Whether they are passed on to the users or not, they are often critical and usually dictate the kinds of materials it is possible to make. To obtain estimates for the cost, it is necessary to know two things: the precise format of the materials and the quantities to be reproduced (which can markedly affect the unit cost).

With print materials, for example, the format must specify the number of sheets or pages, their size, the quality and thickness of paper or card, the use of any second or more colours, the use of halftones (i.e. photographs), and so on. All this is often difficult to decide in advance, until the material is written, but if it is not the costs are likely to get out of control. A dialogue between writer, designer and printer can often help to solve cost problems. In the end, producing learning materials is (like politics) the art of the possible: what can be produced at an acceptable price.

PLANNING PRIORITIES

The paragraphs above refer to the planning of a single project. Most educational services, though, cannot afford to concentrate so narrowly. They will be asked to produce materials in several curricular areas – probably more than their budget will comfortably permit. Costs must be estimated, resource allocation forecast and priorities fixed. The first tasks will be in the province of the planner even though priorities may be decided elsewhere. The planner must, then, be concerned with the total output of the service as well as with the progress of individual projects.

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DEVISING, WRITING, COMPILING, AND EDITING

This is the creative process at the heart of a production project. It is also the hardest to describe. How can curriculum ideas be turned into interesting, imaginative but practical, classroom material? The excitement and challenge of curriculum development are here.

It is not always easy to combine the divergent, imaginative qualities, without which materials for learning become dull, with the more convergent skills – clarity, keeping to the point, and a necessary attention to detail. Several areas of expertise are needed: a thorough knowledge of what is to be taught; an empathy with the learner and an understanding of his problems; an appreciation of the possibilities in the communication media employed; and the practical skills to carry through production and make the materials work. Often the best way to achieve this is to form a small team, perhaps of only two or three people. These might be a subject expert as consultant, a really lively teacher with a gift for popularisation, and a media editor with presentation skills.

THE KNOWLEDGE

An analysis of the knowledge content needs to be made to lay bare, as simply as possible, the basic ideas involved and how these are interrelated. Any argument needs to be broken down into a series of steps and necessary incidental information noted so that it can be incorporated. Assumptions of prerequisite knowledge and experience should be clarified, as they may need revision.

Often the aim will not merely be the transmission of information, but rather to help the learner build up concepts and re-formulate his own experience.

THE LEARNER

The writer needs to forget, temporarily, his own knowledge and experience and put himself in the learner's position. He must understand the way the learner can be helped to build up his framework of ideas, the nature of the experience he brings to the interpretation of new information, and how he clothes it with meaning.

Paramount must be the motivation of the learner. Each learning activity needs its own short term reward in terms of enjoyment, sense of discovery and achievement. Above all, the learner needs success.

MEDIA AND PRESENTATION

From the consideration of knowledge and the learner, ideas for presentation can be developed. These should both exploit the possibility of the available media and observe their limitations.

Finding suitable learning activities, and ways of presenting them in mediated form, usually needs a great deal of discussion, with ideas being tossed to and fro, until they take viable shape. Turning these outlines into final material possibly means working through several drafts until an acceptable treatment is achieved.

One of the strengths of producing learning materials within an education service is the involvement of practising teachers. This has the obvious advantage that the materials should relate directly to their teaching situation and its requirements. And the wider involvement of teachers, perhaps at a trial stage, can play a vital role in the dissemination process. But it does not follow that a good teacher will necessarily have the skills to produce effective materials. That is why the combination of classroom teachers with experienced educational media producers seems to offer the greatest possibilities.

GOOD MATERIALS MUST CAPTURE THE INTEREST AND IMAGINATION OF THE LEARNER, MEET WITH THE APPROVAL OF THE TEACHER, BE PRACTICAL AND ECONOMICAL TO PRODUCE, SIMPLE BUT ENJOYABLE TO USE. A TALL ORDER.

THE EDITORIAL PROCESS

The role of editor will vary widely depending on the way a production project is set up and the teachers' degree of involvement. In some cases, the editor may be the main author and creator of the materials, though usually in consultation with teachers, inspectors or experts with specialised knowledge. In other projects, the devising and writing may be done almost completely by other writers – perhaps a team of teachers – and the editor's main function will be to co-ordinate and process the material as it is received.

More often, the editor's role will lie somewhere between these two extremes. First he will have to discuss the initial ideas with teachers and consultants to help decide the approach and form the material will take. Close consultation with the designer may be important at this stage. A draft format for printed material needs to be prepared and discussed with the authors to make sure it is suitable.

Having clarified the writing team's brief and established a framework for their contributions, the editor will need to support the authors by helping develop treatments, offering advice, showing relevant examples from existing materials, finding visual references, and directing the work of the design and technical staff.

Contributing teachers, though probably experts in teaching their subjects, usually need help in matters of mediated presentation, clarity of exposition, appropriate register of language, sustaining the learner's interest, choice of visual material, and so on. They also need to know what is practically possible: what drawings, artwork, photographs, etc can be found or commissioned.

Existing photographs or illustrations need to be examined, with the authors and the designer, to decide whether they are suitable, fit the intended layout, and are of sufficient technical quality to reproduce well. For many projects, new photographs and illustrations will have to be made. The editor will have to work out a clear brief for these and, in the case of photographs, probably direct the photographer.

As the writing stage progresses, the editor must check to see that authors keep to the agreed format and schedule (no mean task!) and generally nurse the project along. Draft copy from the authors needs to be checked, discussed, circulated for constructive criticism, and then, probably, rewritten. It is here that the editor's skills, tactfully applied, can help achieve a high standard of presentation.

When an acceptable final version is achieved, the material needs to be sub-edited. The final typed copy needs to be checked carefully for errors, to see that it fits the space available, and to be marked up for typographical headings and house style. Bibliographies, credits, acknowledgments, etc, need to be incorporated; illustrations and photographs need to be checked and marked up for size and position.

Finally, the completed material can be handed over to the studio for production. From then on, the editor's role should be confined to checking copy, artwork and paste-up. The temptation to make further changes and improvements should be resisted.

DESIGN

Design is an important, and often underrated, stage in producing educational materials. This section refers mainly to design for print; but the general principles are often relevant to other media.

An educational designer has three main tasks, which we can call planning, presentation and decoration.

PLANNING

The designer follows, in microcosm, the procedures outlined in the section of this pack on planning educational projects. There we suggested a tension between time, cost and the optimal use of resources. The same choices, on a smaller scale, face the designer

PRESENTATION

The idea of 'presentation' is based on the premise that information can be conveyed in fundamentally different ways; and that for every audience there is one mode more suitable than others. Ideally, designer and writer (or editor) should establish a working partnership to find the best mode of presentation for each educational project. Their main constraints would lie in the type of message to be communicated, in the learners' age and ability, in the medium, and in what the classroom teacher will accept.

A partnership of this sort assumes that both writer and designer want to work in this way; that each understands, and can contribute to, the other's craft; and that there is time for the process of shaping and reshaping. These preconditions are, as it happens, more often met in the advertising industry than in educational publishing or television.

DECORATION

'Decoration' is the most commonly accepted of the designer's tasks. It is also the most frivolous and most likely to be disapproved by teachers. The disapproval may, though, be premature. It may well be that the learner's attitude is considerably shaped by the appearance of the materials in front of him. There is very little research on the subject. Until we have evidence otherwise, then, there is a good case for making learning materials at least as attractive as those mass media which demonstrably do hold children's attention. That, so far as costs allow, should be part of the designer's brief.

AFTER DESIGN

Design may be taken as a purely conceptual process going no further than sketches and specifications. Other designers prefer to take their work through the preparation of illustrations and the paste-up of copy to the final production stage.

THE DEMANDS OF A DESIGN STAGE

We have touched on the human problems of establishing a writer-designer partnership. It is worth emphasising, too, the demands in terms of time and cost. Good design cannot be done quickly and it is unlikely to be cheap. It is worth, therefore, setting a level of design appropriate to each project. Some projects may be ephemeral, needing minimal design. Others may be sufficiently large and complicated to demand a year or more of a designer's time.

THE PARTNERSHIP OF TEACHER AND DESIGNER IS THE BASIS FOR PRODUCTION.

REPRODUCTION OF MATERIALS

The production service should decide first how far it wants to be involved in the reproduction of materials. It may prefer to concentrate on origination and either put the materials out to a commercial printer or duplication service, or arrange for a publisher to handle them.

PRINT

LETTERPRESS

This is most suitable for large quantities (over 10,000) of material, in relatively simple presentation, which may run to further editions without substantial change. The image is transferred to paper from a raised metal printing surface and there are a number of constraints on the layout. Costs of setting up type are relatively high and these will be outside the direct control of the production service. In most cases the service will hand over a typescript for typesetting and illustration, and will receive galley – and perhaps page – proofs to check; but the printing and binding will be the responsibility of an outside contractor.

PHOTOLITHO

This is now the more commonly used printing process for educational materials. In the litho process an inked image is transferred to paper from a flat metal plate. The image is usually photographically transferred to the printing plate and, except for tonal contrast, there are few constraints on its composition. It offers the production service much greater control over the layout and design of print. The service can produce its own 'typesetting' on a good quality typewriter or on some similar but more sophisticated machine. Designers or design technicians can then combine the type with headings and illustrations, in dialogue with an author or editor.

Both processes can print only one colour of ink from any one printing surface. Each colour needs separate artwork and printing plates, and each further increases costs. Colour photographs or paintings involve an extra dimension of cost as they need an expensive photographic separation to produce the four plates which will be overprinted to reconstitute the original coloured image.

Simple, small format litho printing can now be set up fairly cheaply and a production service may consider doing its own printing. But costs of labour and equipment escalate rapidly with the complexity of the work, and after printing the finishing – collating, folding, binding, trimming – can make considerable demands on time and space.

Finally, the service will have to consider how its printed materials are to be bound or packaged. This will have a bearing not only on cost, but also on ultimate classroom use.

OVERHEAD PROJECTOR TRANSPARENCIES

These can be duplicated (in small quantities) photographically or electrostatically; and, in larger quantities, by litho printing.

SLIDE OR FILMSTRIP

These can be reproduced either from positive or negative originals. The service will have to decide: whether to process the original stock from the camera, or have that done commercially; whether to produce its own master negatives; whether to buy photographic duplicating equipment and, if so, of what capacity; in the case of slides, whether to do the mounting and printing, or whether that should be subcontracted.

AUDIOCASSETTES OR AUDIOTAPES

The service must decide, first, whether to make its own master tapes and their level of sophistication. On that decision will depend the sort of studios needed, the type of recording and mixing equipment, and the people to work it. Small quantities of tapes can be duplicated on ordinary players; somewhat larger quantities on special duplicators; larger quantities will probably have to be done by a commercial service, or will call for the purchase of expensive equipment.

DISSEMINATION

Learning materials can be brought to the classroom in four main ways:

(a) where the curriculum is centralised, teachers can be instructed to use the course;

(b) materials can be put on the market for teachers to buy, or not, as they choose;

(c) the materials can be developed with maximum teacher involvement and inservice training as part of a wider strategy for educational change.

The last model uses learning materials simply as a focus for a wider effort involving other educational agencies. It is, on almost every count, the most effective way of introducing materials and it involves, in turn, several stages:

(i) there should be wide consultation with teachers over their educational problems – *not* specifically over materials;

(ii) if materials are seen as one solution, they should be planned and devised by a small group;

(iii) at an early draft stage teachers should be consulted over the problems specific to the materials – and this also has a disseminatory function; as does

(iv) testing draft materials in a widespread sample of schools; and

(v) initial inservice training, which should continue through the development of the materials, on a regular basis, during their useful life; combined with

(vi) newsletter, articles and any other form of publicity which will reach those teachers who don't, or can't, attend courses.

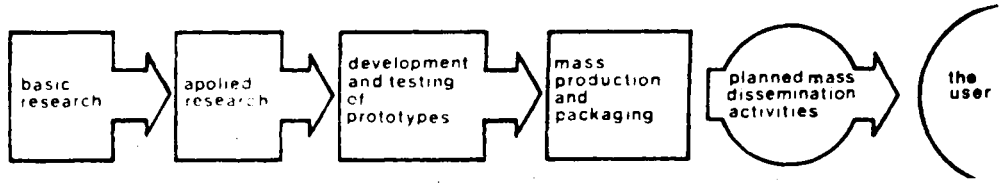
Courses and publicity often fail through poor planning and design – or through sheer boredom on the part of the teacher. Teachers are assaulted by messages and, predictably, ignore most of them. But if they ignore publicity about a new curriculum they are likely to ignore – or at least misuse – the materials themselves.

Even if publicity catches teachers' attention, the dissemination is not a one-step process. Ideally, teachers who have learned to use the new materials should help others to do the same. The most effective ways of organising this will vary from area to area: there is no single prescription. But the principle is central. The developers of material can never, by themselves, cope adequately with its dissemination. They may not even be the best people to try.

MODELS FOR DISSEMINATION

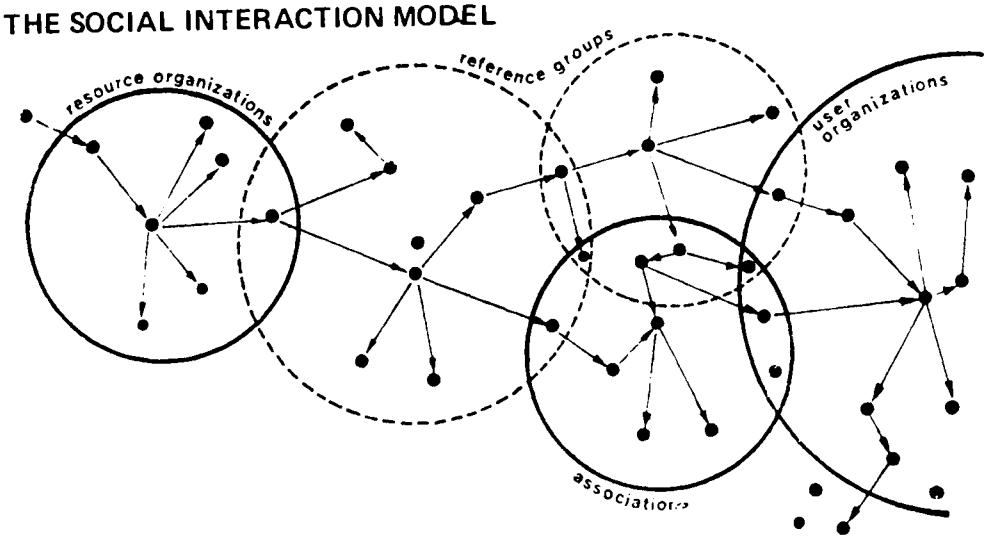
Three main models have been described by Ronald G Havelock for the ways in which educational research and development are disseminated and utilised (*Journal of Educational Technology*, May 1971).

1. THE RESEARCH, DEVELOPMENT AND DIFFUSION MODEL



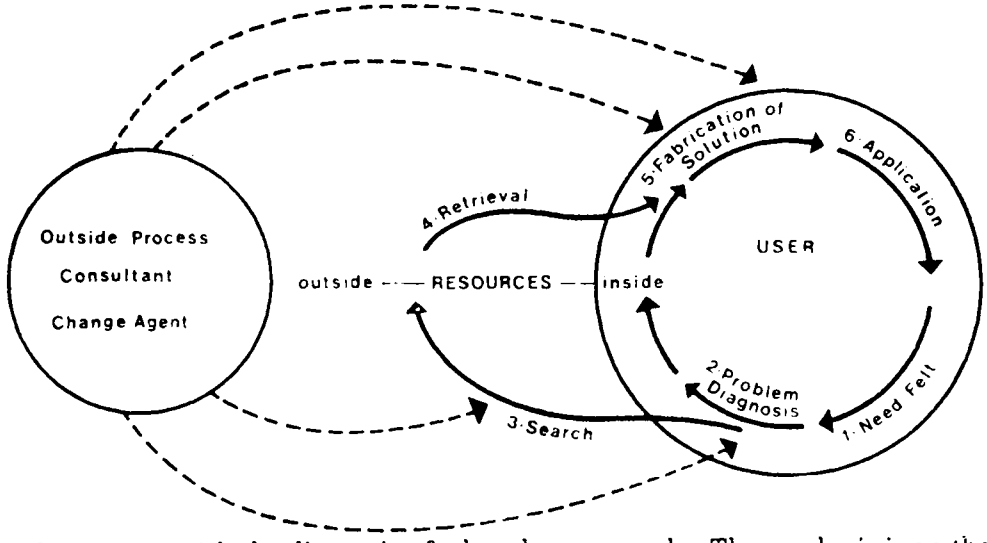
This view of innovation assumes that it will be adopted by teachers if it is offered to them in the right form. Trial materials are systematically evaluated and reshaped to make sure they work and, where possible, the problems of the user are anticipated and adjusted for. This model matches a system where teachers expect and accept central direction.

2. THE SOCIAL INTERACTION MODEL



Here the emphasis is on the pattern by which innovations diffuse 'naturally' through a social system. Informal, personal contact is seen as a vital part of the adoption process, the individual being influenced by the network of groups to which he belongs.

3. THE PROBLEM-SOLVER MODEL



Problem solving starts with the diagnosis of what the user needs. The emphasis is on the teachers initiating their own innovation and drawing on central resources and services to support them.

IN PRACTICE, IT IS THE COMBINATION AND OVERLAP OF THESE APPROACHES WHICH ARE LIKELY TO BE EFFECTIVE.

THE ORGANIZATION AND MANAGEMENT OF EDUCATIONAL MATERIALS

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Education and Social Change

A great deal of thought is being given all over the world to the question of education being an agent for accelerating economic, social and cultural change. If things are allowed to drift and take their own course, the rate of growth of the economy and the associated facets of culture and education is bound to be slow. The imbalances and maldistributions which exist in the developing countries in particular cannot be overcome rapidly, while their existence for any length of time creates social and political problems. The state of the world, and man's knowledge of it, are such that people compare their conditions with those of other sectors of society and other countries, and they place high expectations for transformation of their lives with their country's leaders. It is in this context that education has to play a positive role as an instrument of development and change.

It is again in this very context that objectives of education are established by any government in any country. These objectives are specific to the history and current needs of the situation in any given country. Therefore, no country can really provide a model for a ready-made answer for another; but each can certainly learn creatively from the experience of the others.

Social objectives and, in turn, educational objectives determine to a large extent the nature and pattern of the organization and management of educational materials; so also does the choice of materials from the large variety that is available.

Special Problems arising from Social Purpose and Conditions

In India, after Independence, popular expectations have been roused to an immense degree since, in a democratic and free society, equality of opportunity is the demand of every section of the society. Each section knows that a great many opportunities in life are connected with the various levels of education and training. Hence, there has been a great demand for all levels of education. Equality of opportunity for the individual and, in fact, rapid economic development in the society are connected with universalization of elementary education. We have found that the deprived sections of the society cannot afford to send their children to whole-time schools for given periods of time in a year and for a span of several years. The children are a source of some financial or service benefit to the family and the poor cannot afford to give up this advantage. This obliges us to think of various patterns of non-formal education departing in content and in institutional structure from formal education. The implications of this approach for the organization and development of materials are immense.

An important educational fact is that children learn a great deal within their families in the pre-school stage. We cannot intervene to give a better quality of learning to this stage of experience without the education of parents and change in living conditions. Even if we leave this immense task to be taken up separately, it is a fact that the child learns far more efficiently in the school if he is taught in the mother tongue. Now in a vast country like India this involves the production

of educational material in a large number of languages. Even the constitutionally-recognized major languages are fifteen in number. For historical reasons in our country, education is a State subject which means that the content and organization of education is the business of the various States. This again is connected with the question of a large number of languages in which material has to be produced and makes the problem specially complicated.

Our educationists have come to the conclusion that in order to save education from becoming bookish, it has to be based on the environmental approach. In the very first few classes at school we need not differentiate between science and social science because a child's experience is not boxed in such categories. On the other hand if environmental situations are to be a source of learning, then we cannot have a fixed and set pattern for the whole country. We can give guidelines, we can prepare teachers, but a great deal of initiative has to be left to the teachers and managers of schools, and obviously this complicates the situation with respect to the organization and management of educational materials.

Our social system which has given rise to our expectations and aspirations also demands that education is not to be neutral with respect to values. We cherish social justice, socialism and secularism; and while we have a multi-cultural policy we need a concerted effort to bring about national integration. Now these are new values and new social objectives which arose as a consequence of the independence of our country, and the problems before educationists and those who manage and develop educational materials is how to build these values in various disciplines positively, and on the negative side how to identify and if possible eradicate contrary trends which tend to persist and even are generated afresh time and again.

I wish to indicate by these comments that there is a close relation between social objectives and educational materials and their management, and it is quite obvious that this is not a simple problem in which one country's experience can be of direct use to another. The situation is further made difficult by the fact that the countries with high aspirations for the future have scarce resources at the national level, and so also at the individual level where one cannot afford to buy even seemingly inexpensive material, where mass media like radio and TV have serious limitations. In our country there is, however, a great asset in the fact that we have a large base of know-how at all levels. We have scientists, philosophers, and educationists: we have technologists in all fields including film and television. Therefore, whatever effort we decide to make, recognizing fully the social responsibility and the complicated situation, we can potentially implement no matter what the software and hardware required may be.

The Central Agency of Development and Management in India

Before focusing attention on the specifics let me indicate that while education is a State subject there exists a very powerful machinery for consultation, discussion and possible implementation. One of the facets of this machinery is the National Council of Educational Research and Training (NCERT). This is an autonomous body funded by the Central Government, closely related to the governments at the Centre and the States because the highest policy-making organ of the NCERT has State Education Ministers as its members and is presided over by the Union Education Ministers. On the other hand, as far as its internal management and academic policies are concerned, it is free to make its own decisions. It is academically equivalent to the Central Universities. Thus the National Council of Educational Research and Training is an independent body, an academically-oriented organization, and yet its policies are practical and its priorities are realistically based. To a considerable extent in the field of education it can talk to the States irrespective of the political complexion of their governments because the basic objectives are not challenged by anyone.

The NCERT plays a very considerable role in all aspects of school education and certainly in educational research at all levels. It has departments with academics who can develop the total concept of school education in the form of a curriculum, with a consultative machinery of people from all over the country. It can cause textbooks, supplementary readers, teachers' guides and any other needed material to be written and produced. It develops kits useful for science education, mobile laboratories and television programmes and films. It has an apparatus for extensive evaluation of this material in the school system and it also runs four Regional Colleges of Education to see in practice how the materials fare. The credibility of this Organization on the academic plane is very high, so much so that many States are now setting up State Councils of Educational Research and Training. The books produced by the NCERT and the kits developed by it have found favour extensively in the country and abroad.

Educational Materials

Textbocks

Textbooks are the most popular and perhaps the most important educational material. They are cheap and their content is explicit. But as I have indicated they are a very difficult material to handle in a modern educational system with a multi-lingual population. Obviously, no central organization can produce textbooks which could serve as more than a 'model' in a country like India. This is because the States have their own academics who need not always agree to the centrally-produced material and also because the different cultural, historical and environmental backgrounds have to be taken into account. Once the States produce their own books, there are two types of problem. One is that in each State there are linguistic minorities which may number as much as fifteen. Often the number of people belonging to some of the minorities is small and, therefore, it is expensive to translate books in so many languages for a small population. Books cannot be borrowed from the States where the other languages are used because the syllabus may be different. As a solution to this problem, we would like the curriculum to be divided into units which transcend the conventional boundaries of disciplines such as history or geography or physics or chemistry. The unit system has many other advantages but in the present context we believe that the States could take a large number of units from the central pool without change. Where they feel that their specific needs require different units they will have such units produced in the States. Therefore, it is possible that a large percentage of the curriculum, perhaps 60 to 80 per cent, could be common all over the country for a few years until it is reviewed by an adequate machinery of consultation. The common curriculum could then be translated into various languages and used in the school system. The problem of providing suitable books, or collection of units, for the minority schools would then be reduced to the problem of multiple translation of the specific curricular units which a State wants.

The danger in a highly centralized curriculum or even a core of the curriculum is that the possibilities of modification and improvement are reduced; these possibilities require a multiple alternative type of approach. However, the decision has to be taken in the light of the cost involved.

One of the great problems we have faced in connection with textbooks is the training of authors. Academics are so straight-jacketed that they tend to perpetuate what they themselves have learnt. The needs of today's situations are very different as I have described earlier. Therefore, the training of authors is not only from the point of view of style or other techniques (such as illustration by suitable diagrams and the choice of proper exercises), but in the substance of what they want to communicate. This is a problem which is being tackled and we are gradually building up a group of resource persons in every State.

In connection with textbooks, it may be mentioned that the NCERT's textbooks are produced through a system of subject panels. Once the curriculum is identified and the scope of a particular subject in that framework is made clear, level by level, a number of people who are subject experts and those who have been teachers in schools are assembled to discuss further details. The draft of the book is written and circulated widely for comments and, where possible, tried out in the schools for some time. A stage then comes for the book to be printed and made available at cost price. In the States there are two systems, one is similar to the NCERT process and the other is a system of approving textbooks produced in the private sector. The books published in the private sector are more expensive, quite often two to three times more expensive. Hence, there has been a tendency for the States to enter this field more strongly over the years. The practice of different institutions selecting books on the advice of their own staff or committees is giving way to the practice of accepting the books prescribed by the Boards which conduct school-leaving certificate examinations or the State Departments of Education.

Films

We have a Central Films Library in the NCERT which has thousands of selected educational films available for loan to subscribing institutional members. In the States too there is a facility of distributing films. Here again one of the most important problems is language. A large number of good educational films available are in English and since education in the mother tongue was adopted as our policy, children are unable to really benefit from these films. Besides, the overall content of the English language films is alien to the way of life in our country and this proves, at least, to be a distraction. Therefore, there has been considerable effort and emphasis on indigenous production of films.

The NCERT has made a number of scientific films, particularly those which go with the science kits, but the problem is to have the films available in a large number of State languages. Various techniques are being tried out. Since the educational films rarely use direct speech by those who are on the screen, the problem of synchronization is simpler, and the technique of having a cassette recorder with the commentary in different languages fed through the amplifier of the projector is being used successfully.

The purchase of films as well as the preliminaries to the production of films are based on committee work where subject experts as well as educationists are involved. We have a large programme of producing various kinds of educational films in the country. Some of our efforts at the moment are directed at the satellite instructional television experiment (SITE). The Ministry of Information and Broadcasting and the Indian Space Research Commission are handling the software and hardware respectively but a number of educational films are being made by other organizations. The NCERT is making films for teacher training in SITE. These are not programmes of institutional education because the television audience would be a mixed age-group. These programmes have been so carefully worked out that every village where the receiver is installed was studied for its sociological aspects.

Tapes

Video and audio tapes have also been recently taken up for extensive use in the educational system. The programmes connected with the satellite are mostly on video tapes, and experiments with video tapes in educational institutions are being done in a number of places. As far as audio-tapes are concerned, these are being made on a small scale to supplement correspondence education and also to provide general education. One of the projects in hand is the collection of tapes of important cultural, scientific, political and historical events which are already available in the archives of various agencies in India, and to edit and add

commentaries to these tapes so as to interweave them in educational programmes.

Science Kits

Science kits have been developed at the NCERT for the first eight years of schooling. These kits are of great importance because education in science is to be compulsory in India up to class X (i.e. for students of age 16 +). Education in science is also likely to contribute to the development of a more rational and a more open outlook which would be conducive to strengthening concepts of human equality and national integration. These kits are quite inexpensive and their development was based on a great deal of consultation with experts and trials at schools. The kits are accompanied by instruction manuals and they have lately been strengthened with corresponding films. The project was assisted by UNICEF and the kits produced were distributed to a number of schools in the States. Although the number of schools receiving the kits ran into some thousands, that was a drop in the ocean because we have approximately 600,000 schools. The States have now taken over the procuring of kits for their schools. Extensive facilities for training of teachers to use the kits were provided by the NCERT and by the State Education Departments. A number of teacher training colleges and schools have also been provided not only with the kits but with some other science equipment to strengthen the training of teachers.

Resource Centres

A national centre for textual materials was set up in the NCERT. Textbooks from all the States were collected and placed in the Centre but the development of the Centre has been stifled for various reasons. The periodic change of textbooks prescribed is a great problem. At the moment a large number of centres are operating in the country which may be called resource centres. There are State-run and private organizations which are called community science centres where a good deal of material is displayed, where students can work on scientific projects or in the workshop, and where training is provided for teachers. Of course, there are film shows and exhibitions connected with these centres. Some teachers' organizations have voluntarily started resource centres in district towns. These work in a manner similar to the teachers' centres in England. They have textbooks and other books to benefit the teachers in various subjects and some of them have facilities for showing films and even for producing teaching aids by mutual assistance. There are also extension service departments attached to teachers' colleges which have a selection of instructional aids and materials. But admittedly in this field we have not made a great deal of headway.

Museums and Exhibitions

The use of museums and exhibitions, particularly to strengthen the teaching of science, has been given considerable attention in the last few years, and mobile laboratories and museums are being assembled to help the schools particularly in the rural areas. There are programmes of adult education in the country which would involve the setting up of a large number of Nehru Yuvak Kendras (Nehru Youth Centres) which would have facilities similar to a district-level resource centre. A large number of such centres have already been established and are functioning with a great deal of local initiative.

We have not undertaken any extensive studies on cost effectiveness of educational materials or establishments. But this is admittedly an important aspect to develop. At the moment one is guided by certain broad concepts and values with respect to the various materials and media.

INDIVIDUAL LEARNING AND TEACHING
EXPERIENCE WITH TEACHING THE PHYSICALLY HANDICAPPED

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Before discussing the implications of individualized learning and the severely disabled, may I tell you something about the general background - the problems of developing schemes in countries where the incidence of blindness and physical disabilities is sometimes on a quite appalling scale, where the fight to survive must sometimes overshadow the need for education, and where disabilities are sometimes regarded as something of which to be ashamed - and the implications of these factors on the work of the teachers of the handicapped.

In discussing this wider tapestry, my thoughts go to a variety of field situations; to the provision for long-term child patients in hospital schools, to teachers coping with spastics, in some tropical areas to young people suffering from leprosy, to the inexperienced teacher faced with helping his first spina bifida case, and the child with bones so fragile that the slightest movement may mean yet another fracture. (I once taught a bed-ridden child, who, at the age of ten, had already suffered nineteen major fractures and breakages). Our work covers amputees - sometimes those with immobilized limbs where absolutely no manual control exists, children who cannot even turn the pages of a book. My thoughts go as well to a child in a remote Zambian village, who incredibly writes an almost perfect exercise using his toes; a child taught with superb devotion by a village headmaster. Further we have to think of the multiple handicapped, victims of disease, congenital abnormalities or accident, some often with a tragic history and a horrifying permutation of disabilities.

Many of you will have visited schools for the deaf and for the blind. You will have seen the sophisticated equipment we use alongside the humbler improvised teaching aids. You may have seen teacher and child working in harmony - patiently eroding the barriers which severe disabilities impose. How many of us realize that a teacher of a profoundly deaf child has first to teach the child that sound actually exists? How many of us are aware that, thanks to individualized learning systems, blind students are now accepted in many Commonwealth universities, and that they are tackling successfully a range of subjects which may vary from law to advanced mathematics? How many of us appreciate that teaching handicapped children means placing ourselves at least in thought in an equivalent position. These children need our help now, but because of the shortage of trained staff and equipment in some of our countries, the individualized techniques needed to save them from further mental stagnation may only reach a comparative few. For this reason this paper keeps in mind the broad field conditions in many parts of the Commonwealth and seeks to link them with the relevant practical material aid possibilities. It keeps in mind as well that in younger countries of the Commonwealth there are many other social, medical, and educational priorities.

Teacher-Pupil Relationships

What then does individualized learning mean in practical terms to teachers of the handicapped? It is first an indispensable element in an armoury of ideas, methods, and equipment. Psychologically it is a factor which implies building up a "one to one" relationship between teacher and child. Sometimes we call this rather intangible aspect of our work a companionship element. Whatever we may call it,

it is a component which transcends the most sophisticated and expensive of material - an element which money cannot buy. Yet though its impact must be immense, textbooks and training courses rarely mention this point. It is the factor which should do the most to help young people, cut down by tragic disabilities and deformaties, to adjust and to accept a situation without bitterness or rancour. I mention it so that human and material elements may be kept in perspective and be interrelated. The latter indicates directly enough providing the right equipment at the right time. It calls for continuity of learning apparatus and sensibly graded and prepared material. It means a readiness to compromise, to improvise, and the ability to use a variety of teaching aids. Teaching aids, whether produced in a factory or made locally, form a plank in bridging effectively the learning gap.

Attitudes to the Disabled

Materials and teaching skills are one thing, but we have in some countries the problem of attitudes towards the severely disabled. We have to convince people that proper training can do much to help the handicapped child to ultimately take his place in the community, and that his disabilities should not brand him with the stigma of second-class citizenship. It is for this reason that our work with the disabled child must be seen in action in the midst of communities. An "open door" policy in special schools will do much to build a bridge between work methods, materials, and the community. We have constantly to serve, as well, a wide range of handicaps. For these reasons the dry, dusty pedantic thinking which in the past may have inhibited this work, has given way to an approach in which co-operation and vitality are the keynote of activities.

Administratively, individualized learning may sometimes mean pursuading those who control and organize educational services to accept that the severely disabled have a place in the overall educational pattern and framework of the country. Also that special education, and the individual learning situations it imposes, may often mean a major financial provision. It may mean as well accepting that, even in Commonwealth countries where primary education is still not universal, there is a strong case for at least implementing some form of pilot scheme so that a growth point strategy can be followed which will be ready to expand when more funds and personnel become available.

For many years - certainly in nineteenth century England, and more recently in younger countries - educational work amongst the disabled has been overshadowed by other educational priorities. This is quite understandable, but in an age where many disabled people can by means of good training become economic assets instead of costly liabilities, is it logical to relegate this area of education to enforced obscurity? It is a fact that though special education and its techniques have found their way into the wider school systems, they still show signs of the aura of mystique that formerly surrounded them. Fortunately, in recent years this undue stress on expertise has been considerably reduced.

This brings me to a fundamental point. In our jet age society, the severely disabled are everyone's concern. Whether we are teachers, parents, social workers, or administrators, this fact is inescapable. Individualized learning will not make the impact it should unless there is a receptive, helpful community at hand to welcome the disabled young person back into society. People must become handicapped minded. Major break-throughs are being made in many countries through media- and government-backed campaigns. But even good teaching, first-rate equipment and excellent administration need to be supported by community involvement and participation. If this fact can be recorded and put before governments so that it can constantly find expression, a service to the severely disabled all over the Commonwealth will be rendered. It is a fact to hold before every administration, however forward looking its outlook may be, that individual learning does not mean in this context working in splendid isolation. It implies working towards the goal of

social and economic integration, using the tools of learning and individual methods and materials as stepping stones, and not as the ultimate object of the exercise.

It is a fact that almost every Commonwealth country has now made provision for its disabled through either legislation or in national development planning. In some cases these are still indications of intent rather than of material action, but seen in the overall pattern of development, when so many sectors of education have been seeking recognition, this is a key development. Special education for the disabled is being grafted into the educational pattern of many Commonwealth countries as a right. This in years to come will provide a launching pad for progress. Historically, work for the disabled in Commonwealth Africa and Asia is following a typical cycle of development. The education of the blind has generally been tackled first, and this has opened the doors for the other handicaps, for the deaf, followed by the physically handicapped, and finally the Cinderella of all disabilities, the mentally handicapped. From all this one constant factor emerges. It is that a personal service in the form of individualized learning - with all its administrative, professional, and technical material aid - is vital.

Criteria for Effective Educational Provision for the Handicapped

Around what principles must we develop individualized learning for the disabled child? I suggest they include community involvement; community system of equipment and allied materials; sound teacher-training; an overall adviser-inspectorate service; a service directing developments; an administration aware of the specialized requirements of the disabled child; and government acceptance in principle of the need to be responsible for the disabled. Of these principles three are of particular interest to this conference. They are the logistics of providing material and equipment, teacher training backed up by a well organized inspectorate service, and an understanding administration.

Equipment and teaching aids and their servicing requirements probably present the most formidable problems in younger countries of the Commonwealth, but if we analyse basic requirements for the three main categories of handicapped children it is quite surprising how much can be done through local resources. It is from this starting point that a number of countries have been recommended to include in their National Development Plans for their handicapped a scheme to make certain types of aids, to distribute them from a central depot along with those which have to be imported, and to provide facilities for the technical servicing of equipment. This scheme is, I suggest, vital in the building up of services for the disabled. It is not a luxury, but a necessity. Orthopaedic workshops have already been started in the West Indies, Nigeria, Uganda, and some other countries. Local servicing of deaf aids has been a feature of Zambian development for some years, and more recently in East Africa technicians for repairing Braille writing machines are now under training. This is just one aspect of work. What about the day to day classroom requirements? In Central Africa, a teaching aids centre has been started which by 1972 produced an array of tactile aids for its blind and some visual material for the deaf. At present it has an ambitious list of aids for production for the physically handicapped, all of which can be made by local draftsmen. The first appendix to this paper consists of items of equipment which are suitable for local manufacture for various categories of the disabled. This list is only an indication of the type of service which can be provided - clearly its development potential is immense. In areas where funds for the disabled are very limited, it may be felt that the demands of an equipment workshop for the handicapped are beyond local resources. For this reason a list of basic tools and materials appears as Appendix 2. It will be seen that the items are simple and inexpensive.

Local Workshop for Teaching Aids

Many of us have had bitter experience of the delays and costs of importing teaching aids, and of the accompanying administrative problems of getting foreign exchange and customs' clearance. For this reason, I urge that, as a matter of principle, each country establish its own aids workshop for the disabled. This might form the basis of a conference recommendation. Its functions would be: (a) to service material in use including imported items, such as deaf aids; (b) to make equipment and aids (including teaching material) for all categories of the disabled; (c) to distribute material to schools and open education systems as and when required; (d) to loan individual specialized equipment such as apparatus for the deaf-blind; (e) to pioneer basic research work on equipment for local needs, utilizing local material and "know how"; and (f) to collaborate in training technical personnel with a local vocational unit (e.g. an electronics course and deaf aids).

Local manufacture is not unrealistic or remote. Here are some examples of the types of work which can flourish. For the blind, map equipment - constructed from sand paper, papier mache, cardboard or similar material - is perfectly straightforward. Multiplication tables and interlocking word-building games in Braille are also quite feasible. The physically handicapped can be provided with wooden suspension apparatus for handwriting, a magnetic page-turner, mirror combinations for prone cases in bed; the deaf with an array of visual materials, lipreading illustrations and simple loop systems. Though some countries in Africa and Asia have started to make their own wheel chairs - rugged apparatus suitable for rough terrain - others are still importing low-wheel trolleys for poliomyelitis limb cases at enormous expense when local craftsmen could make dozens of them in a few days. Some local printing firms are co-operating in printing well-illustrated material for the deaf in the vernacular. A start has also been made on making games for the blind.

Training Teachers for the Handicapped

The training of teachers for work with the handicapped, and the general use of specialized material and equipment have been given priority in some Commonwealth countries. In others, however, scant provision has as yet been made. What qualities then are we looking for in teachers for this type of work? How do we encourage recruitment? Can we provide a progressive career for teachers with reasonable promotion prospects? Are training courses sufficiently practical? Has enough attention been given to the multiple handicapped in general teacher training programmes? These are some of the questions which surround our work and directly or indirectly impinge on the field of individual learning.

Special education is one of the sectors of teaching which is moving forward rapidly. A few years ago, in many countries it was declared impossible for the blind to take part in elementary horticulture or agriculture. Today this attitude has changed thanks to new equipment and original training methods. Individual learning received one of its greatest boosts, when "integrated" Open Education Systems for blind children were introduced in Africa in the early 1960s. Developments in the area of the education of the deaf are equally refreshing. Sign language, introduced in some African countries just after the last war, has now been largely superseded by modern lipreading techniques. In the past, teaching the disabled has been hampered by inadequate staff training and recruitment. Many promising young teachers have by-passed this work feeling it to be something of a "dead end", offering little scope for intellectual effort and imagination. This feeling may still persist in some minds. Yet it is the teacher of the disabled child who probably exerts more influence, has greater flexibility in methods of approach, and meets daily challenges which call for more improvisation and thought than most other teachers. It is not a case of finding the answers to problems in a textbook or from training college notes. Each disabled student, each child with a severe disability,

is an individual who reacts differently to a combination of physical and mental pressures. We can produce huge lists of equipment for our work with the handicapped. The material is not the problem, so much as the ability to make the best use of it. In training teachers of the handicapped, are we really providing the approach which makes equipment the servant and not the master of our teaching? This might be the theme behind our discussions of individualized learning and the disabled. Quite recently I have seen stocks of expensive equipment untouched after years because of poor teacher training services. Of course we must have teachers with patience and ability - equally they must be capable of surmounting challenges by improvisation, imagination and tenacity. This then is the teacher training message - the disabled need the best to make possible what may seem impossible.

Planning, Administering and Supervising the Education of the Handicapped

In discussing teacher training, we should keep in mind three other factors. The first is the need to keep abreast of developments in the ordinary school systems, and to encourage an interflow of ideas and methods. The second is to adapt, wherever feasible, teaching material for use in primary and secondary schools for the handicapped. How easy this is, if a little thought is given! Most of you will be familiar with arithmetic games in the kindergarten. The spinning top, normally excluded from a class for blind children, can, with a few materials such as strips of sandpaper and Braille symbols, be readily adapted for blind infants. This is the kind of thing we must encourage teachers to explore - "go getters" who are prepared to experiment and make their teaching live. I can take you to special classrooms in Africa where the most attractive tactile aids include anything from seed recognition trays to weather charts - rooms crammed with interest, the kind of things well-loved by children everywhere, whatever their disability. Behind all this is the third factor - namely, the need for a good advisory inspectorate service to support young teachers and to provide guidance and courses in the materials and equipment they may need. This is what many of the younger countries badly need, local leaders who are capable of assessing equipment and teaching methods which are relevant to the environment, traditions and cultures of the areas they serve. This is one of the main functions of an inspectorate service. Another is to up-grade existing services for handicapped children and represent the needs of special education and its heavy logistic requirements to the administrators.

Sound planning and administration should be the subject of constant consideration. Understandably, few administrators are conversant with our material requirements. Few may appreciate that our equipment requirements must often be exceedingly costly, particularly in the case of the deaf: few realize either that the teacher-pupil ratio using the material must be equally costly. Planning, particularly when it is possible to include schemes for the handicapped in National Development Plans, tackles these formidable aspects at an early stage. This will at least ensure balanced overall development. The question of growth-point pilot schemes in younger countries is especially relevant in this context. We have to justify expenditure, which, if applied to the running of ordinary primary schools, would appear wildly extravagant. It has been calculated that in some areas the cost of providing equipment for ten deaf children may be sufficient to equip a school for 1,425 children; similar comparisons for the blind and physically handicapped are equally revealing. The first point in justifying such expenditure is that handicapped children should not be excluded from educational services because they are handicapped. A start must be made somewhere, however small it may be. Secondly, using wherever possible the open education "integrated" systems of educational equipment, costs are generally reduced enormously, and, incidentally, the system provides a much more natural setting for living and learning in a community.

Conclusion

Individual learning has a message for us all, a message of tolerance, and understanding. In the past, to our regret and shame, some of us have seen how a deeply thought-provoking work has been dressed up in flowery language which most ordinary people cannot understand. Our ability and our "know how" will remain in a vacuum unless we are completely honest with ourselves, the community and the young people we serve. When we do not know the answer to a specific problem, or when "equipment-wise" we may find its use difficult or its value doubtful, it is better to say so and consult our colleagues than blunder on making expensive mistakes at the expense of those whose future may depend on us.

Individualized learning for the disabled means team work, combining teacher training, equipment provision, and administration. Years ago teachers had to work in isolation, and this set the stage for patronizing attitudes and sometimes an equally arrogant administration. The losers in this type of feuding were always handicapped children. Over the years our work has developed a "new look" which has no time for this type of thinking. Petty jealousies are out; new ideas and collaboration are in. The days when our administrator could undo the work of years, as sometimes happended in the distant past, are over.

Our task through good teaching and the use of a suitable equipment supported by a smooth administrative body, is to bring a message of hope to handicapped people everywhere; a message which will permeate through every strata of society with its assurance that the barriers surrounding the disabled child can and will be broken if it is humanly possible to break them.

APPENDIX 1

Suggestions on Types of Apparatus which can be Made in a Central Workshop Specializing in Teaching Aids for the Handicapped

Physically Disabled

Wide base walking aid; roller crutch; walking sledge; knee protectors; writing aids for mouth; one-hand knitting aid; adapted spoon; polio drinking aid; work table with hand sling; mouth page turner; magnet page turner; leather page pencil holder (for those whose fingers are too weak or stiff to grip a pencil); artificial limb (using springs); wooden bed gantry; child bed desk; calipers.

Aids for Blind

Recognition charts; Braille writing aids; calendar charts; metrication units in Braille; graded peg boards; seed recognition trays; plant recognition trays; meaning of 'teens' unit; spinning top (number game); physical features; mathematics diagrams (wire and magnetic board); Braille word building set; miscellaneous three-dimensional models.

Aids for Deaf

Flannel graphs; number word material; fraction apparatus; adjustable mirrors; puzzles (speech training); audiometric systems; miscellaneous visual material.

APPENDIX 2

Tools and Materials for Workshops

Black and Decker driller; Black and Decker kit and accessories; saws; planes; chisels (6); brace; bits for brace; hammers; screwdrivers; G-clamps; fretsaws and blades; tongs, nippers, pincers; vice (woodwork); hacksaw; brushes; scissors, shears (metal); files; gas bottle and accessories for hand soldering; vice (metal work); transformer for polystyrene cutter; overhead projector including accessories; slide projector or copying apparatus; shelves and table; lathe; glass cutter; soldering iron; nails, screws, nuts, etc; paint; glue; timber, hardboard, softboard, plywood; wire (iron, copper, aluminium); glass; mirror; expanded polystyrene; plaster of Paris; plexi and glue; brazing materials; sheets of aluminium, brass, iron, etc; sandpaper, polishing materials; work benches.

LEARNING AND TEACHING IN GROUPS - CANADA'S EXPERIENCE WITH TEAM TEACHING

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Pressures for Change

On Thursday, 25 July 1975, a link-up of the Apollo and Soyuz spacecraft occured some 137 miles high in space. Through international co-operation that overcame two radically different technologies, languages, and social systems, these two spacecraft were launched from pads 6,500 miles apart and successfully linked together. It was an unprecedented team effort on both sides. It is, therefore, significant that at this particular conference some study is being given to the manner in which educators can work together as a team to improve the teaching and learning process in our schools.

In any society, education becomes the product of a number of variables - the values, ideologies, and cultures of that society, as well as the impinging pressures caused by politics, economics, and demography.

Since World War II the public expectations of education in Canada have risen considerably. The faith that education would improve the social conditions in the community and the economic expectations of the individual, combined with a rising birth-rate, created an unprecedented demand to extend the principle of universal access from elementary to secondary, and, finally, to university and other post-secondary education.

In 1950, the school age population (ages 5-19) was about 3.5 million. A decade later, as the result of the increased birth-rate as well as the addition through immigration of some two million new Canadians, it had increased to 5.2 million. Many new teachers were needed and the demand for new school accommodation placed heavy strains upon most educational systems in Canada. During the period 1965 to 1970 the Province of Ontario was opening five new classrooms a day. The 1960s became the "golden age" of educational development in Canada.

At the same time many educators in Canada began to give serious thought to the traditional role and structure of their schools. As public interest in education increased and the problem of education became more complex, the systems and institutions were extensively examined by government commissions set up in every province of Canada.

As these reviews were undertaken, Canadian education became characterized by a high degree of innovation and change. Developments in such areas as "open plan" education, independent study, semestered credit systems, individualized programmes, alternative forms of education, and team teaching became commonplace. A high interest in team teaching resulted from enrolment pressures as well as from a desire to provide an integrated team approach. It is timely when, during the current period of refinement and consolidation of educational development in Canada, we pause and reflect on some of the successes and failures in Canada's experience with teaching and learning in groups.

What is Team Teaching?

Dr J. Lloyd Trump defines team teaching as follows:

> I prefer a relatively broad definition of team teaching. The term might apply to an arrangement whereby two or more teachers and their aides, in order to take advantage of their respective competencies, plan, instruct, and evaluate, in one or more subject areas, a group of elementary or secondary students equivalent in size to two or more conventional classes, making use of a variety of technical aides to teaching and learning in large-group instruction, small-group discussion and independent study (1).

Dr Trump emphasizes the co-operative involvements of the team members. Co-operation is required in drawing up its philosophies, aims, teaching methods, and student groupings. Dr Trump further defines team teaching by stating what it is not:

> Team teaching does not mean... three teachers and ninety students who occasionally come together for a presentation to the total group and then return to their respective classes of thirty. This simple variation of class size is not likely to produce any more gains for teacher or pupils than the hundreds of class-size studies conducted in this country and in others for many years (2).

In a study of team teaching in Ontario secondary schools, Munro and Wiley noted a lack of agreement on the meaning of team teaching. Slightly more than half of the principals of 36 Ontario secondary schools following a team teaching programme selected the following definition: "some type of planned sharing of responsibility by two or more teachers for instruction of a group of students (3).

Generally speaking, it would appear that the definition of team teaching offered by Molnar is the most operative at this time "...a group of teachers who share major responsibility for the instruction of the same group of students, and who co-ordinate their instructional activities among themselves." (4)

Why Team Teaching?

Generally, team teaching proposed to restructure the traditional school and classroom organization in an attempt to find a new framework that would give better and more immediate attention to individual pupil and teacher differences - both strengths and weaknesses. In terms of human energy, the amount of teacher energy wasted through the repetition of lectures from class to class is considerable. Surely a real saving would be gained if teachers delivered a highly motivated lesson to all of their students at once. In addition, it would be valuable if small groups of students, five to fifteen in number, could meet together at times when student and teacher dialogue were required. There would also be merit at other times in having students free to pursue their studies independently under the guidance and assistance of the teacher.

Although many schools have attempted to make use of teacher teams, for a variety of reasons many such attempts were unsuccessful. This leads to the obvious question: Why are schools interested in having teacher teams?

Proponents of team teaching suggest a number of reasons why team teaching is "superior" to the conventional form of instructional organization (i.e. one teacher assigned to one group of students). Some of the advantages claimed are as follows:

(a) Because smaller groups can be organized into larger groups, thus freeing some teachers, fewer teachers per number of children

are required.

(b) Smaller groups may be separated from the larger group, thus allowing for greater intensity of work, more individualized teacher assistance, more effective remedial work, better use of part-time teachers and/or teacher aides, greater individualization of instruction, and fewer disciplinary problems.

(c) Because teachers of the same team frequently interact with each other, they learn much more from each other and are stimulated to prepare lessons with greater care than those teachers who work alone.

(d) More than one individual observing the same pupil, and team discussion of pupils and their work leads to better understanding and assessment.

(e) Weaker and less experienced teachers may gain support and assistance from their "abler" colleagues and also have greater opportunity to improve upon their teaching by observing the "better" teacher (5).

Although these arguments look, at first glance, to be impressive and substantive, many problems arise when the objectives are put into practice. Teachers and administrators have made the following observations:

(a) Team teaching appears to demand more staff, not less.

(b) Very large groups pose several problems: (i) they are difficult to control and the number of teachers who can handle such groups is limited; (ii) responding to individual questions and pupil discussions are virtually impossible techniques to use with the larger group and therefore teaching methods are restricted to teacher/pupil/audio-visual presentations. In using too much of the latter, one risks losing pupil interest because of inadequate pupil involvement.

(c) Interpersonal difficulties occur between team teachers, and not all teachers can fit into a team.

(d) Team teaching demands much greater preparation and planning time on the part of teachers, and most often sufficient time is just not available.

(e) Because team teachers are responsible for a greater number of children, they are superficially acquainted with more children than in the conventional one-teacher setting - but do not get to know many children well.

(f) For the most part, teacher training in Ontario has prepared an individual for the self-contained classroom setting. Most team teachers have received no preparation for team collaboration or training in interpersonal skills (6).

The class size question has long been discussed and researched by Canadian educators and teachers' federations. Many schools have moved away from a fixed number of students per class for each period and provide more flexible groupings. These include large group instruction, small group seminars, and individual or independent study. Each of these forms is commonly found in schools involved in

team teaching.

It may be of interest to read what was said by the Provincial Committee on Aims and Objectives of Education in the Schools of Ontario in 1968 in regard to team teaching under the heading "Teaching Methods".

> The growing interest in integrated instruction through team teaching is leading teachers more and more to a flexible pattern of teaching that employs a wide range of techniques and the special capabilities of the members of the teaching team. The co-operative planning of learning experiences necessitates greater attention to objectives, both immediate and long-term, and in turn leads teachers to adapt classroom procedures to meet these objectives (7).

Canadian educators have become increasingly aware of the importance of establishing close working relationships with the community at large. Co-operative teaching and learning programmes in the schools can readily capitalize on the wealth of human and material resources available in their local communities. In this way, the school can be extended as a cultural, social, and learning centre in the neighbourhood for people of all ages. A number of school systems have provided alternative and independent study programmes at the secondary school level that have made excellent use of the community resources. This option has provided an alternative and more informal schooling based upon a larger and varied team of teachers.

There are apparent contradictions in the literature on team teaching and satisfaction. On one hand, several researchers claim that team teaching does provide a means through which teachers can derive a great deal more job satisfaction (8). On the other hand, other researchers, are not as optimistic about the benefits of team teaching upon job satisfaction (9). Of the literature that bears some association with satisfaction in team teaching, most of the information comes from subjective reports of various team projects and from surveys of attitudes towards team teaching.

Organizing for Team Teaching

Teachers are frequently grouped to form two major kinds of teams: vertical and horizontal. Vertical teams combine teachers with specialization in different fields who share their efforts in offering a course. Examples of vertical teams are English teams and mathematics teams. Horizontal teams are generallly regarded as inter-disciplinary in nature. Teachers of related disciplines might combine in such areas as art, music, and literature, or science and mathematics.

Another version of team organization makes provision for three categories of membership. These are as follows:

> (a) A category of semi-permanent core members, the functional specialists in the teaching of a discipline (a group which may include teachers of children of all age levels).
>
> (b) A category of "floating" members, some of whom may remain with a given team for a lengthy period, while others flit briefly from team to team or perhaps belong to several teams at the same time. (The person who naturally enters this category will possess a qualification that gives him inter-disciplinary status, and may be anyone from a child therapist to an expert in research methodology).
>
> (c) A category of sub-professionals, who are probably better described as associated members than as true members of the team but whose voluntary interest in team activities will be encouraged (10).

Research Pertaining to Team Teaching

Apart from the physical environment (e.g. open-plan versus traditional school architecture), what variables are related to teacher satisfaction with the team teaching situation? A 1975 study by Dr Marjorie Arikado for the Ontario Institute for Studies in Education, looked at some of the variables related to the team's leadership structure, input on decision making, and differences between team members on personal characteristics (11). The study, "Results of a Study on Team Teacher Satisfaction", involved 71 open plan schools distributed among five county school boards. The final sample included 134 teams comprising 529 teachers belonging to teams having three or more members and who taught in open-plan settings. From among the hypotheses tested in this study the following were statistically confirmed:

(a) Teachers belonging to teams with leaders who were formally appointed (by the principal) were less satisfied with the team teaching situation than those belonging to teams without formally appointed leaders.

(b) Team teachers who felt that leadership was shared more or less equally among all team members were more satisfied with the team teaching situation than those who felt that leadership was unequally distributed in the team.

(c) Those team teachers who were given complete choice in the decision to belong as a member of a teaching team were more satisfied with the team teaching situation than those who were given only partial choice, who were in turn more satisfied than those who perceived that they were given no choice.

(d) Teachers belonging to teams with formal leaders and who were given complete say in the selection of their leader were more satisfied with team teaching than those who were given partial say, who in turn were more satisfied than those who were given no say.

(e) The higher the team rated its formal leader in terms of adequacy as a choice for the position, the higher was its score on satisfaction with the team teaching situation.

(f) Teachers belonging to three-member teams were more satisfied with the team teaching situation than those belonging to four-member teams, who in turn were more satisfied than those belonging to five-member teams.

(g) Satisfaction with the team teaching situation was positively related to satisfaction with teaching.

(h) Individual team member differences in age, sex, education, and teaching experience were not found to be significantly related to satisfaction scores (12).

In summary, the most satisfied team members from those studied appear to be those who were given the choice to team teach and belonged to three-person teams with no formally appointed leader.

Recent Innovations

Team teaching can be more effective in open-space schools provided there is

co-operation among participating teachers. Open-space instructional areas represent a radical departure from traditional school organization in at least two ways:

(a) Teachers operate as a formal work team to make important decisions about groups of children, scheduling, curriculum and learning problems.

(b) Teachers have both visual and acoustical contact with one another as they work.

In contrast, the traditional school is designed to create boundaries that permit the individual teacher to organize, control, and teach a class of students.

One study compared the satisfaction of team teachers belonging to the open-plan school as opposed to those belonging to the traditional (self-contained) school. Brunetti and his colleagues concluded that satisfaction scores were higher for team teachers belonging to the open-plan school (13).

Administrators and teachers have recognized the importance of human relations and organization development skills in generating positive constructive efforts among team members and school staffs. The constant contact of several staff members working closely together can produce interpersonal conflicts. In response to this problem, workshops in team building, problem solving, intergroup processes, communication skills, and other related topics are conducted for some school staffs.

Bennis and Slater underscore the importance of building a collaborative climate in The Temporary Society:

> An effective, collaborative climate is easier to experience and harder to achieve than formal description, but most students of group behaviour would agree that it should include the following ingredients:
>
> Flexible and adaptive structure, utilization of member talents, clear and agreed-upon goals, norms of openness, trust, co-operation, interdependence, high intrinsic rewards, and transactional controls, i.e. members of the unit should have a high degree of autonomy and a high degree of participation making key decisions (14).

The importance of collaborative learning at the student level is being stressed. Traditional school programmes have frequently operated on a competitive basis and provided little or no opportunity for students to collaborate and share their talents and efforts to resolve problems. Related to the problem of developing collaborative learning patterns is the task of building a collaborative climate.

Multi-unit school organizations are being experimented with in some parts of Canada. There does not appear to be any single "form" or "model" of multi-unit organization implemented. Instead, there is considerable variation in structure, policies, and practice. The multi-unit school is so organized that many of the usual duties of the principal are shifted to unit leaders.

The Use of Materials

In order to present a variety of materials to their students and to vary the mode of presentation, teachers working with student groups of varied size frequently employ an assortment of hardware and software. Many teachers have become proficient in the design, manufacture, and utilization of software by simply learning on the job or by taking special courses. In addition, a number of schools and boards have hired non-teaching media specialists who assist in all aspects of audio and visual

education.

Teachers in large group settings usually require proficiency in the use of overhead projectors, films, and other techniques that are adaptable to the large group lecturing approach. A seminar leader working in a smaller physical setting with fewer students may choose to employ television, films, slides, and audio tapes. A large flip chart is also a useful tool for "brain-storming" and posting ideas around a classroom. Independent study requires a largely non-directive involvement of the teacher. In this setting, teaching machines, programmed instruction, and computers are sometimes used.

Conclusions

In Canada at the present time there has not been a general adoption of team teaching. In some parts of the country there is little or no activity; in other parts there is moderate activity in isolated schools.

The peak of team teaching was probably reached some time ago. For several years one could scarcely attend a professional activity day session without hearing the proponents of this development eagerly proselytizing the group. When the process was tried in the schools, it was often considered to place a heavier-than-normal work load on the teachers involved, create time-tabling difficulties, and, occasionally, strain staff relationships. Teachers also questioned whether it provided for increased student achievement.

The adoption in many secondary schools of the semester programme has also tended to minimize any residual efforts in team teaching activity. Contract programmes and individual study programmes have, in a small way, provided approaches to alternative methods of instruction. A number of elementary schools provide programmes in integrated studies which may involve more than one teacher. At the present time, team teaching finds its greatest expression in schools with open areas where it provides teachers with opportunities to co-operate in the planning and provision of learning experiences that emphasize their strengths.

Although "team teaching" as originally conceived and practised in the 1950s and 1960s is not presently in the forefront of educational innovation in Canada today, the residual pedagogical learnings of co-operative teaching are presently in most schools. Much has been learned in the process that has found its way into practice through the provision of opportunities for students to experience learning in large and small groups as well as through independent study. Perhaps most important of all, the team teaching experience has provided a permanent challenge to the orthodoxy of conventional school organization which can only lead in the long run to learning situations structured more appropriately to the needs of the learner and the requirements of the subject.

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MASS DELIVERY SYSTEMS - NEW ZEALAND'S EXPERIENCE WITH CORRESPONDENCE EDUCATION

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Background

New Zealand has had a national system of free education for almost a century. When the Education Act of 1877 was introduced, primary schooling was made "free, secular and compulsory". At that time the total population of New Zealand was about ½ million of whom two-thirds lived in the country and one-third in urban areas. New Zealand is about 1,000 miles in length. It is divided into three main islands with many other islands scattered around the coast. It is a very rugged country with high mountains and valleys in between. It has a long and broken coastline of over 4,000 miles. It is still a country of a comparatively small and scattered population. Its area is almost equal to that of the British Isles, but its present population is about three million.

When primary education was made free and compulsory, there were many children living too far away to be able to attend the established schools. For the next 50 years these children, if they could not attend the few boarding schools available, picked up what education a busy parent could give them. But soon after World War I country parents petitioned the government for a better deal for isolated children. And in 1922 the Department of Education appointed one teacher to give tuition by correspondence to primary school pupils. That was the start of what is now the very big correspondence organization in New Zealand, which covers the whole field of primary, secondary, technical, and university education by correspondence methods.

The philosophy underlying New Zealand's major commitment to correspondence-type education is the pursuit of the ideal that every New Zealander should have the chance of a full education, no matter what his handicap and no matter where he lives. The correspondence systems are designed to bring within the orbit of every New Zealander this chance of an education.

Institutions of Correspondence Education

This general principle has resulted in the foundation of:

(a) The Correspondence School, founded in 1922. This provides general education from our primary level, age 5, through the primary school, age 12+, a full secondary school, age 13+ to 19. It also undertakes the training and further training of teachers.

(b) The New Zealand Technical Correspondence Institute, founded in 1946, provides an extremely wide range of technical courses for students throughout New Zealand and overseas.

(c) The Extramural Department of Massey University, Palmerston North, established in 1960, enrols students for many degree-structured courses. It is the national centre for extramural studies within a multi-faculty university.

These three institutions have some similarities and some differences. They may, however, be seen as complementary, and there is a minimum of duplication and overlapping. They co-operate closely with one another. In some cases the Correspondence School provides "bridging" for students to the other institutions.

They all have in common that:

(a) They are official government-funded institutions.

(b) They are non-profit-making. Their students pay minimal tuition and material fees, in keeping with the fees payable at any other state schools or institutions.

(c) Their students are taught in the main by full-time internal teachers and tutors.

(d) Their students follow the same syllabuses as students in conventional institutions, and sit the same examinations.

(e) Their students compare favourably in examination results with students in the normal educational institutions.

There are, of course, some differences, mainly minor:

(a) The Correspondence School and the Technical Correspondence Institute enrol exclusively correspondence students. Massey University teaches both extramural and internal students within a multi-faculty residential university.

(b) There is a variety in the services provided to cater for the different needs of the varied types of students.

(c) Their assignment lessons show differences of approach because of the age levels, background and requirements of the students.

(d) Although all use the regular postal services, they use them in different ways, with different containers, and different methods of despatch and receipt.

To sum up, each institution, although operating on similar basic principles, has its own individual identity.

Users of Correspondence Education in New Zealand

The Correspondence School is used by:

(a) School-age children who are unable, because of ill-health or isolation, to attend ordinary day schools.

(b) School-age children attending mainly the smaller schools which are unable to provide a full range of subjects.

(c) Children of New Zealand nationals residing overseas.

(d) Adults of all ages who wish to complete or continue their general education.

(e) Teachers either to be trained, or wanting to acquire a higher teaching qualification.

The Technical Correspondence Institute enrols:

(a) Directed apprentices in the various trades who are compelled to study as part of their apprenticeship articles.

(b) Voluntary students who study for advanced trade, technician, or vocational qualifications.

(c) Overseas students, including armed forces servicemen.

(d) Members of accredited vocational groups (e.g. young farmers).

Massey University Extramural Department enrols students exempted from attendance at lectures at other universities because:

(a) they live out of reach of regular attendance at universities;

(b) they have domestic or business commitments which prevent their regular attendance at university;

(c) they are overseas.

These are just very broad outlines of the type of students who are accepted. As a general principle it may be said that the three institutions of correspondence teaching take those students who, for one reason or another, are unable to attend the normal institutions of face-to-face learning.

Teaching Methods

Assignment lessons

In all cases, the basic teaching medium is the correspondence assignment. These assignments are planned, written and produced by the tutoring staff at the three institutions. In the case of the Correspondence School the actual printing is done by the Government Printer. Both the Technical Correspondence Institute and Massey University have their own printing establishments. The assignments are consistently revised and up-dated.

Broadcasting

The Correspondence School broadcasts every day of the school year over a national network of Radio New Zealand.

Audio tapes

Particularly with language teaching, but in other subjects as well, tape recordings form a part of the teaching medium. Both Massey University and the Correspondence School make wide use of cassette tapes.

Study kits

Study kits are provided to correspondence students for work in particular subjects (e.g. sciences, woodwork, needlework).

Library service

Both Massey and the Correspondence School provide a library postal service to the students.

Resident courses

Massey University arranges vacation courses on the University campus for the students. In most subjects attendance at these courses is obligatory. It also arranges local study groups.

The Correspondence School arranges regional camps and an annual residential school on the campus of Massey University and many local school gatherings, often in co-operation with local schools who act as "host" schools.

The Technical Correspondence Institute arranges block courses for the students who come into the neighbouring Central Institute of Technology where they have the chance of direct tuition from their own tutors. It also arranges seminars at the Institute for direct tuition.

They all welcome students who can come in by appointment to see their tutors.

Tuition

Whatever media are used, these are no more than back-up for the personal tuition given by the individual tutors. Our correspondence teaching is highly individualized. It is a one-to-one relationship between the teacher and the learner. The teacher establishes a close and personal link with the students. The returned script is always accompanied by a personal letter, note of encouragement, or commendation, as the case may be. Although this paper is about mass delivery systems the teaching method adopted by all three institutions is a highly personal and individualized one.

Visting teachers

The Correspondence School has five full-time visiting teachers in the field and other teachers go out regularly.

Use of Media

Although on the face of it the use of various forms of modern hardware appears spectacular and is, without question, an exciting development with a particular application to distance learning, all our experience is that the best and most fundamental piece of equipment is the teacher himself. A teacher who has the ability to teach well in the classroom is also likely to be the most successful in teaching at a distance. The teacher and the well-planned assignment are still, as we see it, the most vitally important unit in distance education.

But the broadcast lesson has an important part. We find that it is useful for:

(a) Setting the pace: the regularity of broadcasts can remind students of their obligations.

(b) Acting as a stimulator: it should awaken curiosity, arouse imagination and whet the appetite for more.

(c) Bringing school and home, teacher and pupil, closer together.

Our experience is that it does not do very much more than this. But the tape recorder, and particularly the easily-managed cassette, can, and is, adding a new dimension to correspondence education. We see the broadcast lesson and the tape recording as two complementary things. Especially in the field of language teaching this has a most valuable and wide application. The tape recording can give practice and aural/oral language: it can be played over and over again, and the student can record his own voice for the teacher. It then releases the broadcast lesson to

perform the functions it is best able to do. The liberalized broadcast can then entertain, as well as attempt to teach. But with the cassette the skills of language, listening, practice drills, grammatical points can be studied over and over again.

Correspondence Education - Strengths and Weaknesses

You may ask yourselves why New Zealand, which might be considered a developed country educationally, has opted so strongly for correspondence systems. In terms of student numbers, the commitment to correspondence education is very high. During the course of the year the Correspondence School would enrol up to 14,000 students, the Technical Correspondence Institute 24,000, Massey University over 4,000. These are significant numbers in a country the size of New Zealand. Of all adults studying in New Zealand, about one in six is doing so by correspondence. But in New Zealand we do not regard correspondence education as second best, as a poor relation, as a stop gap. We regard it as an alternative of equal status, and as the method we have chosen to reach students who would not be reached by the other established institutions of education.

Admittedly there are difficulties in establishing and maintaining a viable correspondence education system. Thus, children of school-age need to be provided with considerable quantities of equipment. They also require the full co-operation of parents for the supervision of the lessons involving sacrifices on the part of parents in terms of time and space and other inconvenience. Notwithstanding these problems we do, on the whole, get complete co-operation from parents and the bond between the school and the families is close and warm. But if pupils do default with their lessons, the task of remedying this is long, involved, frustrating and most vexatious.

The total enrolment of full-time school pupils taking all their lessons by correspondence at any one time is over 2,000. But in the course of the year there is a large turnover in this roll because of short-term enrolments for ill health or accident victims, or pregnant school girls or children who move from one location to another. These constant changes in the roll do create administrative problems.

The great majority of students taking correspondence-type courses in New Zealand are adults. The Correspondence School has over 7,000 adults currently on its roll, and both the Technical Correspondence Institute and Massey University enrol exclusively adult students.

Correspondence education is particularly suitable for them. In the first place, they are basically voluntary students and therefore have made a decision and a commitment on their own initiative. Secondly they have maturity and judgement and more independence than younger students. Adults are more self-directing. They know what they want to learn. They often have evolved their own system of learning. Correspondence education is flexible. Students can learn in their own way, in their own time and in their own place. Adult students appreciate the advantages it gives them as mature people who have experience to lean on, to learn under their own terms when they want to learn, where they want to learn and to some extent, how they want to learn. If you like, they can set their own climate.

But there are still problems. In all correspondence institutions throughout the world, drop out rates for adult students are consistently a cause of concern. This applies also to New Zealand. We may divide them into two categories: non starters, and later casualties. The non starters do not cause quite so much of a problem except they are time-consuming and nothing is achieved. The later casualties may or may not have benefited by the work they have done. In our experience some adult students are inclined to over-commit themselves or be over-optimistic as to their potential or the time they have available to study. Among adult part-time students at the Correspondence School the drop out rate is approximately 33%. Of those 19% are non-starters, 14% later casualties. Though this is high it is

probably no higher than that for equivalent evening classes.

A serious disadvantage of correspondence teaching is the delay between the time a student completes his assignment and the time he gets it back. All institutions do their very best to return the work as promptly as possible, but there are unavoidable delays in the mail service and periodic backlogs of work. This is a serious matter and is a definite disadvantage to distance-learning students. The Open University in the United Kingdom overcomes this to some extent by having some computer-marked assignments. We have not entered this field which, in part, negates the whole principle of correspondence education and makes mass production of what is an individualized tutoring system. But it does have the advantage of speed of return to the student.

Costs

It is difficult to arrive at an accurate estimate of costs. In all cases the most expensive item of expenditure is staff salaries. New Zealand has opted in the main for full-time teachers/tutors. You may well ask if it would not be cheaper to employ external part-time tutors. The answer is yes, and we do make limited use of them. In most other countries where correspondence education is used, the majority of the teaching is in fact done by external tutors paid on a piece-time basis. It is my personal view that this can be a satisfactory way of teaching by correspondence, particularly with adult part-time students.

The production of materials is another expensive item, but it is difficult to arrive at an exact costing. The Correspondence School is provided with paper and printing by the New Zealand Government Printer as a free service. The Technical Correspondence Institute, although it has its own printing plant, has this operation absorbed within the Education Department's overall budget. The Massey Extramural Department also has printing facilities under its own control but once more this is part of the University's printing establishment.

The cost of buildings and equipment depends on what is felt to be necessary. In New Zealand the Correspondence School has never had a building of its own but has had to make do with "hand me downs" from other users of buildings. The Technical Correspondence Institute took over a former secondary school which was no longer required and has very greatly expanded this. Massey University, apart from the offices of the Extramural Department, uses the facilities already existing on the campus at times when they are not required for internal full-time students. All in all, the saving in capital equipment and buildings can if desired, be considerable.

As a general proposition it would be safe to say that correspondence education in New Zealand, although by no means cheap, is less expensive than conventional education in terms of the number of students it reaches.

Overseas Aid

New Zealand has had over half a century of experience in correspondence education. I hope that in that time we have learned something about it. We have proved willing to let other countries, and particularly Commonwealth countries, have the benefit of whatever knowledge we have acquired. All the institutions here have been happy to make available materials from our resources. But in addition to that, we have helped with advice and actual personnel and materials in the setting up and development of correspondence systems in other Commonwealth countries. To date we have sent consultants who have worked for some years to help establish correspondence systems in Malawi, Botswana and Uganda. At present we have a consultant just returning from Jamaica and a Jamaican education officer is coming to New Zealand to be attached here for the next two or three months. She will be arriving in about a week's time to look at our ways. But knowledge is a two-way street. In assisting

other Commonwealth countries we have learned a great deal too.

An Evaluation

I am not sure how you evaluate any educational institution or programme. Correspondence education was established in New Zealand half a century ago to cope with a particular situation of a sparsely scattered rural population in a country with undeveloped communications. It might have been thought that when these conditions altered, correspondence education would - like the communist state - wither away. But like the communist state it has not withered away. In fact it has grown, and with the establishment of the provision for technical and university education, has made giant strides. In other words it has proved both its adaptability to changing circumstances, and its wide acceptance.

How else does one evaluate? By examination results? If so, once more the answer is favourable: the students compare well with others being taught by conventional methods. In its rehabilitation of students enrolled for special and temporary reasons? Children who are overseas and return home to their former schools; pregnant school girls who go back to their old school; students who are ill, but who recover and return to school, have no problems in retaking their place in class.

The Future

If correspondence education in New Zealand was established in a somewhat half-hearted way, its development has been whole-hearted particularly of recent years. By any standards the growth has been both rapid and wide. The plans for the future in all institutions include more use of media and face-to-face tuition, more co-operation with one another (a working party for this has now been established), and more participation in and co-operation with local regions, particularly in the field of continuing education. We are planning to work closely with the newly established community colleges and community schools.

Correspondence education has a very important and perhaps a vital role to play in life-long education, in retraining for changed and future occupations. I have already mentioned some of the advantages it has for adult students, but in the field of retraining it has one most important advantage, and that is that it is capable of undertaking a very wide range of tuition to a very varied, scattered group of people who can be retrained without any upsetting of their life and work patterns.

NON-FORMAL LEARNING - JAMAICA'S EXPERIENCE IN MASS LITERACY

Marjorie Gammon and Marjorie Kirlew

Introduction

In 1972 the Government of Jamaica established a National Literacy Programme aimed at eradicating illiteracy in four years. The Ministry Paper on the subject stated: "The Government regards illiteracy as a grave and fundamental problem in Jamaican life. On the one hand illiteracy restricts freedom, self-reliance and potential for achieving true independence; and on the other it impedes national progress by hindering the release and full utilization of human resources for economic and social development."

At that time it was estimated that some 400,000 to 500,000 persons were functionally illiterate and unable to contribute in an effective way to national development. The Government therefore decided "to make literacy a national priority and to launch a vigorous and massive attack on illiteracy."

The literacy movement in Jamaica dates back to the 1940s, when the Laubach method of "each one, teach one" was introduced. This was followed in the 1950s and 1960s by a limited literacy programme undertaken throughout the island by the Social Development Commission. The limited resources available to those early programmes restricted achievements in reducing the illiteracy rate to an appreciable degree. However, the research, invesitgations, and materials production undertaken then - which proved vital to those initial programmes - are still of great practical and resource value to the present National Programme.

Materials for Learning and Teaching

The main objectives of this material are:

(a) To form the basis of a reading programme concerned with the development of reading abilities which are fundamental.

(b) To give the students practice in writing and assist in comprehension and clarity of expression through workbooks.

(c) To provide exercises which will lay the foundation of, and increase, phonetic skills.

(d) To provide through games and other teaching aids vocabulary expansion, word comprehension and phonetic drill.

(e) To provide through the media of radio and television, and cassette tape recorders, assistance to teachers in the preparation of their lessons; and students in the acquiring of literacy skills.

(f) To promote instructional guidance to teachers through the provision of detailed teacher's guides to books, television and radio programmes, etc.

The basic teaching material consists of readers, workbooks and teacher's guides. The reading programme employs a series of four graded readers which take the student from the stage of complete illiteracy to that of functional literacy (i.e. the stage where he can apply the skills of reading and writing in his day-to-day living). As well as this, the content of the basic readers bears relevance to the lives and needs of the learners. Class discussion on the content of the readers and the problems experienced by the characters who appear in them, is encouraged and related to the students' own problems.

Each reader is accompanied by a workbook which provides the student with practice in writing and comprehension, while a detailed teacher's guide to both the reader and workbook gives the voluntary teacher guidelines in the instructional aspect of the material. Within these guidelines, however, allowance is made for the individual teacher's ingenuity and subject application.

Continuous evaluation of all aspects of the programme has indicated that in respect of teaching materials, both teachers and students have felt a great need for a number of books to be prepared to assist with the teaching of phonetics. In this connection the programme has undertaken to prepare a series of these books which will assist, mainly through graphics, teachers as well as students in mastering phonetic skills.

The basic teaching material is supplemented by booklets and a monthly newspaper entitled Let's read. This is presented in a magazine type of format and carries articles graded to four reading levels which pertain to student news, historical and geographical features, as well as current events of a local and, at times, foreign interest. Also included in this publication are crossword puzzles and word games which serve as an entertaining as well as an educational feature, as they embody exercises in comprehension, word building and writing.

The subjects on which supplementary booklets are prepared compare to a large extent with the 13 subject areas on which the programme places emphasis. These are: identity and self image; citizenship and government; consumer education; community; community education; home and family; health and hygiene; food production; occupation; work; communication; nutrition; and enquiry and critical thinking. In this way, the programme allows the recipients to acquire literacy skills, and simultaneously become more aware of the historical, cultural and economic stages of our growth and of the practical needs for the development of the country's resources.

A number of teaching aids are also prepared for the programme. These include such aids as word dominoes, word bingo, and are intended to provide new and stimulating ways to reinforce phonetics, increase word recognition and word building.

Methodology of the Reading and Learning Programme

In the beginning stages, students are taught to read by the "look and say" method at first (i.e. to recognize words by sight only), then by the "look and say" method combined with phonetics. Gradually, as greater emphasis is placed on phonetics, the students become completely self-sufficient and reading takes place through the unconscious application of the phonetic system. Indicated in the teacher's guide to each reader are the suggested discussions for each lesson, the reading passage to be tackled, the new words in each lesson, and the written exercises which are to be done.

The Development of the Material

The Jamaican Literacy Programme's main objective is to have those members of the

population whithout literacy skills made functionally literate in the shortest possible time.

Functional literacy can be expressed as:

(a) Being equipped with certain demonstrable mental skills such as being able to read and write to "junior standard" (the fourth level standard of JAMAL's graded readers).

(b) Using such mental processes as judging, assessing and generalizing satisfactorily.

(c) Applying the above mental skills for the gainful exploration of one's environment.

These criteria are borne out in the curriculum programme applied in the classes and in the development of teaching material - for students are given instruction in reading, writing and simple computation whilst teaching material is provided to complement these subjects. As well as these broad areas, material is developed to provide information on a wide range of interests.

In order to prepare material on any subject for students of adult education classes, it is necessary that certain criteria be adhered to.

Vocabulary

(a) The vocabulary must be made up of words expressing adult experience.

(b) All words, the meaning of which might be doubtful to the adult, must be adequately explained by their context and must have frequent repetition. Repetition should, however, be carried out naturally and as unobtrusively as possible.

(c) New words should be introduced gradually, following a regular pattern.

(d) The vocabulary in basic reading material should include very few technical words.

Content

(a) The content of the story must be related to the experience of the reading audience.

(b) The events should have practical application (i.e. the story must be useful to the audience; it must therefore present and solve a problem).

(c) The solution must be within the practical reach of the student (i.e. the student must be able to go home and do what is recommended in the book).

Style

(a) For beginning readers, books should be written in story form.

(b) The characters should live.

(c) The events in the story should be realistic.

(d) The sequence of these events must be logical.

(e) Ideas must be expressed clearly.

(f) Sentences must be short, but should vary in length to ensure smooth, easy reading.

(g) The material should be presented in "digestible parts" - each unit must be small enough to be easily absorbed by the reader.

(h) The reading difficulty should increase as the book progresses, and each reader should begin at a slightly lower reading level than that at which the previous one ends.

(i) Illustrations should be used to clarify the text, add visual appeal, and carry the main point of the page that it is illustrating.

To be able to check the Jamaican material against these criteria, a readability formula had to be decided upon. In the early years of the programme, the readers prepared had been graded by the Lorge Formula. It was discovered that this formula was not only unsuitable for Jamaica's material owing to the emphasis it placed on the use of prepositional phrases as an element of difficulty, but it was also unsuitable for material written below the fourth grade. After careful study, the Dolch Formula was found to be more suitable for the Jamaican beginning material, and the Dale Formula for the use of supplementary material above the fourth grade level.

Often, in developing supplementary material, the content has to be researched through libraries, government agencies, and resource persons. Invariably, the final drafts are checked for content accuracy with responsible personnel in the specialized field.

Media as Teaching Aids

The teaching of literacy throughout Jamaica by the use of a combination of face-to-face teaching and radio and television programmes, has been most effective and successful. As teaching aids, media programmes have been used in the Jamaica Literacy Programme since 1966, first as a closed-circuit experiment conducted amongst specific groups, then in 1967 with regular programmes - "Together We Learn" beamed in regular broadcasting time on the two commercial radio stations RJR and JBC and the island's television station at JBC.

The present media programmes are prepared and broadcast under two distinct categories. The series of programmes known as "Teaching Box" are primarily instructional programmes, while the series "Into the Light" concentrates on the motivational aspect. As well as these, a series of Teacher Training Programmes entitled TOTAL, intended to assist teachers and teacher trainers in problematic areas of their work, have been prepared.

In television, the usual visuals, film strips, etc. are included with a view to more effective communication. Radio programmes depend on imaginative word-picture representation and a dramatic presentation. Since 1974, programmes beamed on the media are recorded and stored on cassette tapes and on audio-visual film. These are distributed amongst classes which require them, so that if they were unable to get a particular lesson at the regular broadcasting time, or need to refer to it for reinforcement, they can replay this at a time convenient to the students and the teacher.

The Teaching Force

One of the problems which faces the programme arises as a result of the voluntary nature of the teaching force on which the programme depends. Teachers in the programme who are of varying educational standards consist of:

(a) National Youth Service Volunteers. These young people, selected to do their National Service in the area of Adult Literacy Education, have had little or no work experience and no training whatever for teaching.

(b) Teachers who have been trained for the school system. Having been trained in techniques of child teaching they need an orientation into the techniques of teaching adults as well as in the use of educational technology.

(c) Housewives, social workers, civil servants, and people from all strata of the society, urged on by a spirit of goodwill and a desire to serve.

Because service to the programme is given on this voluntary basis, the most willing are not necessarily the most capable. The instructional aspect of the programme has therefore to be carefully monitored. For this reason, paid members of staff serve in a supervisory capacity in the Adult Education Centres where classes are held during the day on a shift system. The monitoring of the entire teaching aspect of the programme falls under the Teacher Training Division of the Technical Services Department which employs a number of Teacher Trainers who have the responsibility of seeing to it that the voluntary teachers receive the necessary training and give instruction in the manner recommended by the programme. All Teacher Trainers are required to have previously served as teachers trained under the formal school system. While this is advantageous for obvious reasons, on the other hand it poses a problem, as some teachers find it difficult to adapt to the techniques required for, and the concepts behind, adult learning.

Class and Student Profiles

As well as those classes which are held during the day in the day centres, there are a great number of evening classes, many of which are conducted in private residences, church halls, school buildings, etc. All classes are equipped with a blackboard and chalk, and classes held in the day centres are provided with desks and chairs. Free books are supplied to each student. Each teacher is required to make whatever visual aids (e.g. flash cards) the class may need. Instruction in this is given from time to time in workshop sessions.

The recommended class size is 10 to 15 students. However, where there is a great demand, classes accommodate a larger number. This at times reduces the amount of personal attention which would otherwise be given to each student.

The programme caters to a student population whose age range is between 15 and 54. The majority of this group of persons is made up of individuals whose employment is often sporadic and unstable. This leads at times to transfers of class members from one area to another as their job situations demand, and as a result to a disruption in their learning situation.

While a number of students who join classes join as complete illiterates there are also those who join as lapsed literates (i.e. they attended school for a limited time but did not have the skills required to maintain literacy). Another difficulty pertinent to the student population lies in the varying age groups that one class can manifest. This, of course, creates a diversity of interest and differences in the

responsibility of each student to family and employment which affect class attendance.

Administration

The programme is administered by a central body called the JAMAL Foundation. This is headed by a Board of Directors responsible for the programme, a Director responsible to the Board, and eight Assistant Directors who have specialized responsibilities. The Foundation receives substantial funds from the Government of Jamaica, but has the mandate to solicit funds from private bodies both local and overseas. In addition, it has the responsibility to see that continued education is provided for the graduates of the programme.

Conclusion

Jamaica looks forward to the day when illiteracy is eradicated, towards which event the programme is concentrated. It places on record its appreciation of the contribution that countries, organizations and various other bodies have made to the programme from its very earliest days, and hopes that the achievements it has made and will make will be of benefit not only to Jamaica but to other nations engaged in similar work.

TRAINING AND SUPERVISION FOR THE EFFICIENT USE OF EDUCATIONAL MATERIALS AND THE DISSEMINATION OF INFORMATION RELATING TO THEIR USE

Abstract of paper

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Throughout the world there has been an increasing awareness of the needs of in-service training for teachers and of the relationship between these needs and relevant educational materials. New Zealand's position was stated in February 1974. "In order to maintain steady improvements in the quality of education received by children at all levels there should be a progressive increase in the amount of full-time in-service training for teachers in all branches of the profession and at all levels of seniority." The recent report Directions for Educational Development (November 1974) affirmed this position. "Teachers immersed in busy day-to-day activity need the opportunity to stand aside from their work, to re-examine their objectives and their methods with the assistance of other teachers as well as experts in the various fields, to develop their abilities further and to renew their ideas, their enthusiasm and their sense of purpose. In order that they can face change confidently and effectively, a substantial increase in opportunities for continuing education is needed."

The Experience

The New Zealand experience to 1975 suggests that there has never been a time when a state of equilibrium has existed in the provision of in-service education. Early efforts to influence and alter teacher behaviour could be seen in the writing of syllabuses and prescriptions. Teachers were expected to adopt these and implement them. Advisers were appointed in the 1920s and 1930s to assist teachers in such fields as science and agriculture, and the isolated teachers in rural areas. The period after 1935 saw the establishment of large groups of advisers in physical education, music and arts and crafts. Within the Department of Education the first officer for In-Service Training was appointed in 1949 and the acquisition of the first national residential in-service centre, Frank Lopdell House, followed in 1961. Changes in direction and intention for the advisory services were charted in the Report of the Currie Commission in 1961. There has been, too, steady expansion of local in-service programmes. Each team of education board inspectors in consultation with teacher committees arranges programmes in specific teaching techniques and skills in subject extensions and in the adoption of curriculum changes. This way of organizing in-service education has recently been extended into secondary education.

The characteristic New Zealand mode of operation has been to identify a problem or weakness in method or syllabus. Action taken to alter a problem is then broadened by the application of resources, be they people or materials. Frequently, these resources are used in combinations, although the usual pattern has been one of people, resources being seen as the initial corrective. A consequence of this method is that there has been an avoidance of rapid educational "switch backs". Change has been a steady factor, though the relative rate of adoption and implementation of innovative practices has been variable.

While past experience suggests variable rates of change in teacher and student perceptions as a result of in-service education, there has been in recent years a strong impulse towards an increasing pace through the provision of teaching and learning materials. The availability of resources in any given teaching situation is now accepted as a strong base for curriculum innovation. It has been a continuing facet of departmental policy that this base has been steadily expanded through the production and purchase activities of such agencies as the National Film Library, the School Publications Branch and the Visual Production Unit, through the services provided by Schools Library Service and through the tangible provision of physical spaces and equipment.

The section of the Department with the longest span of involvement in the provision of resources has been the School Publications Branch. Since its inception (1902) the group has produced print materials for free issue to schools. A guiding policy has been for the Branch not to compete directly with commercial production, but rather to produce resource and literary material that meets a range of local demands. Hence, these materials tend to emphasize New Zealand strongly. This activity has been related to and influential on private publishing houses.

It should also be noted that the provision of all forms of resources whether they are print or non-print has been the result of a slow build up of physical and plant resources, of financial resources and the expertise and experience of the individuals involved.

The Constraints

Major constraints on in-service education in New Zealand are broadly similar to those occurring in other countries.

(a) There have always been financial limitations restricting the government's ability to pursue a large-scale development in the short term. Allied to this limitation is the matter of competition for resources. Commitments undertaken in the past generate a financial momentum with which new initiatives have to compete, frequently unsuccessfully.

(b) Financial limitations in the government sector are paralleled by the small market New Zealand presents to the educational publisher of books and related audio-visual material.

(c) The feeling that finances available for in-service training are not necessarily being spent in the most appropriate fashion when it is clear that full regard is not being paid to the need to "train the teachers".

(d) The difficulties of providing experienced people in an ever-widening range of curriculum areas to act as in-service training inspiration and co-ordination.

(e) There are constrictions and inhibitions relating to the need to have students achieve examination goals. At secondary levels teachers involved in these programmes within school are likely to be conservative. It should be noted however that constraints at one period in time may be regarded as needs at another. Examinations in a national system have helped to achieve standards that are acceptable throughout the country.

(f) The limitations which school organization and administration could place upon the teacher who may wish, as a result of in-service education, to make programme or resource modifications.

(g) A tendency towards dispersal of effort resulting from the number of independent groups involved in in-service education. These include, for example, the in-service training section, the Curriculum Development Unit, the resource provision groups, and the primary and secondary inspectorates.

Developments

One of the long-surviving myths is that of the teacher as the repository and fountain-head of all knowledge.

> And still they gazed and still the wonder grew,
>
> That one small head could carry all he knew.

This view of the teacher's role is no longer an accurate one. The selection, modification, display and above all the involvement with a variety of learning resources is forcing the teacher and the in-service trainer more and more into the consideration and adoption of skills found more usually in managerial, advertising and other commercial fields.

This movement in the skills that teachers wish to deploy is leading to a number of new demands.

(a) The school with its resource base and its skilled professionals is increasingly to become the place where in-service education and consequently curriculum innovation is located.

(b) There will be a need to increase among teachers the skills of curriculum building. When these skills are associated with the capacity to modify and develop resources, there is the likelihood of an increasing rate of change.

(c) An increasing emphasis on a range of teaching and learning resources means that teachers are no longer willing to accept at all times ready-made resources. To some extent at least this view is leading to the demise of the textbook as the sole provider of fact.

The need to modify resources that a teacher wishes to use will be an important consequence of the foregoing developments. These modifications, aimed at satisfying the needs of both teachers and students, will depend on the availability of trained para-professionals and the provision of a wide range of audio-visual hardware.

It will be apparent that it is not possible to supply all equipment requirements and the trained operatives at all points in the system. A new look may be required. This could well include consideration of national, regional and local provision of resource and education centres.

While major changes are envisaged in resource modification and in the development of teacher skills, significant developments are also likely within the Department of Education. These changes will be aimed at integrated initial planning of all facets of teacher development and allied resource provisions.

Evaluation

Evaluation has been implicit in curriculum development of the past. Guideline conferences have usually begun this process and it has been carried on through teacher consultation and trialling of materials and approaches. However, specific

modes of in-service training have not been subject to applied research on an adequate scale. The need for evaluation of any programme is clear, and it is likely that evaluation in the future will concentrate on both teacher and student performance in terms of the programme and its outcomes.

Conclusion

In-service training, whether national, regional or local, presumes that there will be modification of teacher perceptions. This should result in modifications in classroom practice and student perceptions. In order for in-service training to be effective there are two basic requirements. The first of these is that of active participation and co-operation between those responsible for in-service education and teachers who participate in the programmes. This basic requirement needs the direct support of workable in-service infra-structure. It needs, too, a resource base in or adjacent to schools that is capable of providing a flexible flow of educational materials together with a school organization and administration that allows experimentation to proceed.

The second basic requirement is acceptance of the view that teacher development is a total enterprise. We can no longer afford to work separately on different fronts. Initial planning must be integrative and cover all facets of teacher development. The question that we must continually keep in mind, is a simple one. What is the nature of teacher performance and how best can this be supported?

IN-SERVICE TRAINING INFRA-STRUCTURE

The Physical Forms

Residential

The Department owns two residential centres: Lopdell House in Auckland and Hogben House in Christchurch. Each is in operation 48 weeks of the year, and there are normally 26 people (including course directors but excluding visitors) on each course. Courses at other venues vary from year to year, but typically last 20-25 weeks in total.

Costs per annum comprise the operation (with staff salaries) of Lopdell House and Hogben House, travelling costs of course members, costs of relieving teachers and accommodation costs at other venues. For 1972/73 these costs were nearly $160,000, plus the salaries of relieving teachers. Assuming an average of 15-20 relieving teachers to be employed at the time of each course, their total salaries would be of the order of $200,000 during a year.

Non-residential

Since 1961, when Walters House was established as a non-residential in-service centre in Auckland, in-service centres have been established in Hamilton, Tauranga, Rotorua, New Plymouth, Hawera, Wanganui, Palmerson North, Napier, Gisborne, Dannevirke, Wellington, Nelson, Christchurch, Timaru, Oamaru, Dunedin and Invercargill. These centres range from a room to a centre with offices for advisers, storage, and secretarial assistance. They have been set up through the initiative of district senior inspectors with the co-operation of district education boards. Though used also by secondary teachers, they have been and still are used in the main by primary teachers. They provide a focal point for the in-service activities of inspectors and advisers in their districts.

In-School

Although the residential and non-residential in-service training centres are occupied by groups on all possible occasions, this does not mean that no further in-service training is carried out. In many courses programmes of training are carried out by using a part of school premises. This use accounts for a significant proportion of activity in the primary field and almost the whole of the activity in the secondary field.

In addition, in-service training is carried out within schools by principals or staff members with the relevant expertise.

The People

Departmental

All of the ten administrative districts for the purposes of primary education have teams of inspectors and advisers. The numerical strength of these teams varies according to the size of the population of each district. The total strength for New Zealand is 112 inspectors and 225 advisers.

Secondary education is administered from four regional centres. Teams of inspectors total 68 for the whole country. In addition, up to 25 full-time teachers or their equivalents can be seconded annually for the purposes of in-service education.

Within the Head Office of the Department two groups are located. The in-service training group of four professionals and five administrators directs the specific work of the two national centres. This work includes the administration of the National Advisory Committee for In-service Training where the decisions regarding the national courses required are taken. The other function of this group is to administer the requirements of the Teachers Refresher Course Committee. This group, funded by the Department of Education, arranges those courses required by teachers during vacation time.

The other group - the Curriculum Development Unit - is involved at both national and local levels with specific topics that may be allocated to any in-service centre. However, the major concerns of curriculum officers are related to the development of national guidelines in specific curriculum areas. The national in-service centres can thus be viewed, at least partially, as places where core developments may begin.

Teacher Organizations

Both the NZEI and the PPTA are represented on NACIST, and form the major groups in the Teachers Refresher Course Committee. In addition both teacher organizations maintain national curriculum panels in all subject areas. This form of organization in co-operation with the Department of Education, ensures that all groups concerned with in-service training have full representation in the formulation of required initiatives.

The organization of regional and local in-service training programmes is also such that all groups concerned have full representation and a voice in the programmes to be undertaken in the following year.

Independent Professional Subject Associations

Recent years have seen a marked growth in professional subject associations. These associations vary in character from full professional associations (e.g. New Zealand Geographical Society resources organization) to specific regional associations (e.g. Social Studies) and national associations of teachers (e.g. National Science teachers associations). The contributions these groups make in the provision of resources and

in the spreading of recent understandings in any specific curriculum area are a subtle part of in-service training. The effects of these understandings may well become evident in the establishment of national or regional courses.

Teachers Colleges

The major purpose of the nine teachers colleges in New Zealand is the pre-service education of teachers. The staff and physical resources of the colleges are playing increasingly important roles in in-service training work.

TRAINING AND SUPERVISION FOR THE EFFICIENT USE OF EDUCATIONAL MATERIALS, AND THE DISSEMINATION OF INFORMATION RELATING TO THEIR USE

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When one is discussing a programme of training and supervision for the efficient use of educational materials and the dissemination of information relating to their use, one is speaking of effective change. The question is, what is the most successful method for implementing educational change? This question applies whether it be for a different curriculum guide, new media, new equipment, new or different materials - even additional personnel.

The study conducted by the Centre for Educational Development Overseas and the Commonwealth Secretariat which was published in 1974, titled New Media in Education in the Commonwealth, led to a number of conclusions and a twenty-point summary of factors determining success of projects using new media. There can be little quarrel with the findings, in the light of many Canadian experiences as well as observations by other authorities, but the arrangement of the summary points might suggest a different priority order.

A number of research and development institutions, both profit and non-profit, have expressed frustration at failing to have their materials accepted and used in spite of the most careful authoritative development.

Several researchers have suggested that two significant factors relate to this problem of under-utilization of educational materials. First, education is extremely complex and is continuously developing. The main conceptions of teaching and learning, which are being applied in the great diversity of educational situations, have very little in common. Consequently, the development of educational materials for universal use is almost impossible. Selection from and adaptation of common materials is time-consuming, and requires that the teacher or someone else knows the whole content in order to be able to select and adapt. Some prepared materials are "teacher-proofed", defying selective use, or if used as designed impose a passive robot role to the detriment of teacher morale.

The second factor, related to the first, is the prevalence of the design-development-implementation model. The underlying assumption is that of a one-way flow, from a domain called research into practice. This model has been an effective one for fields such as medicine, agriculture, and industry. The "research-innovation" model has merit also for education, but the gains in this complex and developing field will be as slowly and painfully incremental as they have been for medicine and the other sciences. In the meantime, developments in the practice of teaching and learning are occurring at breakneck speed.

The proposal here is that while the research-innovation-practitioner model continues at its slow steady pace, far greater emphasis should be placed by those responsible for education on a reversal of the model, that is, practitioner-innovation-research. This emphasis on the practitioner as source of innovation is suggested by an examination of some of the more successful Canadian experiences for disseminating information on educational materials. In a one-sentence summary it could be described as follows. The individual teacher is the way and co-operation is the means. Several examples are worth citing.

Education in Canada is basically the responsibility of the provinces. Consequently, there is no national training centre as such. However, the grouping of provincial and territorial teachers' organizations in the Canadian Teachers' Federation provides a vehicle that at present has one notable programme for developing and disseminating educational innovation, at a national level, known as the Hilroy Fellowship Program. This was established in 1969 by the Roy C. Hill Charitable Foundation and is administered by the Canadian Teachers' Federation. (Roy C. Hill, manufacturer of stationery, began the Foundation through a philanthropic donation of $1,000,000 in personal funds, the interest on which was in some way to be returned to teachers for the advancement of education.)

The aim of the Program is to encourage and reward active classroom teachers who are developing new ideas for the improvement of teaching practices. Teachers who are working at any level in an elementary or secondary school and who are devising new methods, new approaches, or new teaching devices, are invited to apply for Fellowships. Small groups of teachers working as a team under the chairmanship of a co-ordinator are also eligible. Application forms and instructions may be obtained from CTF or from provincial or territorial teachers' organizations. Applications may be in either English or French. In each province a Provincial Advisory Council, appointed by the teachers' association, reviews applications and makes recommendations which are forwarded to a National Advisory Council. It, in turn, makes recommendations to the Roy C. Hill Charitable Foundation which makes the final selection.

Hilroy Fellowships are intended to reward the initiative and the professional enterprise of the classroom teacher and to make some contribution toward out-of-pocket expenses in the development of experimental and innovative approaches. It is not necessary, however, that expenses of any kind be involved. Generally speaking, the amount of each award is in the range from $800 to $1,500. Approximately 20 awards are made annually from hundreds of applications. Payment of awards is made in three instalments during the school year - the first at the time of the approval of the award, the second and third on the receipt of satisfactory interim and final reports on the implementation of the project in an actual school setting. A Hilroy Fellowship Certificate is also awarded at the time of the third payment.

While the stated purpose of the Hilroy Fellowship Program is to encourage and reward the innovative classroom teacher, it may be considered to have a more out-reaching objective - namely, the fostering of improved teaching practices for the general improvement of education. In keeping with this objective, there is published a yearly compilation of the reports of award-winning projects. It is hoped that these publications will have a wide circulation, that many teachers will draw useful ideas from the projects reported on, and that news of the awards will encourage other teachers to experiment and to innovate.

This "national" programme has been a considerable success because the emphasis is on the practitioner as an innovator meeting the specific needs of his or her students. However, the projects offer opportunities for the researcher which have not yet been sufficiently exploited. Many of the innovations could benefit from the support, advice and experience that research persons or institutions could add. Many others embody ideas which might suggest new avenues to be pursued, through the research-innovation model, beyond the classroom teacher's immediate purposes.

Several successful programmes at provincial levels have similar characteristics to the practitioner-innovation-research model. One of these, in the province of Ontario, began through a co-operative voluntary organization called the Ontario Curriculum Institute, made up of teachers, trustees, professors, a few Ministry of Education personnel, and people from the business world interested in curriculum. The Institute was originally funded by the Ford Foundation for $50,000 a year for three years. During the post-Sputnik period when emphasis was being

placed upon more physical science, one of the Institute's task was to design a series of curriculum units on such topics as weights and measures, microscopy, volume, etc. Initial support materials, which were often invented from local hardware supplies, were put together by one teacher who was working with slow-learning vocational boys. They benefited greatly from the experience and continued for several years as manufacturers and suppliers of kits. To put the curriculum units and the materials together, a limited number of teacher workshops were planned. The cost of the three-to-five week workshops was underwritten by the Institute, on condition that a school board agreed to buy the materials (at a non-profit cost of $600-$800 per school). The demand grew rapidly because of the adaptability of the programme and the grass-roots level of involvement.

Unfortunately and in spite of its success, the voluntary Institute was replaced by a formal, tax-supported, research institution. This change of function of the sponsoring body seriously threatened the science project. It was rescued by the teachers' organization which took on the programme and the funding. The Special Science Project of the Ontario Teachers' Federation with its system of leadership workshops was so successful that teacher demands for further implementation and development were presenting financial problems. As well, the bias towards science was diminishing as the teachers came to realize that the most important values of the workshops were the skills they provided in curriculum development and teaching strategies.

The move towards a more diversified programme in all curriculum areas changed the nature of the workshops to labour-personnel intensive, with ideas and people emphasized more than materials. Further major impetus was given when the Ministry of Education increased the number of free days for professional development. This increased the demand for and the variety of the workshops and significantly altered the pattern from week-end-time to mid-week-throughout-the-year requests. Suddenly, the teachers' organization was flooded with requests for assistance, as were the Ministry and the Ontario Institute for Studies in Education (OISE). The teachers' organization drew up a proposal for the three organizations to co-operate in meeting this new demand. Within one year of its adoption the programme had grown beyond the possibility of central control. Ten regional programmes now operate. The regional organizations include a teacher as chairman, a regional Ministry official, a representative of the OISE regional office, a representative of the nearest faculty of education and, often, other local educational representatives. That is where it is at currently, with demands outstripping expectations.

Several things are being learned. Many teachers and teacher groups are aware of needs, but need assistance in defining them. They are asking for consultative help - de-emphasizing the package workshop for developing materials in favour of access to advisory resources. The latest stage in this development has been a province-wide catalogue of human resources, a "kangaroo pouch" of names and qualifications of resource personnel to be available to all teachers. The Ministry is supplying the pouch and stuffing it. The educational research institution is doing the printing. Many organizations, teachers, Ministry, university faculties, trustees are supplying the names of resource personnel and non-school board publications. The second step will be to include the many school board publications, print and non-print materials. Every aspect of this adjunct development is co-operative and has been initiated by the teachers' organization as it tried to meet the needs of the practitioners.

Many other examples of successful in-service training, with developing networks for dissemination of information on utilization of resources and materials, are to be found in the other provinces of Canada. Particularly notable are the projects conducted in various regions under the auspices of the Canada Studies Foundation (originally funded by philanthropic grants, with a governing board of distinguished Canadians concerned about the neglect of the national heritage; now

jointly funded by the provincial and federal governments). In these projects, teams of teachers, students, university faculty members and specialized advisers from teacher organizations and departments of education work together to devise curriculum units in the social studies. They build upon the resources of the region, creating learning materials which help students to comprehend historical and social realities. The creation of teams is stimulated by the central agency; the work of curriculum-building is guided by local initiatives in the light of local conditions. Exchanges of reports and visits provide for dissemination of ideas.

To mention a few is to risk leaving out many, but the characteristics of the successful programmes can be generalized. Programmes developed for the field are difficult to have accepted. Programmes that originate in the field and allow for on-going participation by practitioners, students, teachers' organizations, researchers, educational officials, and trustees in conceiving, developing testing and modifying curriculum have the vitality and immediacy that promise the greatest success. The best training for efficient use of materials is involvement in their creation; the best "supervision" is supportive advice in an atmosphere of shared commitment. The teacher is the way and co-operation is the means for the efficient use and dissemination of educational materials.

COMMONWEALTH CO-OPERATION IN THE MANUFACTURE SUPPLY AND USE OF MATERIALS FOR LEARNING AND TEACHING

Prepared by
the Commonwealth Secretariat

The following quotation from the report of the Sixth Commonwealth Education Conference indicates in broad terms the main concern of the education programme of the Commonwealth Secretariat:

> The Commonwealth Secretariat should contine to encourage and foster regional co-operation among member countries in the field of education, identifying trends and responding to expressed needs.

The Education Division of the Commonwealth Secretariat is the Division mainly responsible for promoting co-operation in education in Commonwealth countries, though its work programme often involves other divisions, especially the Commonwealth Fund for Technical Co-operation.

The work of the Education Division can be described under three heads: the collection and dissemination of information, the organization of conferences and seminars, and the support of training courses.

Information

One of the main functions of the Commonwealth Secretariat is to act as a clearing-house for information about educational developments in the Commonwealth. Information is received in various ways; for example, through visits to Commonwealth countries, through correspondence, and through the large number of journals and periodicals that the Division receives.

It is sometimes necessary for the Secretariat to commission specialists to obtain information in particular fields. The Secretariat also organizes surveys in order to supply information requested by Commonwealth countries. For instance, two surveys have recently been made about practical experience in the training of technicians in Commonwealth countries.

The information obtained in these ways is disseminated through publications such as the bi-monthly Newsletter, reports of seminars, workshops and other conferences, as well as through the results of surveys. There is the Education in the Commonwealth series in which publications have appeared dealing with special areas of education such as "The Production of School Science Equipment", "Mathematics Teaching in Schools", "The New Media in Education", and "A Survey of Correspondence Institutions in the Commonwealth".

Conferences

Commonwealth conferences dealing with Education are handled by the Education Division. The conferences include ministerial conferences, specialist conferences, and smaller meetings such as workshops, seminars, and symposia.

So far six ministerial conferences have been held at roughly three-year intervals since 1959. The most recent was the one held at Kingston, Jamaica in 1974, and it is hoped that the next will be held in Ghana or Kenya in 1977. Their main function is to review Commonwealth co-operation in education and to discuss general

lines of policy regarding educational programmes, as well as considering a particular theme. Specialist conferences, on the other hand, concentrate on specific educational problems. Examples are School Science Teaching (1963), Education in Rural Areas (1970), and Teacher Education in a Changing Society (1973). The specialist conference now being held in Wellington is concerned with problems relating to materials for learning and teaching.

Recently, the Secretariat has also been concentrating on the workshop/seminar type of meeting which, in addition to discussing problems in general terms, aims at providing an element of training for participants. Examples of these are the series of regional seminars on Book Development, the last of which took place in Ibadan, Nigeria in February 1975, and the series of workshop/seminars on Educational Administration and Supervision, the last of which took place in Kuala Lumpur, Malaysia, in May 1975.

Training

Training is provided and supported by the Commonwealth Secretariat in various ways, some of which are as follows:

(a) Bursaries To meet expressed needs, the Secretariat encourages Commonwealth countries to send personnel to train at courses which are already in existence. Emphasis in training is mainly on middle level personnel and awards have been made for a wide variety of courses in technical and professional institutions. For instance, the Secretariat recently supported with bursaries the training of 25 technicians from Tanzania who went to India to train for the promotion of small-scale industries in rural areas. The Secretariat has also supported training in special courses at the East Caribbean Institute of Agriculture and Forestry in Trinidad and Tobago and nautical training courses at the Honiara Technical Institute in the British Solomon Islands.

(b) Provision of Consultants The Secretariat has often provided consultants to assist national training programmes. For example, the Commonwealth Secretariat was involved in the recent review of educational policy and programmes in Sierra Leone, and a team of consultants has recently reported on their mission to advise the Government of the Bahamas on the organization and administration of their educational system.

(c) Regional Training The Secretariat is prepared to consider requests for support to enable personnel to participate in training courses. Where possible, it can also support Commonwealth personnel at courses run at non-Commonwealth centres. The Commonwealth Secretariat is itself trying to establish regional training centres, in accordance with a recommendation of the Sixth Commonwealth Education Conference. It is usually agreed that regional training is worthwhile for two main reasons. First, training will be in the context of problems which are common to a particular region; secondly, the cost of training can be reduced by avoiding the necessity of having a number of national training centres for the training of only a limited number of personnel.

The Secretariat is arranging for two planning meetings to decide on the content of courses which it hopes to start at two centres. One centre, which will be based at the University of Nairobi, will deal with the training of personnel in the field of educational administration and supervision, while the other, at the University of Guyana, will deal with the training of personnel responsible for the local production of textbooks and other teaching materials. These are only two of a number of regional

courses which it is hoped will develop if demands for them increase.

(d) Educational Visits The Secretariat has provided a number of travel grants to enable personnel from developing countries to travel to other developing countries to examine special educational areas of interest. These visits have proved very useful and it is hoped that the number of yearly awards will increase as funds become available.

It is necessary for this Conference to consider specifically Commonwealth co-operation in the field of manufacture, supply and use of educational materials. Suggestions have already emerged for co-operation in this field. The Commonwealth Secretariat has already been requested, for instance:

(a) to circulate information on developments in the field of educational materials, and compile and publish a directory of audio-visual materials on a regional and pan-Commonwealth basis;

(b) to encourage the free flow of educational materials among Commonwealth countries, especially by assisting with copyright and related problems;

(c) to investigate the design of basic equipment which can be used widely, especially where there is no supply of electricity;

(d) to encourage regional co-operation through standardization, production and distribution of educational materials, including textbooks, where experiences and situations are similar;

(e) to assist with programmes of in-service training of teachers in this field, and with the running of regional workshops.

There are other areas of Commonwealth co-operation which could be considered. As has been done in other fields, the Commonwealth Secretariat would be happy to consider requests for:

(a) support for national training programmes either through the provision of consultants to help plan the programmes or operational personnel to assist with the actual training;

(b) provision of bursaries for trainees at centres already in existence;

(c) provision of travel grants for persons engaged in the design, production, distribution and use of educational materials.

Bi-lateral Co-operation

It is encouraging to note that the widening of the range of Commonwealth co-operation through the Secretariat has not lessened the importance of bi-lateral co-operation which has given rise to a great number of exchange visits and a certain amount of technical assistance. The following could be considered as areas suitable for increased bi-lateral assistance:

(a) Funds to enable visits of personnel to the donor country or a third country or countries to see educational projects.

(b) Awards to enable personnel to train in the donor country or in other countries in selected fields.

(c) Support for trainees at regional training centres.

(d) The supply of personnel to support national training programmes.

(e) Exchange of educational materials.

Commonwealth Associations

There is room for Commonwealth Associations as well as other international organizations to assist with the training of personnel. For instance, recently the Commonwealth Broadcasting Association organized two 8-week courses for broadcasters from East, Central and Southern Africa with financial support from the Secretariat through the Commonwealth Fund for Technical Co-operation. Any Commonwealth Association which is willing to assist with training personnel for the manufacture, supply or use of educational materials could expect the support of the Commonwealth Secretariat.

Teachers' Associations can be very useful also, by encouraging teachers to train in this field, especially through arranging in-service training courses.

Teaching About the Commonwealth

Sadly there is a great deal of ignorance in Commonwealth countries about what the Commonwealth is and what it has to offer to member countries. The Commonwealth Secretariat would like to see more teaching about the Commonwealth in schools. In Britain for example, the Commonwealth Institute, which is an independent body supported by most Commonwealth countries, has produced for use in Britain a kit of materials which teaches about the Commonwealth. The Secretariat would like to see this approach developed in other Commonwealth countries, and would be willing to consider requests for assistance in this effort. The future of the Commonwealth will depend ultimately on the degree to which its members work together. It is for this reason that the Commonwealth Secretariat is anxious to stimulate in every possible way the knowledge and understanding that is necessary for effective co-operation.

APPENDIX 1: CONFERENCE AGENDA

Introduction

A provisional agenda was drawn up by the working party nominated by the Commonwealth Education Liaison Committee which was charged with the responsibility for advising on and reviewing progress of initial preparations for the conference. This agenda, approved and recommended by the Commonwealth Education Liaison Committee was adopted by the conference.

It was agreed that, even though broadcasting would be covered at the specialist conference in Australia planned to follow on immediately, it should not be completely omitted from this one since it was important to see educational broadcasting in the context of all materials that facilitate learning and teaching. It was felt too that by emphasizing the potential of the various media, member countries might see models that could be adapted for their own educational systems.

The agenda was designed to provide an appropriate basis for discussions on educational material relating to all levels and types of education, formal and non-formal.

Theme

The theme of the Conference was The Development, Supply, Use and Management of Educational Materials.

Objectives

(a) To consider the current and potential use of educational materials and media;

(b) To consider the methods by which educational materials are most effectively developed to fulfil curriculum objectives;

(c) To examine the role of teachers, instructors and community workers in the development and use of educational materials;

(d) To devise strategies for improving the interaction between curriculum innovators and potential users of new curriculum material;

(e) To consider the implications for teacher education if teachers are to participate meaningfully and effectively in innovative strategies of teaching which are based upon new teaching materials, and

(f) To determine ways of improving Commonwealth co-operation in the flow and use of educational materials.

Agenda Item I: The Variety and Potential of Educational Materials

(a) Traditional Media
(mime, drama, folk theatre, masqueraders, puppet shows, itinerant story tellers, balladeers, interviews)

(b) Teaching aids from real and simulated life
(specimens, artifacts, models, dioramas, exhibits, puzzles, simulation and other instructional games)

(c) Display Materials
(chalkboard, markerboard, flannelboard, feltboard, plastiboard, magnetic board, pegboard)

(d) Printed and Graphic Materials
(pictures, posters, charts, diagrams, graphs, maps, flash cards, assignment cards, programmed learning material, pamphlets, books)

(e) Audio Recordings
(discs, tapes, language laboratories and radio broadcasts)

(f) Projected Materials
(transparencies, filmstrips, cine films, closed circuit television, broadcast television, and video recordings)

(g) Multi Media Kits
(films and filmstrips with sound, various media with print)

Agenda Item II: The Design and Production of Educational Materials

(a) Initiatives for the development of educational materials: the role of curriculum councils, research units and other bodies at local and national level

(b) Methods for supporting and encouraging teachers in the design, production and evaluation of educational materials from local resources

(c) Resource materials, design, production and evaluation centres: their function and basic equipment; standards and methods of testing and reporting; recognition of the needs of handicapped learners.

Agenda Item III: The Organization and Management of Educational Materials

(a) The role of advisory committees for textbooks and other educational materials at institutional and national levels (membership, function and relationship to the administration)

(b) The development, utilization and management of resource centres at institutional, area, and national levels (staffing, accessibility to users, systems of classification, storage and retrieval)

(c) Supply, procurement, maintenance and support services (materials, equipment, repair and replacement)

(d) Designs for estimating cost-effectiveness.

Agenda Item IV: The Use of Educational Materials in Teaching and Learning Situations

Pre-conditions for the effective use of resource-based learning in relation to finance, administration, inspection, teachers and teacher education in such teaching situations as:

(a) Individualized learning

(b) Small group learning

(c) Mass delivery systems

(d) Formal and non-formal learning

Agenda Item V: Programme of Training and Supervision for the Efficient Use of Educational Materials; also the Dissemination of Information relating to their Use

(a) National training centres

(b) In-service training at local level

(c) Networks for dissemination of information on successful utilization of local materials.

Agenda Item VI: Commonwealth Co-operation in the Manufacture, Supply and Use of Educational Materials

(a) Exchange of information

(b) Regional agencies for training: visits and attachments

(c) Teaching about the Commonwealth.

APPENDIX 2: CONFERENCE ARRANGEMENTS

Background

The plan to hold a specialist conference on materials for learning and teaching was developed as pressure mounted from successive Commonwealth Education Conferences to give special consideration to the supply, use and management of a wide variety of learning materials. This culminated in a decision in Jamaica in June 1974 by the Sixth Commonwealth Education Conference that a specialist conference on the subject should be held in the latter part of September 1975, and in an offer from New Zealand to host it. The New Zealand conference was timed so as to precede a complementary conference on educational broadcasting in Australia and enable the two together to provide a comprehensive review of the role of the media in education.

This conference was the seventh in the series of Commonwealth specialist conferences on educational topics, previous meetings being devoted to the consideration of Teaching of English as a Foreign Language (Makerere, Uganda, 1961), School Science Teaching (Peradeniya, Sri Lanka, 1963), the Education and Training of Technicians (Huddersfield, England, 1966), Mathematics in Commonwealth Schools (Port of Spain, Trinidad, 1968), Education in Rural Areas (Accra, Ghana, 1970) and Teacher Education in a Changing Society (Nairobi, Kenya, 1973).

The working party which was set up by the Commonwealth Education Liaison Committee to plan the Commonwealth Conference on Materials for Learning and Teaching met in London on four occasions in February and March 1975. Members of the working party were: Mr H. J. Russell (Australia), Mr A. Rouf (Bangladesh), Mr J. M. Scoular (Britain), Mr D. K. Tettey (Ghana), Professor R. N. Dogra (India), Mrs J. Wynter (Jamaica), Mr N. T. Lejaha (Lesotho), Mr L. P. Ramyead (Mauritius), Mr J. D. Ngonyani (Tanzania). To assist the working party in its task, experts on the subject were co-opted as members. They were: Mr B. E. Gainsford (District Senior Inspector, Otago, New Zealand), Mr P. R. Weiss (Director, Inner London Education Authority Media Resources Centre), and Mr J. R. Bunting of the British Council.

At its meeting on 16 April 1975, the Commonwealth Education Liaison Committee endorsed the working party's proposals, and arrangements were thereupon made to hold the conference at the James Cook Hotel from 22 September to 3 October 1975. The New Zealand Government appointed Mr W. S. Edginton and Mr P. R. Miles of the Department of Education to co-ordinate activities locally.

Keynote Address and Lead Papers

The working party felt that as the keynote address should deal with the philosophy underlying the use of various media in education, and focus attention not only on their potential but also on their limitations, it should be delivered by a person of international repute in the field of teaching and learning materials. Accordingly, Mr L. C. Taylor, Principal Administrator of the Centre for Educational Research and Innovation of the Organization for Economic Co-operation and Development, and author of Resources for Learning (Penguin Books) was invited to undertake the task.

In keeping with the theme of the conference, the first agenda item consisted of an exhibition of educational materials and displays, and, in consequence, the first of the lead papers consisted of a guide to the exhibition. It was prepared by Mr P. R. Miles of New Zealand. Lead papers on the other agenda items were prepared by Mr Peter Weiss (Britain), Professor Rais Ahmed (India), Mr G. Salisbury (Britain), Mr J. W. Storey (Canada), Mr H. L. McVeagh (New Zealand), Mrs M. Gammon (Jamaica), Mr Ian J. Fife and Mr Norman M. Goble (Canada), Mr W. L. Renwick (New Zealand), and the Commonwealth Secretariat. A list of conference documents, including the country papers that were supplied, is given towards the end of this report.

Participation

The conference was attended by 76 delegates and observers representing 30 Commonwealth countries and dependent territories. A list of all who attended appears at the end of this report.

Administration

A steering committee composed of all heads of delegation, the Chairmen of the four groups, and the Chairman, Secretary and Co-Secretary undertook the formal administration of the conference. To oversee most of the day-to-day operations a conference bureau was set up. It consisted of the Chairman, Secretary, Co-Secretary and Administration Secretary of the conference, and the Group Chairmen. Mr W. L. Renwick, Director-General of Education, New Zealand, was appointed Chairman of the conference.

Programme

On the morning of 22 September, after an introductory statement by the Commonwealth Secretary-General, Mr S. S. Ramphal, the conference was opened on behalf of the host country by the Hon. P. A. Amos, Minister of Education. The response to the Minister's speech was given by Dr S. J. Cookey, Director of the Education Division of the Commonwealth Secretariat.

At the first plenary session the Chairman invited Professor Dan Dicko, Secretary-General of L'Agence de Co-operation Culturelle et Technique, to address the conference. This was followed by the keynote address delivered by Mr L. C. Taylor and, later in the day, delegates were welcomed at the Waiwhetu Maori marae. In the second week, observers from UNESCO and WCOTP also addressed the conference.

During the conference visits were arranged to a choice of 20 educational institutions and government departments, and delegates were able to visit four other government departments on request. On some evenings extra informal sessions were held on various subjects.

The agenda consisted of six items. These were:

(i) The variety and potential of educational materials

(ii) The design and production of educational materials

(iii) The organization and management of educational materials

(iv) The use of educational materials in teaching and learning situations

(v) Educational materials; disseminating information and organizing programmes of training and supervision

(vi) Commonwealth co-operation in the manufacture, supply and use of educational materials.

Each of these agenda items was introduced in a plenary session, and discussed by four groups which reported their findings to a plenary session. For all but one of the agenda items the groups were chaired by Mr R. P. Martin (Britain), Mr J. Storey (Canada), Mr G. J. Roberts (The Gambia) and Mrs M. Kirlew (Jamaica). However, for the special interest groups that were constituted to discuss agenda item 4 the Chairmen were Mr G. W. E. Archer (The Bahamas), Mr T. A. Short (Cook Islands), Mr G. S. Hall (Britain), and Mr D. Francis (New Zealand).

APPENDIX 3: CONFERENCE DOCUMENTS

REFERENCE NUMBER	TITLE	SOURCE
CCMLT/GEN/1	Agenda	Commonwealth Secretariat
CCMLT/GEN/2	Timetable	Commonwealth Secretariat
CCMLT/GEN/3	Directory of Delegates and Secretariat	Commonwealth Secretariat
CCMLT/GEN/4	Conference Documents	Commonwealth Secretariat
CCMLT/GEN/5	List of Participants	Commonwealth Secretariat
CCMLT/Keynote	Educational materials, their development, supply, use and management	L. C. Taylor
LEAD PAPERS		
CCMLT/Lead 1	Guide to exhibition	P. R. Miles
CCMLT/Lead 2	Producing learning materials for an education service	P. Weiss
CCMLT/Lead 3	The organization and management of educational materials	Professor R. Ahmed
CCMLT/Lead 4A	Individual learning and teaching experience with teaching the physically handicapped	G. E. Salisbury M.B.E.
CCMLT/Lead 4B	Learning and teaching in groups: Canada's experience with team teaching	J. W. Storey
CCMLT/Lead 4C	Mass delivery systems. New Zealand's experience with correspondence education	H. E. McVeagh
CCMLT/Lead 4D	Non-formal learning - Jamaica's experience in mass literacy	M. Gammon/M. Kirlew
CCMLT/Lead 5A	Training and supervision for the efficient use of educational materials and the dissemination of information relating to their use	W. L. Renwick

REFERENCE NUMBER	TITLE	SOURCE
CCMLT/Lead 5B	Training and supervision for the efficient use of educational materials and the dissemination of information relating to their use	I. J. Fife and N. M. Goble
CCMLT/Lead 6	Commonwealth co-operation in the manufacture, supply and use of materials for learning and teaching	Commonwealth Secretariat
COUNTRY PAPERS		
CCMLT/CP/1	In-school in-service support materials project of the Department of Education, South Australia	Australia
CCMLT/CP/4	Country Paper	Barbados
CCMLT/CP/6	Microteaching - two significant developments	Britain
CCMLT/CP/8	Materials for learning and teaching in Cyprus	Cyprus
CCMLT/CP/14	A. - Innovative methods and media. B. - Correspondence courses - an educational innovation in Delhi.	India
CCMLT/CP/15	Curriculum development and instructional materials	Jamaica
CCMLT/CP/16	The Kenya Institute of Education	Kenya
CCMLT/CP/20	Malta resource centre	Malta
CCMLT/CP/21	The Audio Visual Centre	Mauritius
CCMLT/CP/22	Background material. New Zealand (slide-tape presentations, VCR edit programmes)	New Zealand
CCMLT/CP/22A	New Zealand Social Studies Resource Kits (Forms 1-4)	New Zealand
CCMLT/CP/22B	ERIC (Early Reading In-service Course)	New Zealand
CCMLT/CP/23	Universal primary education	Nigeria
CCMLT/CP/25	Country Paper	Sierra Leone
CCMLT/CP/26	Education for living (EFL)	Singapore
CCMLT/CP/32	The Namutamba project	Uganda

APPENDIX 4: PARTICIPANTS

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