

A Handbook on
In-Service
Teacher Training
in Developing Countries
of the Commonwealth



Commonwealth Secretariat

A Handbook on
In-Service
Teacher Training
in Developing Countries
of the Commonwealth

by S. Vivian

Commonwealth Secretariat
Marlborough House, Pall Mall, London

© Copyright 1977

Printed and published by
The Commonwealth Secretariat

May be purchased from
Commonwealth Secretariat Publications
Marlborough House
London SW1Y 5HX

ISBN 0 85092 128 7

Contents

Page

Introduction 1

PART 1 PLANNING AND ORGANIZING IN-SERVICE TEACHER TRAINING

Matters for consideration in planning in-
service teacher training 6

Needs and priorities in in-service training 11

Resources for in-service training 15

Teachers' support services 22

Participants for in-service training 30

Modes of Training 37

Methods of work 42

Follow up 49

Evaluation 55

PART 2 CASE STUDIES

The Lesotho Primary Teachers' In-Service
Programme, 1966-1974 62

The Montserrat Teacher Vacation Course in
Mathematics, 1973 69

The Caribbean Mathematics Project,
1971-1975 73

The Kenya Headmasters' In-Service
Programme, 1968-1972 78

The Uganda/UNICEF Teacher Up-Grading
Programme, 1967-1970 83

The Swaziland In-Service Teacher Training Project, 1973-1978	87
India: The Bombay Science Improvement Project, 1970-1974	96
Nigeria: A Primary Education Improvement Project, 1969-1975	103

PART 3 CONCLUSIONS

Planning and organization	110
Execution of in-service training programmes	112
Bibliography	114
Project materials and information	116

INTRODUCTION

Educational expansion

With the coming to independence of many formerly dependent countries in the past two decades or so there have been striking developments in the field of education. The widely held conviction that in education lies the key to future progress and a better way of life for all, has led governments to give educational development top priority in their planning and consequently to devote to it a major share of scarce resources, financial and human.

The problem of teacher supply

There has thus been a remarkable and very rapid physical expansion of educational facilities at all levels, but more especially in the field of secondary and higher education, in response to the need for educated and trained manpower in all sectors of national development. The need to staff the new and expanded schools, colleges and universities has been a major problem, met in part by recruitment from external sources, but increasingly dependent on the establishment and rapid expansion of national facilities to provide both pre and in-service teacher training. The latter has frequently taken the form at secondary school level of intensive upgrading type courses for selected primary or intermediate teachers, enhancing the status of those concerned but having the unfortunate effect of depriving the primary schools of some of their best and most experienced staff. The rapid increase in the numbers of secondary school leavers has, however, made it possible increasingly to concentrate on the initial training of academically better qualified students.

Although the primary education sector has not usually grown in size as rapidly as the secondary there has, nevertheless, been an

ever-growing demand for more school places, if only as a result of population growth; and it has to be remembered that many countries can still provide even a basic education for no more than half of their primary school-age children. Here too, then, the demand for more teachers has been urgent and has in part been met by in-service and emergency training programmes, more especially for the large numbers of un-qualified and under-qualified teachers in the field.

New thinking
on schools
and the
curriculum

As educational expansion has gone ahead, however, there has been a growing and wide-spread concern amongst those professionally involved as to the nature and quality of the education provided at all levels. The purposes, content and methods of existing school curricula have been questioned, both in terms of their relevance to the requirements of rapidly developing modern economies and to the no less important cultures of the society or societies involved. Concern that the strictly limited financial and human resources available should be used to the best possible effect has been another element in this re-examination of educational aims and practices. All this has taken place at a time when the sum of knowledge has been growing at an ever-increasing pace and when our fuller understanding of the psychology of learning has led to radically new emphasis in the teaching of many areas of the curriculum, notably in mathematics and the sciences.

New modes
and methods
of training
for teachers

One of the major outcomes of the re-thinking stimulated by such factors as these is to be seen in the efforts of many countries - by no means uniformly successful - at curriculum reform and development. It has become all too clear that changes in the content, and even more in the methods, of teaching and learning, can only become a reality if the teachers - and this means the very large numbers of existing teachers, especially in the primary schools - are adequately prepared for change by a process of re-training. Curriculum reform

has thus provided a major impetus to the very considerable in-service training programmes which have been launched in developing countries in recent years. This applies equally to those long-term upgrading programmes for unqualified and under-qualified teachers and to the shorter courses aimed at introducing new materials and developing specific skills. Further, what is involved, as Dr Beeby points out in his "The Quality of Education in Developing Countries", is not merely the acquisition by the teacher of a new method or technique but the understanding and acceptance of a new purpose in education.

The need
for in-service
teacher
training

Both the rapid growth of educational systems and at the same time the need to devise and implement a more suitable kind of education have thus presented those concerned with a major challenge. Whilst more and better pre-service education and training has been seen to be needed and has indeed often been provided, the speed of growth and change has, in addition demanded large-scale efforts to provide re-training and further training for the mass of serving teachers who will continue to set the educational standards for a good many years to come.

About this
handbook

It is against this background of widespread and varied work in the field of in-service training that this handbook is offered. It sets out to do two main things: first, in Part 1, to consider, in the light of experience, the many problems involved in the planning and carrying out of in-service programmes; second, in Part 2, to provide a number of Case Studies of recent significant in-service programmes of varied types and from a variety of situations and countries. These provide illustrations of the different ways in which the problems discussed in Part 1 have been, and are being, tackled in the field. In Part 3 we include certain observations and conclusions which we feel can be drawn from the Case Studies cited and from other general experience in the field

of in-service teacher education. The bibliography will assist the reader who wishes to go further.

It should be emphasized that in no sense does this handbook pretend to be a complete "how-to-do-it" manual. Simple and easy answers do not exist for what are difficult and complex problems. Circumstances vary widely from country to country, and even within countries, and must obviously be the base on which plans are built for the further education and training of the teaching profession. We have not, however, in the past been as ready as we might have been to learn from relevant experience - including failures where publicized - elsewhere. It is this sharing of experience in a major area of educational concern that it is hoped to assist and encourage by the production of this handbook.

Part 1

Planning and Organising In-Service Teacher Training

MATTERS FOR CONSIDERATION
IN PLANNING IN-SERVICE
TEACHER TRAINING

National
educational
objectives

In recent years many developing countries have taken a fresh and more critical look at the role of education within the context of overall national development. New concepts of education have evolved, both formal and non-formal, and these have often been formulated in forthright terms, setting the goals for all - teachers, parents and others - concerned in education.

To take but one example, Kenya has stated its educational aims as being that

- (a) Education must serve the needs of national development.
- (b) Education must assist in fostering and promoting national unity.
- (c) Education must prepare and equip the youth of the country so that they play an effective role in the life of the nation, whilst ensuring that opportunities are provided for the full development of individual talents and personalities.
- (d) Education must assist in the promotion of social equality and train in social obligations and responsibilities.
- (e) The educational system must respect, foster and develop our rich and varied cultures.

New national goals such as these cannot be achieved by an educational system that has grown up in response to other objectives. Consequently, action is urgently needed to

help teachers adjust to the new directions that education is being asked to take.

It is immediately apparent that the quality of the teaching profession is a factor vital to the achievement of such aims, and further, that any plan for its upgrading cannot wait for the production of new and better qualified teachers from the colleges and the universities. The existing teaching force, which will set the standards for some years to come, must be helped to adapt to their new roles without delay for they will be the backbone of the teaching profession for the rest of this century.

Dr Beeby in his "The Quality of Education in Developing Countries" has suggested that there are four main stages through which most school systems have to pass and that it is very difficult, and even dangerous, to attempt to force a school system directly from, for example, Stage 2 ("Formalism") to Stage 4 ("Meaning"). In this situation the state of the teaching profession is crucial as indicated by the general level of teachers' education and training and thus their capacity for improvement; their status in the community; their morale; their stability within the profession and their continuity of service within the schools. In practice, at any one time a number of levels of education and professional competence is likely to exist and this will be reflected both in the provision for in-service training and in the priority given to any single aspect of it.

New tasks
for schools

The aims of the school system, as indicated earlier, have been stated in general terms; less frequently in more specific operational

terms. The importance of a clear definition of objectives is obvious in that it points to the kind of education desired and so to the knowledge, skills and attitudes the teacher will need in order to be fully effective. In such a situation the planning of an in-service programme becomes more meaningful and its execution more likely to be fruitful.

A good example of this process is to be seen in the case of Nigeria in Case Study 8. Here the national educational objectives, at both primary and secondary levels, were laid down at the 1969 National Curriculum Conference. Then, within the framework provided by this document, the 1971 Primary workshop at Ibadan worked to produce detailed, specific objectives and syllabus guidelines in six subject areas. It was then left to the Regions to take the next step and to translate these guidelines into experimental syllabuses with supporting materials for teachers and pupils.

New
curricula

The innovations that have been introduced as a result of curriculum development have left many teachers ill-equipped to implement them without further training. But whether new or old, there are questions about the curriculum that will influence the nature of any training given.

Is it centrally devised and controlled, or is there some degree of local variation and initiative allowed or encouraged? Is it closely geared to prescribed pupils' and teachers' books? Is it in a stage of relative stability or one of major change and innovation? The answers to such questions will determine the content and methods of in-service training courses.

Physical
facilities

The school buildings: Are they weather-proof? Secure? Is there storage space? What school

furniture is provided? Are there lockable cupboards for materials? Can children's work be displayed? Is there a reasonable supply of learning materials - number apparatus, card, paper, paint etc.? How large are the classes? Is group work practicable? Are the schools difficult of access - or inaccessible at times? These and many other matters vitally affect the ability of teachers to make good use of what they may learn on an in-service course, and will in some degree determine the nature of the course itself.

Competence of training staff

Professionally competent and experienced staff for in-service courses are an obvious prerequisite to success. But such people are in very short supply and, almost without exception, have full time jobs to do as teachers' college tutors, inspectors and the like. Planning must therefore take account of the staff resources likely to be available, which should not be over-stretched, and might consider the advisability of building up a nucleus of staff with full time in-service responsibility - whether as organizers or as the staff of specially created in-service centres or "extension" departments of teachers' colleges. (see Case Studies 6,7 and 8). Whatever the means employed, it is vital that the staffing aspect of any development be planned most carefully and that maximum use be made of all available talent.

Support from educational authorities

Few countries anywhere have yet built up an administrative support adequate to the development of a national in-service teacher training effort. And yet a programme well conceived and conducted professionally may fall down if it lacks the understanding and support of the educational administrators. This is particularly so at the post-course stage. Consequently in-service training for educational administrators is now seen as a vital element in educational development.

Finance

There was a time when in-service training of a limited kind could be carried out at no great expense by providing modest supplements to the budgets of local education officers and inspectors. This is no longer so in the conditions of today. Considerable provision on a national basis is necessary and even this, in the case of major programmes, has now often to be supplemented by outside, frequently international, agencies; as in the case, in varying degrees, of all the programmes described in the Case Studies in Part 2. Account also has to be taken of the longer-term financial implications of any major in-service training programme, where this includes an element of "upgrading".

NEEDS AND PRIORITIES IN IN-SERVICE TRAINING

Determining needs

A realistic assessment of the educational situation having been made, the most urgent development needs, both quantitative and qualitative, become clear. It may, for example, be that the education provided for children in the lower primary grades is of a very formal and authoritarian type allowing little scope for young children's creative and imaginative activities. The remedies may well be varied, such as smaller classes, more and better reading texts, materials for creative play, number apparatus and so on - but all depending for their effective use on the re-training of the teachers concerned or, in the case of unqualified staff, on their initial training.

Thus, if a policy decision were to be taken that the first priority in in-service training for the next three years should be the upgrading of the professional competence of all teachers of the first three primary grades, a detailed planning exercise would then have to be undertaken to translate this major aim into a practical programme within the resources likely to be available. (Factors to be taken into account in such planning are considered later under "resources").

Formulating objectives

From a professional viewpoint the general aim already decided on must be broken down into a number of specific and clearly stated objectives for the course, or series of courses, to be undertaken. In this way the various elements which go to make up the desired improved professional expertise can be identified. This will be of great assistance to those called on to organize and teach on in-service courses and will also provide criteria for evaluating the

effectiveness of the courses both in the shorter and longer term.

Planning appropriate kinds of courses

In his study of "In-Service Teacher Training in English-Speaking Africa", carried out in 1967-1968, Graham Trevaskis notes that, in the 13 countries surveyed, it is possible to identify courses initiated to achieve 7 major objectives, as follows:

- (a) Initial training for unqualified teachers.
- (b) Upgrading professional qualifications.
- (c) Implementing curriculum change.
- (d) Developing and evaluating curriculum materials.
- (e) Developing professional skills.
- (f) Improving administration and supervision.
- (g) Orienting participants to new responsibilities.

Trevaskis' detailed analysis makes clear that a wide variety of course patterns have been developed in pursuit of these major objectives. This is to be expected bearing in mind the varying local conditions and the absence of any established structure for in-service teacher training comparable to that which exists for pre-service training in most countries.

It is, however, clear that the first two of the major objectives are in a rather different category from the others, and in two respects. The objectives themselves are very broad and in practice must include, as suggested earlier, a number of more limited specific objectives; and consequently the courses developed to achieve those broad objectives are usually long-term, rarely less than one year and often stretching over three years or more. Whereas in earlier years, such courses have often been full-time and residential, and extravagant in

money and staff, more recently, with the much larger number of teachers involved, they have tended to take on the pattern of a series of short residential vacation courses together with correspondence assignments and sometimes radio broadcasts. (See "Modes of training"). The importance of clear and realistic definitions of objectives for such courses is well illustrated in the case of the Nigerian "Teachers' In-Service Programme" of recent years * where, not only would it appear that the capacity of the majority of the teachers involved to profit from the planned programme had been over-estimated, but, more important, the goals set and the means used to assess the work of the teachers were, in retrospect, seen to have been inappropriate. It might, therefore, be advisable, wherever practicable, for a large-scale in-service programme, even when carefully planned, as in the Nigerian case, to be preceded by a smaller-scale "trial run". In this way unforeseen difficulties might be brought to light and appropriate action taken. Staff would also have the opportunity of trying out and revising their programmes as necessary.

Courses geared to the other five objectives noted by Trevaskis would seem for the most part to have been likely to be much shorter in duration, ranging from one half-day to about a month, although not always taken in one block. Where this has been the case, experience suggests that it is essential for the objectives to be both strictly limited and closely related to the current work of the teachers in their schools.

Consider, for example, the need to introduce primary school teachers for the first time to

* Aleyideino, S.C. and Hawes, H.W.R.
"TISEP: A well planned in-service programme that didn't quite work".
Teacher Education in New Countries.
Vol. 12 No. 1, May 1971.

an environmental studies approach through a new curriculum. The objective, stated in such broad terms, for one five-day course for 50 teachers of different primary grades, might all too well result in a generalized programme of lectures illustrated by reference to the new curriculum and to the materials, such as teachers' guides which, one would hope, had already been prepared and tried out in a sample of the schools. How effective such a course would be in terms of the teacher's approach in his classroom is open to doubt.

On the other hand the objective stated in such terms as "to give teachers of primary grade 4 first-hand experience of a local environmental study in such a way as to prepare them for similar work with their pupils as part of the new curriculum" might well produce interesting and useful results, more particularly if a series of short local follow-up courses were possible so as to provide the essential interaction between course and classroom.

The temptation, for worthy enough reasons, to attempt too much, on too broad a front, in a short period must be resisted. The principle of limitation certainly should apply in the case of our objectives c-g, more especially where, as is so often the case, time, staff and money are themselves limited.

RESOURCES FOR IN-SERVICE TRAINING

The need for
co-ordinating
support

As the tempo of in-service teacher training in many countries has speeded up in recent years, it has often led to situations lacking any overall pattern or planned development. Local, regional, national and international bodies of many kinds have become interested and anxious to make their contribution. Thus overlapping and duplication of effort have been common and the need for some order and control has become urgent.

On the one hand the size of the task has made assistance from all sources welcome. On the other hand such help from a variety of quarters has needed to be welded together into a coherent overall, planned and progressive programme. Thus, national councils and co-ordinating committees representative of the main agencies have often had to be set up to plan and to ensure the fullest co-ordination of all available resources. Integration and co-ordination, together with realism and continuity have thus become the guiding principles for those who plan in-service teacher training.

Foreign and
national
agencies

The number and nature of the various agencies involved varies considerably from country to country, but may include any from the following sources:

Foreign

- International agencies e.g.
Commonwealth Secretariat,
UNESCO, UNICEF
- Foreign government agencies e.g.
USAID, ODM, SIDA

- Foundations e.g.
Ford, Carnegie
- Cultural organizations e.g.
British Council

National

- Central ministry of education
- Local education authorities
- Teachers' associations
- University institutes of education
- Religious organizations
- Correspondence institutions
- Radio and television authorities
- Examination councils

The role of the national ministry of education

Whatever the body, or bodies, involved in any particular programme, the national ministry of education, through its central inspectorate or other appropriate arm, will almost certainly have the final responsibility for ensuring that it is properly organized and conducted in line with its overall plan and policy. This should not, however, imply any undue interference with the way in which the course director and his staff carry out their task from day to day.

The role of national teaching councils

A further point that may be made under the heading of planning is the desirability of having a national body, perhaps a "National Council for Teacher Education" which has responsibility over the whole field of teacher education, including pre-service and in-service training. Lack of co-ordination between pre-service and in-service programmes has not been unknown in the past. The two should clearly be planned as inter-related parts of a continuing process. Teachers' experiences during their initial training must, for example, determine the extent to which they are likely to benefit from particular kinds of in-service training.

Sources of recruitment for training staff used in in-service courses

As with the schools so with any in-service training programme, the numbers and quality of the staff available are obviously of the first importance to the achievement of the objectives that have been set. Only in very recent years, however, - and for good enough reasons - has much attention been given to this matter.

The sources of recruitment for either full-time or short-term in-service staff are likely to come from:

- University and teachers' college lecturers
- Inspectors and advisers
- Headteachers
- Selected class or subject teachers
- Specialists employed in national curriculum development centres, resource centres, media production centres, etc.
- Specially recruited expatriate staff

In each case the main requirement will be that the person concerned is both knowledgeable and experienced in the area of education concerned. Also, as far as possible, that he, or she, is able to follow the in-service course work through, with teachers, into the school and classroom situation. One might add, too, the ability to establish, at an adult level, the right sort of relationship with experienced teachers, both qualified and unqualified.

In practice, however, the field of recruitment is usually not a very wide one and a great deal of use may have to be made of a relatively small number of suitable staff.

Full-time in-service staff

These are needed for the longer projects of one to three year or more as when the object is to upgrade or retrain major categories of serving teachers. A number of countries have now set up full-time in-service colleges or centres for this purpose with appropriate

staffing. An example is the National In-Service Teachers' College (NISTCOL) near Lusaka, Zambia; another the In-Service Training Centre at Kano, Nigeria.

Such centres may, in addition to long courses, also provide a series of shorter residential courses for anything from three weeks to three months duration. Since the range of work covered may be very wide, the permanent tutorial staff need to be supplemented for varying periods by others with particular qualifications or experience.

In any case it should be recognized that the job of the full-time in-service tutor is a particularly demanding one requiring, as already suggested, a combination of qualities not very commonly found. The situation, too, may be one in which different courses, or courses at different levels, are run simultaneously, or alternatively, where a large number of teachers are put through the same programme in a series of "repeat" courses. The good, effective, in-service tutor is thus likely to be a fairly rare bird and consequently needs incentive and status to enable him to give of his best under frequently difficult and taxing conditions. It is arguable that a job of this nature should be undertaken for not longer than two or perhaps three years at a time, at the end of which the tutor would return to his substantive post in school, college or inspectorate. Full time staff may also be required as in-service organizers, at national or regional level, in which case their duties are primarily administrative and their function to make all necessary arrangements to ensure the smooth running of the planned courses.

Part-time
in-service
staff

By far the majority of those involved in teaching on in-service courses do so in addition to their normal duties and are therefore available for only brief periods - a few days to a few weeks at a time - usually in school holiday periods.

The main problem here is likely to be the heavy demand on the time of the more experienced tutors for frequent participation in in-service courses on top of their regular work in school, college or elsewhere. A good course requires time for adequate preparation by the staff of course programmes and materials - a task which can be assisted by the production of "course guidelines" over a wide area of the school curriculum. Such guidelines, or "suggestions for in-service course tutors", could be prepared centrally by small subject panels at various levels and might include sample course outlines, lists of books and materials etc. At a time of widespread in-service activity and pressure on staff such guidelines could be very useful without being at all restrictive. Examples of such guidelines are to be found in the tutors' handbooks for the "Headmasters' and Unqualified Teachers' In-Service courses in Kenya" described in Case Study 4.

One strictly practical question is whether such short-course tutors should receive additional payment for their work. Practice and opinions on this vary from country to country. Certainly tutors, as well as teachers, are human and react favourably to a reasonable incentive.

Finance

No country can afford to enter on a major programme of development in in-service teacher training without first making detailed estimates of the financial implications, both short-term and long-term.

The annual budget for in-service teacher training must take account of a number of major items, including:

- Transport for staff and participants
- Catering for residential courses (less any payments made)
- Staff allowances

- Teachers' replacements in their schools (necessary in the case of long courses)
- Equipment and materterials
- Electricity and fuel etc .

In the case of major projects there may also be capital and/or maintenance costs for buildings including staff housing. In such cases, however, there may be an element of international aid which could extend also to the provision of staff and materials.

Inevitably the funds available may fall short of requirements, in which case economies will have to be made in the programme even to the extent of some courses being postponed until a later date.

An accurate check on the real expenditure on courses must also be kept and this could usefully be worked out in terms of a unit cost such as the cost per teacher per day. Such a costing exercise would enable more realistic future budget estimates to be made.

There are, in addition, significant long-term financial consequences of any major in-service programme which is concerned to upgrade unqualified or under-qualified teachers. This is especially so as a very large proportion of any education budget is taken up by teachers' salaries. Any Ministry of Education must thus look carefully at its future commitments arising from in-service courses.

Accommodation for in-service training

Most countries under-use their schools and colleges which often lie empty for several hours in the day and at weekends, as well as for up to 12 weeks in the year during holiday periods.

In theory, therefore, there ought to be no shortage of accommodation for in-service courses, either residential or non-residential. In practice, however, the demand for courses,

especially residential, tends to be concentrated in one or two favoured periods as, for example, shortly before the new school year. Further, long courses require, as already noted, their own accommodation in special in-service centres or colleges, or alternatively they take up teaching and accommodation space in existing teachers' colleges.

The extent to which in-service courses can be run on a non-residential basis (desirable for reasons of economy) clearly depends almost entirely on local geography. In a large town or a rural area with many schools and reasonable transport facilities, there need be no major difficulties, either during holiday periods or during term time at weekends. One in-service programme for teachers of young children used local schools during term time in a series of 5-day courses drawing teachers in from nearby schools. A room was set aside for the teachers' use in each school and children were brought in from time to time for demonstration and practice purposes. The programme proved to be very economical to run and enabled continuing and close contact to be maintained with children under normal school conditions.

As with other aspects of in-service organization accommodation for courses is a matter requiring careful long-term planning in relation to national and local conditions and with the need for economy always in mind.

TEACHERS' SUPPORT SERVICES

The needs of lifelong education for teachers

The courses and short term attachments that are able to meet the specific objectives of in-service teacher training are not well suited to the continuous process of renewal that is implicit in lifelong education. For this, additional resources are required, so that the teacher can be supplied with:

- (a) Intellectual nourishment and stimulation.
- (b) Practical and material support for his day to day teaching.

Long established resources cater for some aspects of these needs and it is a matter of encouraging teachers to make the fullest use of them. For other aspects, the resources are still under development and teachers have an opportunity of influencing and shaping them.

Intellectual needs

Teachers are accused, sometimes justifiably, of not reading educational research and not keeping in touch with trends through educational publications. The problem is understandable in that teaching can be an absorbing occupation in itself and completely satisfying. Nevertheless, a valuable dimension in teaching is lost by those who choose to ignore the literature.

Educational publications

Textbooks are for study and do not come into the category of resources for lifelong education considered here. Teachers' journals and educational research publications, on the other hand, provide the kind of news and information of which each teacher should be aware if he is to make the claim to be professional. Such publications can help to stimulate new ideas

and bring about positive change in the way the teacher does his work. They can also encourage him to reflect upon what he is trying to do, so leading to that rewarding experience of inspiration in which new ideas are born and new experiments attempted. Teachers should therefore discipline themselves to the inclusion of such resources in their intellectual diet.

Correspondence
education

The economics of education is such that governments can afford only a very small proportion of their teachers to be involved in courses of in-service training at any one time if that training should take them out of the classroom and make their replacement necessary. But they look more favourably on systems such as correspondence education that enable teachers to further their education while remaining on the job.

Correspondence courses, aimed simply at the intellectual enrichment of teachers do not at present exist. As yet, all courses are designed to help teachers pass specific examinations in the furtherance of their careers. But the growing number of institutions which offer correspondence courses and the increasing variety of subjects covered by these courses, make correspondence education a resource that the teacher should not ignore. It offers a means of advancing his knowledge, deepening his understanding and broadening his interests; and the Commonwealth Secretariat has brought out a publication * giving details of correspondence institutions and the courses they offer in order to provide precise information to people in all walks of life who want to further their education by correspondence.

* Correspondence Institutions in the
Commonwealth 1976
Commonwealth Secretariat

Educational
broadcasting

Broadcasting organizations in developing countries regard education as a major element in their total schedule of programmes. Broadcasts to schools and teachers' colleges represent only a part of this service and so teachers can derive benefit from the many other programmes that carry information about educational developments or which discuss educational issues.

Today, teachers in a number of countries are being invited to share in programme production so that matters that really concern the profession can be tackled in ways that are relevant to them. Also, outside broadcasting performed in schools together with phone-in techniques and such like, are offering teachers the opportunity to share constructively in their own continuing education.

New dimensions of communication have been demonstrated in the Pacific region by the use of the artificial satellite PEACESAT. This has been used by educationists and others in the island communities to converse with each other on professional matters and to hold radio conferences. The full potential of educational broadcasting in all its varied aspects is yet to be fully grasped by teachers.

Practical and
material
support

Teachers often complain of the lack in their schools of adequate resources for learning and teaching, and how this lack hinders lesson preparation and innovation. The cost of providing such resources, at least in the case of primary schools in developing countries, has been prohibitive. Consequently, in the normal course of events, teachers have been denied any share in devising and producing teaching materials other than those which they could make by hand from local materials.

As a counter to this problem, countries have been taking up the idea of resource centres and media production units. For example, the Tivoli resource centre in Grenada was

developed as part of the Caribbean Mathematics Projects to help with the production of teaching materials, today offers teachers the services of a small staff of skilled personnel and a certain amount of technical equipment such as typewriters, photocopier, offset litho printing machine, collator, sticher, and guillotine for producing materials which teachers or their classes have devised; and it does so at cost price.

In Fiji, a rather different support service for teachers is provided by a Ministry of Education textbook production unit at Nasinu Teachers College. This unit works closely with the country's curriculum unit where its staff of forty five curriculum writers double as school advisers to devise and implement new curricula in the schools. A rather similar relationship exists between the Jomo Kenyatta Foundation and the Kenya Institute of Education where the latter acts as the developer and distributor of new curricula while the former provides all the technical resources for printing and publishing.

Resource centres at institutional level, are essentially multi-media lending libraries with low priority given to production. At regional and national levels, the priorities are reversed because of communication difficulties so that in place of lending, greater emphasis is paid to production.

Teachers'
centres

In recent years the rapid development of Teachers' Centres * in Britain has attracted widespread interest, not least in a number of developing countries. Initially these Centres were established to provide in-service and study facilities for teachers involved in new

* Teachers' Centres

Edited by R.E. Thornbury, Darton,
Longman and Todd, 1973.

curriculum work, particularly in mathematics. In more recent years they have widened the range of their activities and facilities considerably and provide not only a variety of in-service courses to meet local needs, but also

- cater for teachers' curriculum study groups (for the production of materials for use in local schools);
- provide a library service, usually of a reference nature;
- have a range of educational equipment and apparatus (including films and tapes) for demonstration, practice and often loan to schools;
- provide workshop facilities (wood, metal, clay etc.) for teachers;
- act as a meeting place and social centre for teachers with a common room and limited catering facilities.

The variety of teachers' centre

Teachers' Centres vary in size, facilities and function. Some are large, with lavish accommodation. Others are merely a room or two within some institution. Some offer first class photographic, recording and reprographic facilities and a good range of basic materials from which teachers can produce their own teaching aids. Some also have printing equipment that rivals that of commercial firms. At the other end of the scale, there are teachers' centres that can boast little but a friendly and willing part-time warden.

In areas with a high density of schools, there has been a tendency for teachers' centres to specialize in particular fields of education. Some have become Mathematics Centres, others Social Studies Centres, and so forth. But, where they have to serve an extensive geographical area, they have generally tended to be comprehensive in the service they offer.

The permanent staff of a teachers' centre

The staffing and management of a teachers' centre is important if it is to function effectively. Usually a Warden is put in charge of the Centre and he is given secretarial and possibly technician help to assist in running it. The Warden is generally an experienced teacher with good organizing ability and a pleasant welcoming manner, for public relations play an important part in his job. He must also be a person who understands the need for and the techniques of curriculum development. Additional staff members consisting of experienced teachers, may be seconded for limited periods to help build up resource materials and carry out in-service training, but every effort is made to keep the permanent staff as small as possible so that the programme can be kept flexible.

The management committee of a teachers' centre

The management committee usually consists of a representative of the Ministry of Education or Local Education Authority, depending on which of these is responsible for the Centre, together with representatives of local primary and secondary schools, teachers colleges and any Institute of Education that may be in the area. This committee plans the programme of courses and other activities held at the Centre. The school teachers' representatives ensure that the programme responds to local teachers' needs while the higher institutional representatives are able, through their knowledge of experts, to suggest suitable people to lead the activities.

The programme of a teachers' centre

The pattern of the programme that emerges from such a committee will naturally vary, but the options are not unlimited, and so there are usually elements of the following:

- (a) Lectures and very short seminars held after school.
- (b) Conferences lasting a whole day or even a weekend.

(c) Workshops covering a series of after school sessions either on successive days or on the same week-day for several weeks.

(d) Exhibitions of new books, teaching materials and technical equipment.

(e) Exhibitions of children's work in local schools to illustrate the implementation of new curricula.

(f) Exhibitions or demonstrations of local teachers' bright ideas and innovations to stimulate and inspire other teachers.

In addition, the Teachers' Centre will provide teachers with information on current events likely to be of interest and relevance to them.

Teachers' centres and communication

Maintenance of effective communication links between teachers and the Centre are vital. This is only partly achieved by the teacher representatives on the management committee. Better links result if a teacher in each local school is appointed as the Teachers' Centre representative. This teacher can keep the Warden informed of the wishes and reactions of his colleagues with regard to the Centre's programme and, at the same time, keep his school informed of its current activities. In addition, however, most Centres' have found it useful to publish a regular newsletter giving information about the programme, lists of recent acquisitions of books, materials or equipment, and any educational news of local interest.

The location of a teachers' centre

The whole concept of a Teachers' Centre is based on the necessity for its being a place to which the teachers it serves have easy access. Consequently great care has to be given to the choice of location. As a rough guide, no school should be said to be served by the Centre if the form of transport normally used

by teachers involves more than two hours travel to get there.

Alternative forms of teachers' centre

If no site fulfills this requirement of access, it is best to think of alternatives such as motorized mobile units containing film projection and exhibition materials together with some of the technical equipment that a Teachers' Centre would normally possess. Units of this kind already exist and are generally staffed by crews of two or three trained personnel who travel from place to place within the area served and "camp" at school sites. Teachers are invited to make intensive use of a unit while it is with them. Another alternative is to make temporary Teachers' Centres by providing and equipping a room or two in a school for a term or so at a time. Such centres can achieve greater results because of the longer time they are open to teachers, but it is difficult to find staff willing to keep up the nomadic life imposed by either these or the mobile units.

PARTICIPANTS FOR IN-SERVICE TRAINING

Categories of
in-service
training need

In the conditions of educational change and development obtaining in almost all developing countries today the need for in-service training appears limitless and ranges across all levels and types of staff. These may be briefly summarized as follows:

- (a) Primary and secondary levels
 - Unqualified teachers
 - Qualified teachers
 - Headteachers
- (b) Teachers' college level
 - Potential and recently appointed tutors
 - Experienced tutors
- (c) Inspectorate
 - New recruits to the Inspectorate
 - Experienced inspectors
- (d) Educational administration
 - Provincial/regional and district education officers

Choosing the
participants

Decisions on priorities at national level will determine which categories of staff will, in any given period of time, receive major attention in the in-service programme. In practice, the need is likely to be such that few, if any, major groups will be entirely excluded. Further, since it is clear that the implementation of curriculum change is a main purpose of many in-service programmes, a new development at

one level will automatically involve staff at other levels. For example, in order to implement a newly devised and tested primary science curriculum, with its materials, it may be decided to mount an in-service training programme on such lines as:

- (a) A national-level course for key staff - senior inspectors and heads of science departments in teachers' colleges.
- (b) Regional-level courses for district inspectors, assistant inspectors and other college tutors.
- (c) District-level courses for head-teachers and teachers from selected schools, timed to correlate with the progressive implementation of the new curriculum in the schools.
- (d) A series of local school-based one-day courses to follow up the district-level courses, and staffed by the district inspectorate and college tutors.

The carrying out of a programme of this nature is a complex operation. There will be numerous practical problems to be tackled and difficult decisions to be made. What are these likely to be, as far as the various participants are concerned?

In-service training for primary school teachers

The main problem here would seem to be the sheer size of the teaching force, unqualified and qualified, in need of in-service training. Ghana had in 1971 some 33,000 primary school teachers, of whom about 42% were unqualified. In 1970, in Kenya, the comparable figures were 45,000 and 27%; in 1973 in Jamaica 10,000 and 47%; in Malaysia in 1971 the figures were 45,000 and 21%. Such situations pose considerable problems of selection, and the criteria to be used in the selection process, more particularly in the case of major programmes for unqualified teachers. Their

academic standards and capacity to benefit from in-service training have to be assessed, possibly by some form of written examination.

Even in the case of qualified teachers it cannot be assumed that their previous education and training, especially in the case of older teachers, has been such as to enable them at all easily to profit from further training. In Kenya, 63% of the qualified primary teachers in 1970 had no more than a primary education themselves; in Malawi 86%; in Sierra Leone 54%. Paradoxically, therefore, it may well be that those selected for in-service training are those who are least in need of it, and vice versa. And yet the teacher supply situation usually makes it necessary to continue to employ all, qualified and unqualified, who are willing to offer their service.

Deciding on incentives

Increasingly, too, the provision of incentives for professional advancement is seen as a major problem in in-service training. With the numbers involved at the primary level Governments clearly have to approach this matter with considerable care in view of the likely financial implications. The keen competition for places on upgrading courses at various levels is sufficient evidence of the effectiveness of the incentive i.e. upward movement to a higher salary scale. Such courses however, tend to be relatively long, residential, or partly residential, with participants on full salary, and so very expensive in themselves, particularly when the teachers concerned are away from their schools for considerable periods and replacements have to be found. The award of one, or perhaps more, increments is thus an alternative form of incentive for certain types of courses and this may well be geared to "a credit" system for in-service courses along the lines proposed in Papua New Guinea. For most shorter in-service courses, however, no direct financial incentives are likely to be available; and at primary level the opportunities for promotion in any meaningful sense are so limited that this prospect is hardly calculated

to provide an effective substitute for financial reward. It may, very well be agreed however, that a teacher may reasonably be expected from time to time to devote a weekend in term time or a week or two in a school holiday period to activities which aim at helping him, in a period of change, to do his job more effectively. He should not, however, be out-of-pocket as a result of fulfilling such an obligation. In many countries it may be the in-service staff, especially college tutors and inspectors rather than the participating teachers who may justifiably feel over-stretched. It has not been unknown for such men and women to be required to serve at one and the same time both as course tutors and as members of staff training courses.

In-service training for headteachers

The crucial role of the primary school head-teacher in building up sound educational standards has long been recognized. However, many good heads of former years have been overtaken by more recent educational developments and the number of schools, and thus of heads, has greatly increased. Thus head-teachers, as in Kenya, now figure increasingly in in-service courses, particularly those concerned with improving administration and supervisory skills. Where new curriculum developments have been to the fore, the need for headteachers, as well as members of their staffs, to be fully aware of, and sympathetic to such changes, has frequently led to their personal involvement in curriculum courses from an early stage. The realization that change involves the whole school and its organization has led in some cases to the whole school staff, rather than individual teachers, being regarded as the proper unit for further education and training; such is the case in the current phase of Lesotho's in-service programme. (see Case Study 1)

Here the problems have been less acute because of the much smaller numbers. The needs, however, have often been very real,

particularly in two areas. First, many secondary schools have been staffed in part by professionally unqualified staff, mainly young graduates straight from university. For many of these, teaching may only be a temporary measure before moving on to a better paid job elsewhere. Others, however, may not find this possible or may wish to make teaching their career. Professional qualification can then be obtained either by full-time attendance for a year at a university education department or by a series of shorter courses during vacations of the kind recently introduced at the Institute of Education, Zaria, Nigeria.

Second, the demands being made by curriculum developments, particularly in science and mathematics, are requiring the re-training of many existing secondary school teachers. Problems here are lack of enough qualified and suitably experienced staff for the needed courses and the relatively high costs both of bringing teachers from far afield to the centres (often the university) and of providing the apparatus and materials required by the new curricula.

In-service
training for
teachers'
college tutors

Higher minimum entry levels into teacher training have not only meant that many primary school teachers have found themselves under-qualified. Many college tutors have also been in much the same position. Upgrading programmes for such members of college staffs, together sometimes with newly appointed or potential tutors, have thus been a feature of in-service work at this level. The National Institute of Education in Uganda has provided one and two year courses of this kind since 1966. Increasingly, too, graduate-level education courses have made special provision for the entry and further education of experienced teachers' college tutors.

Additionally many, usually shorter, in-service courses have been organized to bring the experienced tutor abreast of recent developments in his own subject field, particularly in science and mathematics.

All such programmes aim to increase the tutors' effectiveness both in his pre-service and in-service role. The problem for the well qualified and experienced tutor has therefore been to find time for the varied activities in which he is called upon to engage.

In-service training for inspectors and supervisors

The participation of members of the inspectorate in in-service training seems likely to be evident at two main levels:

(a) Orientation-type courses for newly appointed inspectors. Both the rapid growth of numbers in the inspectorate and re-definition of their role have made courses of this nature essential.

(b) Curriculum courses associated with new developments. These usually involve inspectors' active involvement in an in-service role such as, for example, the primary science programme referred to earlier.

The main problem faced by inspectors, as Trevaskis points out, is to find time amongst their many duties to attend courses and conferences aimed at improving their own competence. Yet in the changing conditions of today, it is essential that inspectors, or advisers as they might be better called, should be professionally well equipped and abreast of educational developments.

In-service training for educational administrators

The importance of an efficient and well-informed educational administration not only in supporting in-service teacher training but also in educational development generally is unquestioned. With the recent rapid educational expansion in many countries both the range and complexity of the administrators' task have increased

considerably. So have the number of administrators. As with the inspectorate, therefore, orientation and regular training courses have become a feature of in-service work, limited only by the time and finance that can be devoted to them.

MODES OF TRAINING

The variety
of patterns

In recent years a large variety of types of in-service courses have been devised in many countries to meet a wide range of needs and conditions as economically as possible. It is therefore difficult to suggest any simple classification of in-service courses. How does one define a "short" course? And may not an in-service "project" or "programme" be made up of a variety of different elements - "short" and "long" courses; weekend conferences; radio study groups; correspondence assignments and so on?

It is therefore only for the purpose of convenience of discussion that the following main types are suggested:

- (a) Short courses
 - (i) One off
 - (ii) Serial
- (b) Long courses or projects
 - (i) Continuous
 - (ii) Serial

One off
short courses

These courses tend to be the most numerous, being brief in duration, relatively cheap to run, and requiring no complicated organization. They may last anything from half a day to 3 or 4 weeks and may be residential or not according to local circumstances. The main feature of this type of course, as indicated by its "one-off" label, is that it is intended to be complete in itself and does not necessarily lead on to any further training for those concerned.

Such courses in earlier years were commonly referred to as "refresher" or "improvement" courses, intended to "brush-up" teachers' knowledge or techniques in particular subject areas. More recently they have been devoted very largely to introducing fairly large groups to new subject syllabuses and materials as part of major curriculum development programmes. In either case such courses must set themselves strictly limited and practical objectives if they are to have any outcome in terms of better classroom performance. This point emerges clearly from the Montserrat case study.

Serial short courses

The essential feature of the serial-type course is that it is broken up into a number of usually fairly short segments and spread over as long as a term or even a year. The segments need not be of the same length. For example, a course for a group of teachers concerned with introductory science in the first year of the secondary school, might begin, in a holiday period, with a 3-day block, go on to a series of 10 weekly half-day sessions during the term, and finish with another 3-day block during the next holiday period. A similar purpose might be met by a series of 10 Saturday morning sessions, in this case not involving any release of the teachers during school time.

The main advantage of this kind of arrangement is the close and continuing relationship which is possible between the course and the teaching/learning situation in the schools, thus giving the project clear purpose and relevance. Such "courses" are likely to develop a strong "workshop" approach with a good deal of teacher participation and feed-back from the classroom.

In practice, however, serial-type courses are only practicable where it is possible for a sufficient number of teachers to get regularly to the chosen centre without having to spend a lot of time in travel. One teacher in Uganda, however, known to the author, travelled fifty

miles each way at his own expense every Saturday morning during term time to attend a course at the Institute of Education. Day release programmes can thus be effective in fairly large urban centres; and Saturday or weekend courses in compact rural areas and where transport is available. It is in such situations that the local Teachers' Centre - even when it is only a spare room in a centrally located school - comes into its own as a focus for a variety of activities aimed at promoting teachers' professional understanding and skills.

Continuous
long courses

The longer type of continuous course, lasting for one or two years was an early feature of the in-service training scene in a number of countries and is still by no means uncommon.

Courses of this nature have as their purpose the upgrading to qualified status of untrained teachers, or the further education and training of already qualified teachers. In Uganda, for example, between 1953 and 1960 some 400 "vernacular grade" teachers were upgraded to full primary teacher status as a result of one-year courses in which particular emphasis was given to the teachers' own competence in the English language and the teaching of this subject. During the same period some 200 specially selected and fully qualified primary teachers also followed upgrading courses of the same length which were aimed at helping them to teach in the junior secondary schools. The Uganda Education Commission, reporting in 1963, condemned this latter type of course as depriving the primary schools of their most skilled and experienced teachers. At a later date, with the growth of secondary-level teacher training, this course was discontinued.

Chief
characteristics
of continuous
long courses

Long courses of this type generally display some of the following characteristics:

- (a) Their objectives are broad rather than limited and specific. The teacher's personal education as well as his professional ability is included in the

course and the whole school curriculum is studied, discussed and tested in practical exercises.

(b) They require full-time staff, either in a designated in-service college or centre or in a teachers' college which is taking on such an in-service commitment in addition to its normal pre-service work.

(c) They are residential.

(d) The teachers concerned have to be replaced in their schools, very possibly by temporary, untrained staff.

(e) They are expensive, for the reasons already indicated and also because the teachers probably continue to receive their normal salaries during the period of the course.

Courses of this kind, whilst probably continuing to have a part to play in a national in-service training programme, can only cater for relatively small numbers of teachers at a time and are tending to be replaced by the more economical "serial" type in-service project.

Chief characteristics of long serial and project courses

Further accounts of this type of in-service programmes are to be found in the case studies on Uganda and Swaziland.

It will thus suffice here to suggest what are likely to be the main features of such projects.

(a) There is usually a full-time, face-to-face training period (normally residential) broken up into a series of three or more fairly short periods of three to six weeks each. These may be in the school holidays only or continued throughout the year. If they are continued beyond holidays, full-time staff and accommodation are required, thus adding considerably to the cost.

(b) In between their residential courses, the teachers may continue with their normal teaching duties but, at the same time, work on a set of correspondence assignments to which they have already been introduced on their course.

(c) They may listen to regular radio broadcasts directed to them and intended to keep alive their interest in the on-going programme.

(d) They may also receive from time to time a project "Newsletter" to which they themselves are invited to contribute.

(e) They are visited in their schools by their project tutors whose task is to advise and help them in all possible ways to apply their training in the realities of the classroom situation. Such visits from project tutors are really possible only if they are full-time in-service staff for enormous practical problems develop if they are only part-time staff.

(f) Both during and at the end of the training period, the teachers are assessed by written tests (including assignment grades) and in practical teaching. If successful, they then receive the appropriate qualification.

METHODS OF WORK

The need for teaching methods similar to those the candidates will use

It is a commonplace that young teachers, when in doubt, tend to revert to the methods which they themselves experienced as pupils and students. For this reason, careful thought needs to be given to the methods of teaching and learning to be employed on in-service courses. No course concerned to encourage a more active, enquiry-based, approach to learning is likely to be effective if it is conducted very largely through a series of formal lectures.

Most in-service courses aim at bringing about some change in what the teacher does and how he does it. For this to happen, teachers need not only to know about the suggested new materials or approaches, but also to have the experience of seeing and using them in such a way that they will feel a personal commitment to trying them in their own school situation in face of the inevitable difficulties.

Characteristics of suitable methods for in-service training

What then, can be said about the most suitable methods of work to be employed over a widening range of types and levels of in-service training?

Perhaps the following main points might be made:

Varied

1. The methods used should be varied. This variety should be evident not only in the course as a whole but in the daily sessions. This hardly needs arguing. A week's course consisting of a daily morning round of four lectures followed by an afternoon session devoted to a series of routine exercises is not very likely to provide the desired stimulus to fresh thinking and improved performance.

Related to the nature and purpose of each course

2. The methods should be suited to the nature and purpose of the course. The short environmental studies course for primary school teachers referred to at the end of the section on Needs and Priorities in In-service Training should obviously take a very practical and professional form, and might well include:

- (a) Introductory discussion with the whole group on the new school syllabus and the purpose and plan of the course.
- (b) Planning the project to be undertaken, including map study and discussion of techniques and resources.
- (c) Small group investigations in the local environment.
- (d) Recording findings in a variety of forms - in writing, diagrams, graphs, maps, photographs, tape recordings etc.
- (e) Display and presentation of work done to the whole group with discussion of difficulties encountered and those likely to be encountered in the primary school.
- (f) Individual, or small group, preparation of schemes of work for use in teachers' own schools.

In such a situation, the methods chosen would thus hopefully provide the teachers with both an experience of, and preparation for, an environmental studies project in their own school areas.

In contrast, a long-term upgrading programme which is concerned to improve both the personal education as well as the professional competence of those involved, is likely to make use of a very wide range of methods including those of a more formal kind.

Related to the level, experience and needs of the participants

3. The methods used should also be suited to the teachers taking part in the course. They should take account of their education, whatever professional training they may have received and their teaching experience; also to the circumstances in which they carry out their work in the schools.

A project like the Uganda Grade 1 upgrading course described in Case Study 5 found it necessary, for example, to concentrate effort in its first year of operation almost entirely on improving the teachers' own English. Consequently, and because of the particular needs of this group of teachers, much time and attention was given to practise in correct spoken English.

Courses in modern mathematics for teachers have to take account of the fact that almost all those concerned have themselves been taught through a very traditional approach to the subject. The same is true in the case of courses aimed at introducing teachers to social studies through an integrated approach. In both cases the situation demands methods which will give teachers themselves a first-hand and vivid experience of the new approach.

The more active, enquiry based, methods used on in-service courses may, however, run into the difficulty that the teachers' pre-service professional training was of a very formal kind; one in which little was done to develop the student's personal study skills, with the result that their conception of education as something to be "received" was re-inforced rather than the concept of it as something to be developed by a process of personal enquiry. Thus the teacher's whole academic and professional background may be such as to make a more modern, student-centred, approach on in-service courses not at all easy of achievement, at least at first.

Related to the working conditions of the participants

It must also be the case that the actual conditions in which teachers often work in their schools are constraints which cannot be ignored. The pattern of school organization and authority may be such that it will be very difficult for one teacher, however keen and able, emerging from an in-service programme, to put his ideas into practice. This supports the argument for priority for in-service work to be with headteachers or indeed with whole school staffs as suggested in Case Study 1. The physical facilities of the schools such as furniture, equipment, teaching and learning materials and the size of the classes teachers have to manage, must be very much in the minds of in-service staff when planning their courses. How much individual attention or group work is possible with classes of over 50 which are a far from uncommon experience in the primary schools of many countries? Can the preparation, perhaps on a course, of sets of graded work-cards in mathematics, science or language help the teacher in such a situation?

Workshop type courses

4. The methods used should aim at maximum participation by the teachers themselves. This is implicit in much that has been suggested already and is in line with accepted principles of learning at any level. It is even more to the point in the case of serving teachers as they often have as much to give as to receive in an in-service situation. The practical experience, even of the untrained teacher, is something to be drawn on and made maximum use of at every opportunity. Ideally the approach should be a "problem-centred" * rather than a "solution-centred" one in which it is assumed that the tutor has all the answers and it only remains for the teachers to learn, accept and apply.

* Eraut, M.

In-Service Education for Innovation.
National Council for Educational
Technology, 1972.

Dr Beeby warned of the danger of this latter approach when he wrote, "the average teacher has a very great capacity for going on doing the same thing under a different name". Case Study 3, which describes the Caribbean Mathematics Project was one in which "teacher development" and curriculum development were approached as but two sides of the same coin and it illustrates very well how productive and educative a "problem-centred" or "workshop" type approach can be.

Appropriate
training
activities

The task of the in-service staff, then, is to select and devise methods of work appropriate to the aims and circumstances of their course or project. The following list, by no means exhaustive, may be helpful:

Formal lectures

Research suggests that they have very limited value in the learning process; perhaps their best use is as an introductory stimulus or concluding summing-up.

Lecture-discussions

Because of their greater informality and greater opportunity for questions and comments by participants, these are superior to lectures.

Discussion groups

These are best if the groups are composed of six to twelve participants and are used to discuss specific questions raised in the course.

Study/work groups

These carry out specific tasks such as planning a project, making work cards, designing an experiment, planning an exhibition, or producing a play and offer collaborative involvement for all participants.

Individual work

This might include demonstrations by staff, practice by teachers, (including micro-teaching), correspondence assignments, researching from reference books and materials, craft work, or child study.

Apart from formal lectures these approaches are flexible in that they can be used for a variety of purposes, in and out of class, and allow for the maximum of participation by those concerned. In all cases the use of suitable audio-visual aids to learning and teaching should be standard practice and wherever possible teachers should be involved in preparing and using such aids, especially those relevant to their own classroom work. It may often be an important course objective that teachers should return to their schools with a package of materials which they themselves have prepared and which they plan to use with their pupils.

The need for services and resource materials

Methods of work requiring teachers to be active in practical tasks need services which must be carefully planned well in advance to allow time for arrangements to be made. Where course tutors are brought together from their different places of normal duty, it is helpful to have an "on-the-spot" course organizer, often a member of the staff of a Teachers' College where this is the location for a course. He can co-ordinate the requirements of the tutors, order materials, and be responsible during the course for their issue and for all the regular services needed such as accommodation, food, transport and welfare. An efficient course organizer, preferably with no teaching duties, can be a great help and support to the tutors and indeed contribute considerably to the success of the course.

A college, or in-service centre, has the advantage of a library which can usually be made available for teachers' use, as can craft rooms

and equipment of different kinds. Materials, however, such as paper, card, paint, wood, clay, fabrics and so on, have to be assembled in sufficient quantities and paid for from course funds. In some cases, teachers may be required to bring certain materials with them, or alternatively, schools may be charged for the materials teachers use and take back with them for use.

A short course should be a busy one. When motivation is good, teachers will often be found working away in their spare time to make sure they get the most out of it. Nevertheless, there should be time set aside for recreation, arranged by the teachers themselves and using such facilities as the course centre can offer. Where possible also, one or two educational visits to local places of interest may be well worthwhile, particularly where teachers come from widely scattered and often remote rural areas. Here again is an activity that the course organizer can plan and arrange in advance in consultation with any people in the locality who may be concerned.

FOLLOW-UP

The case
for follow -
up

"The provision for in-service training may be excellent and the arrangements beyond reproach, but it can still be ineffective if the opportunities for teachers to apply the training in their school work are very limited or non-existent. Staff may soon forget the new methods or the alternative approaches if difficult circumstances, lack of equipment, or lack of encouragement prevent them from putting the training into practice." *

This comment, written in the context of Britain in the late 1960s, could be just as true - even more so - for those countries with less highly developed educational systems and therefore less chance of providing the conditions necessary for effective follow-through from in-service courses to the classroom situation. A Jamaican primary school headmaster writes: "The successes on the courses are only superficial. Very little or nothing is done to ensure that the teachers' experiences are conveyed to the classroom situation the courses are a temporary break from the classroom and materials to revert to his old, often irrelevant experiences." It is perhaps unnecessary to state the obvious; that in-service training is only a means to an end - better teaching, and thus better learning. In this connection it would seem clear that the less well educated and professionally qualified a teacher is the more help and encouragement he is likely to need

* Cane, B.
In-Service Training.
National Foundation for
Educational Research, 1969.

"on-the-job" after - or in the process of - involvement in an in-service training programme.

The purpose of follow-up

The first purpose of any follow-up exercise is thus to achieve the maximum possible "carry-over" from course to classroom; helping the teacher to apply what he has learnt and experienced in the particular circumstances of his school.

The second is to provide reliable "feedback" on the adequacy of the course programme itself, leading to re-examination and revision as suggested by experience in his schools.

Problems of follow-up

In the context of many developing countries the follow-up phase of an in-service programme frequently presents many intractable problems. The need is clearly seen, but the means are rarely available in any adequate measure.

The main problems and difficulties, varying in nature and degree from country to country, and from urban to rural areas, are likely to be:

- (a) Poor physical conditions in the schools - especially primary schools: excessive size of classes; temporary and insecure buildings; lack of storage facilities; shortages of furniture, equipment and school materials, including books.
- (b) The physical and thus the professional isolation of many teachers in rural areas.
- (c) Difficulties of communication between school and the main educational centres, either in personal contacts or through the printed word or mass media.
- (d) Shortages of supervisory staff, transport and finance.

Ideally specific provision for the follow-up element of an in-service teacher training project should be built in at the planning stage. In practice, however, it is rarely possible to do this except in the case of major long-term programmes, particularly where these are made up of a series of unit courses. More commonly ad hoc efforts to make a course effective have to be resorted to. In general the methods of follow-up which may be available fall into two main categories: those external to the school itself and those located "in-school".

Follow-up
at the
personal
level

Advisory help may come to a school from outside in a variety of ways. At the personal level this will usually take the form of advisory visits by inspectors as part of their regular programme of work. However, the inspectors may not always be familiar with the objectives and nature of an in-service project, especially if it lies outside their own particular subject interest. In any case, time is a limiting factor and inspectors have a variety of duties to perform, and usually more schools to supervise than they can easily give full attention to. (It is not uncommon for an inspector to have 100 or more primary schools in his charge).

There may be circumstances - as with the "New Primary Approach" in Kenya in the 1960s or the early years of the "Zambia English Medium Programme" - in which a special corps of supervisors is considered essential to the effective implementation of a new educational programme. The difficulty is usually to find, and make available, suitable staff for such a purpose, and to retain them for a sufficiently long period.

Ideally, the people who should provide the follow-up advisory support are the members of the in-service course staff, but this is not always possible. Expatriate tutors frequently employed on short Teachers' Vacation Courses have extremely limited opportunity for any follow-up of their work although even a little

may be helpful as mentioned in Case Study 1. Where campaigns or programmes are staffed by teachers or college tutors during their vacations, it is equally clear that they will be too fully occupied with their other duties during term time to visit schools and help teachers. Full-time in-service staff are, of course, in a much better position to carry out this essential task, provided that provision for it in time and money is built into the programme as was the case in Case Study 6.

Follow-up
by advisory
personnel

It may be asked just how a teacher can be helped by visits from supervisory staff. Much will depend on individual circumstances and on the degree to which the teacher is aware of the kind of help he needs. In general, the adviser - so long as he is not acting in a traditional inspectorial capacity - can discuss his problems with the teacher; see him at work; remove misunderstanding; advise on preparation of lesson units, learning and teaching aids and suitable class organization; clarify his suggestions by demonstration; seek the understanding and support of the headmaster for the teacher's work and in many other ways. What matters most, perhaps, is the quality of the relationship established in such a way as to give the teacher positive help, encouragement and confidence.

Follow-up
meetings

In addition to - or sometimes instead of - individual school advisory visits, local groups of teachers from a number of schools may be brought together at a convenient centre such as a teacher's centre for a half or one-day follow-up meeting. Depending on need, this may have the characteristics of a short course with demonstrations, a workshop, conference, discussion group or a combination of these. The particular advantage of such an arrangement is clearly the opportunity for teachers to meet and exchange experiences and ideas in the setting of their own locality and preferably in one of their own schools.

Follow-up
within the
school

Outside help for the teacher cannot always be relied on. Travel may be difficult or impossible; postal services erratic. What can the school do to help itself? Often, it must be confessed, in the deprived situation in which it finds itself, not very much. And yet a start can often be made, even if only in a small way.

The role of
the headteacher
in follow-up

Much depends on the headteacher and his capacity to fulfil an in-service function in his school. The key importance of the headteacher was noted in the study of primary education made in Sukumaland, Tanzania in the mid-1960s.* It is reflected also in the increasing provision made for primary headteachers in in-service courses, for example in Kenya, Nigeria, Botswana, Lesotho and elsewhere. Such further training can help the head to consider how he can assist his staff to make the best use of their own in-service training experiences. Interest, encouragement, and help with materials are the more obvious ways. Some supervision, suggestion and perhaps demonstration may also be appropriate. And, if he is to be really helpful, the headteacher must take the trouble to familiarize himself with the aims and content of the courses his teachers have attended. Where major new curriculum developments are in progress the head himself should be personally involved in the re-training process - perhaps with the whole of his staff as in the case of the most recent phase of the Durham-Lesotho in-service training programme described in Case Study 1.

The needs of
the headteacher
as a
professional
adviser

In this context the headteacher becomes a professional adviser. But if he is to be effective, he not only needs further training, his status needs to be more explicitly recognized. He needs some release from what is often a full-

* Primary Education in Sukumaland, Tanzania,
Wolters-Noordhoff Publishing,
Groningen, 1969.

time teaching commitment, and more continuity in his post than is frequently the case. In addition he will need the full support and help of his local inspector and education officer. Nothing is likely to do more to improve the quality of education, especially in the primary schools, than the building up of a corps of professionally competent and dedicated head-teachers accorded the status that is their due.

EVALUATION

It has already been suggested that one of the main purposes of following-up an in-service programme is to provide reliable feed-back on the adequacy of the programme itself, thus providing guidelines for future course planning. It would seem that, in practice, evaluation is frequently no more than an incidental by-product of an informal process of follow-up, often carried out by staff who have not necessarily had first-hand experience of the in-service programme itself.

However, where countries are committing themselves to a growing involvement in in-service training as a major element in educational strategy, it would seem only sensible to ensure, by all practicable means, that "value for money" is obtained. This necessarily implies more attention to appropriate means of evaluation, as was done, for example in the Bombay Science Improvement Project described in Case Study 7.

Methods and timing of evaluation

These may be roughly classified as formal or in-formal and may be applied at one or more of four main stages:

- (a) before the course
- (b) during and immediately after the course
- (c) at intervals during a long-term campaign
- (d) some time after the conclusion of a course programme

Evaluation by participants

Evaluation may be carried out by participants at the end of an in-service course, when

teachers may be asked to indicate, usually by completion of a questionnaire, their views on the usefulness to themselves of the main elements in the course: content; methods of work; materials used or produced etc. This method is an easy one to use; but its value will depend very largely on the frankness of the response and particularly, on the level of sophistication of the course members.

It is possible for teachers to engage, at a later date, in a process of self-evaluation in which they are asked to assess the extent to which they have benefited from the course and the ways in which they have been able to apply the knowledge or skills gained to their own teaching situation. The same limitations apply here as to the first method.

Evaluation by
In-service
staff

In-service staff often make a useful contribution to evaluation for it is common practice for course directors, after informal consultation with course tutors, to submit a report on the conclusion of a course. This is usually likely to take the form of a factual statement of the content of the course, with comments on the response of the teachers concerned and the professional and practical problems encountered. Suggestions may also be made as to the nature of future courses of a similar kind in the light of experience gained. Such reports can often be most useful, although, as with evaluation by course members, they are necessarily subjective, and cannot by their nature evaluate the longer-term effects of an in-service course.

Where in-service staff are full-time, as in the case of the Northern Nigerian mobile teacher trainers programme described in Case Study 8, then an on-going process of informal evaluation is practicable, and leads to continuous revision of the programme.

Evaluation by
inspectors

Inspectors can also contribute positively to evaluation for, as part of their normal school visiting programmes, they often make a

particular point of seeing something of the work of teachers who have recently attended in-service courses. As the inspector will usually be familiar with the work of those concerned from his earlier visits, he may thus be in a good position to judge the extent to which the new techniques, skills, materials, etc. have been incorporated into the teachers' work and to note any changes in teachers' attitudes to their task. He will, therefore, be evaluating, as far as he can, the professional growth of individual teachers and will, incidentally, be able to comment on the worthwhileness of the in-service programme.

In the case of short, "one-off" courses, this is as much evaluation as is likely to be practicable, although even here, there are limitations consequent on the time an inspector is likely to be able to devote to any one teacher. Further, he himself may not always be wholly familiar with the objectives and nature of the in-service courses which his teachers have attended.

Formal
methods of
evaluation

Evaluation of a more formal and objective kind becomes a matter of considerable importance in the case of major, long-term in-service programmes; and for two main reasons. The first, referred to earlier, is the need to ensure that programmes of this kind, involving relatively large commitments of men, materials and money, do in fact achieve their intended objectives. Misdirected or faultily executed programmes can be unacceptably wasteful of resources. The second reason applies more particularly to in-service programme of the upgrading type, that is those leading to the award of basic, or higher, teaching qualifications. In such cases, it is necessary to ensure that the successful participants reach a level of competence roughly equivalent to that expected of those who have reached the same grade by a more conventional route.

Evaluation by results in examinations

Written examinations to test academic attainment, and often also professional knowledge, tend to be a feature of upgrading in-service programmes. Such examinations are likely to be closely geared in standard if not wholly in content to the comparable examinations taken at the end of pre-service courses. In addition in-service trainees are likely to be tested at appropriate intervals during their programme: both in a conventional way and through the grading of correspondence assignments, where these are an element in the programme. Where an examination is also used as a means of selection for in-service training an additional check on progress can be provided.

Evaluation by results in the classroom

This is a notoriously difficult exercise, even under favourable circumstances. No reliable, objective measures of teacher effectiveness have yet been devised, and such as have been produced, mainly in the USA, tend to be complex and usable only by highly trained specialists. And yet, whatever the objectives of a major in-service programme, some attempt needs to be made to assess its effectiveness through assessing the teacher's performance possibly through his pupils' response and learning.

Requirements for success in evaluating by results in the classroom

The necessary requirements for success in evaluating the effectiveness of training by the results observed in the classroom are:

A clear definition of course objectives

The more clearly and precisely such objectives can be stated, the more effective is evaluation likely to be since the necessary criteria are thereby provided. The evaluator needs to know what is to be expected of the teacher, in terms of the organization of his work the methods and materials he uses and his relationship with his pupils. Curriculum-type courses obviously lend themselves more easily to such

evaluation than those of a more general upgrading nature.

The integration of evaluation as part of the planning process

If provision for evaluation is made from the outset, particularly in the case of major in-service programmes, it is more likely to be effective. Pre-programme testing and assessment can be carried out and the course staff involved as far as possible in the evaluation process.

The use of qualified and experienced staff

The evaluation team should be familiar with the objectives of the in-service programme and, as far as possible, have first-hand experience of it. Even so, they may well require training in the use of the proposed techniques.

The preparation and trial of a realistic evaluation process related to the course objectives

The instruments used may consist of observation/assessment schedules; questionnaires; interviews with teachers and headteachers etc. In the case of courses designed to implement curriculum change, it may be appropriate in certain circumstances to test pupils' performance on an experimental/control basis. An evaluation exercise of this kind has recently been carried out in connection with the Zambia English Medium Programme.

The use of pre- and post-course tests

Where the main objective of a programme is to upgrade professional skills, it is clearly desirable that some assessment

be made of teachers' competence before embarking on in-service training. (see Case Study 8).

With such major professional and practical problems likely to be faced, it is not surprising that more time and energy is often used in arguing the need for evaluation than in carrying it out, even if only on a modest scale, and using relatively unsophisticated techniques. The lesson would seem to be that, where serious, formal evaluation of an in-service programme is essential, provision for it must be built into the overall planning and it must be carried out by means which are within the capacity and resources of the organization.

Part 2

Case Studies

1. THE LESOTHO
PRIMARY TEACHERS' IN-SERVICE
PROGRAMME 1966-1974

Background

The Lesotho programme, whilst retaining the same overall purpose and organization since 1966, has varied its emphasis from time to time in the light of growing experience.

Three phases can be identified in which the main emphasis has, in turn, been on:

- (a) the up-grading to qualified status of a considerable number of unqualified primary teachers.
- (b) the further education and training of selected primary school headteachers.
- (c) the "up-grading" of the whole staffs of 12 selected primary schools.

Aims

There were two major aims:

- (a) to improve the competence of the body of primary school teachers, about one-third of whom were untrained, in such a way that they could play a constructive role in implementing a modernized primary school syllabus.
- (b) to develop the understanding, skills and teacher-training expertise of the field inspectorate staff.

Needs and priorities

Educational resources at all levels are very inadequate to meet the country's needs. At primary level there is a high rate of wastage, due to poor physical conditions, lack of educa-

tional materials; children's malnourishment; parental poverty; large classes; and unqualified or under-qualified teaching staff.

The priority need was identified (1966) as up-grading the competence of primary teachers, at first by concentrating on unqualified staff. Later (1969 and 1971) there were shifts of priority, first to headteachers and then to whole school staffs.

The consequent in-service programme was planned to be carried out in the context of a revised and modernized primary school curriculum.

Resources

The resources on which the programme drew included:

(a) Agencies such as the Lesotho Ministry of Education; the University School of Education; The British Council; the British Ministry of Overseas Development sponsoring the team of British tutors; the Canadian Teachers' Federation (1969); UNICEF - financial assistance to local costs.

(b) Nine tutors recruited for the first and latter phases of the programme from Colleges in the Durham Institute of Education area. These worked with local counterparts - members of the Inspectorate. Staff preparation was helped by advance visits to Lesotho by the leader of the Durham team and by short attachments by Lesotho inspectors and teachers to St. Hilda's College of Education, Durham.

A group of five Canadian teachers helped to initiate the Headteachers' course in 1969.

(c) Financial assistance was supplied by the Lesotho Government in respect of local costs and by foreign agencies for the remainder.

Participants

A major problem was the selection of:

- (a) suitable unqualified teachers, with an adequate command of English.
- (b) the schools in the latter phase - "schools capable of acting as models for visiting teachers and as teachers' centres."

The motivation of the teachers concerned was generally of a high level and there was no shortage of applicants.

Content of the course

The courses were concerned both to increase the teachers' knowledge of subject content, related to the school syllabus, and to improve their classroom practice by re-orientating their professional attitudes. In the case of the headteachers there was concern also to develop administrative skills.

Modes and methods of training

The residential courses were usually for two weeks with a further two weeks for planning and working with teachers in their schools. The unqualified teachers attended three such residential courses - one per year - and carried out a number of assignments in the form of practical activities in their schools.

In the latter phase of the programme the selected school staffs attended for two consecutive years.

The methods were very largely of a practical nature, involving the teachers (with groups of children when appropriate) in active practice of more modern approaches to the teaching of such subjects as mathematics, English, science and art.

Personal experience through involvement was considered to be more beneficial than a lecture-dominated programme. The latter phase of the programme was "firmly based on the study of child development."

The following is a description of a typical day's programme, taken from the 1972 Report:

"Work began at 8.30 a.m. with 30 minutes of games. This "warming up session" was followed by practical teaching activities until noon but with a 30-minute break (10 a.m. to 10.30 a.m.). During this period, pairs of schools worked together spending two mornings with each pair of tutors in turn. In this way every school had an opportunity of working with each of the four pairs of tutors during the fortnight. An inspector linked with the school assisted by providing a degree of continuity in the work of its staff and by becoming familiar with the ideas and specialized knowledge of every tutor. The tutors, in these sessions, demonstrated a child-centred approach to various aspects of the primary school curriculum. (In some cases children from a local school were supplied for demonstration purposes). Lunch was from noon until 2.00 p.m., after which lectures were given by individual tutors. Two lectures were given daily; one to the four "first year" school staffs and one to the second years. In 1971 of course, only one lecture was given during this period since there were no second year students. The object of this part of the timetable was to enable each tutor to lecture on his or her special interest, not only to the students but also to inspectors and colleagues. Attendance at these lectures was so arranged that one tutor from each pair attended each lecture so as to be better prepared to answer students' queries during tutorial sessions. Tutorials followed the lecture period, here the students and their "own" tutors discussed the day's work and made plans for its application to their own school situation.

Finally there was a period of discussions between schools. Schools of the 1971 intake met schools of the 1972 intake (changing daily) and discussion was supervised by the local inspectors. Voluntary sessions were provided

in 1972 for those interested in games coaching and drama; on other evenings educational films were shown."

Follow-up and evaluation

This was the work of the members of the Inspectorate during their visits to schools. Because of their participation in the programme, the Inspectors were, from a professional point of view, in a good position to perform this function. However, in the case of the unqualified teachers, the numbers involved and the problems of travel made this very difficult to achieve. (The Lesotho Ministry of Education Report for 1968 states that only about one quarter of the primary schools were visited during that year.)

In the latter phase an Inspector was assigned to follow-up work in the 12 selected schools, in what came to be known as the "Experimental Primary Schools Project".

There was no formal kind of evaluation, but reports were made by Inspectors following their school visits. Such evaluation was seen as serving the purpose of improving the programme and, indeed, provided the information on which decisions were made to change the emphasis of the programme from one phase to another.

Special features

Of special note were:

(a) The integration and co-ordination of resources: a poor country like Lesotho could only carry out an in-service programme of the kind and scale described by identifying and co-ordinating all possible resources, both local and external.

(b) The continuity in staffing, achieved by the partnership between the Lesotho Inspectorate and the Durham team over a period of several years, thus building up an esprit de corps as well as accumulating experience and expertise:

the fullest involvement of the inspectors, both in the courses and in the follow-up process were an element essential to success.

(c) The changes of emphasis from one phase to another as a result of the field observations of the inspectorate: the headteachers were brought more fully into the programme when it became apparent that their understanding and support was essential to the success of the unqualified teachers involved in the project.

(d) The conviction that a more modern approach to the work of the primary school could not be fully achieved by the in-service training of only one or two members of its staff. Also, that a national in-service programme needed to develop a number of strategically located schools which could serve as local demonstration and resource centres. It was possible to maintain the essential continuity of staffing in the "experimental" schools for the duration of the project but these schools needed additional provision of the basic materials necessary for an active, child-centred approach to education.

(e) The considerable advantage of correlating in-service training of this kind with the production of curriculum materials for pupils and teachers, as has been done in the primary education improvement project in Northern Nigeria (Case Study 8): the cost per pupil was very modest, and within the limits of what could reasonably be expected to be afforded for the programme's next stage.

(f) The proposals made for the modernizing of the Primary Leaving Examinations for the 12 experimental schools: this would involve, in addition to two

objective attainment tests in English and mathematics, the assessment of pupils' individual project work and a process of continuous assessment based on the keeping of individual pupils' records.

References

1. TURNER, J.D. - Continuity and Integration in in-service teacher education in Lesotho. Teacher Education, February 1968.
2. JOACHIN, N. - In-service courses for teachers in Africa. Education for Teaching, Spring 1969.
3. Lesotho in-service teacher education programmes - Commonwealth Education Liaison Committee Newsletter Vol. 2 No. 11.

2. THE MONTSERRAT TEACHER VACATION COURSE IN MATHEMATICS, 1973

Background

The 1973 Montserrat Teacher Vacation Course in Mathematics was organized on a model developed using the planning and execution of three similar courses for teachers in Grenada and Carriacou. The course model was based on the following assumptions:

- (a) that in-service training of teachers is an ongoing process.
- (b) that the nature of such courses should reflect a fusion of relevant content and methodology.
- (c) that specific courses should recognise specific needs of the participants, both as a group and as individuals.
- (d) that in-service courses acknowledge their limitations, and focus attention on the implementation in the classroom of the ideas and suggestions passed on to participants.

Aims

The course aimed at providing training for a group of teachers responsible for junior classes of all-age primary schools, in the teaching of mathematics.

The specific objectives were:

- (a) to discuss the main features of "New Mathematics".
- (b) to describe the mathematics needs of junior pupils.

(c) to define in broad outline the Scope and Sequence of Mathematics for Juniors I to IV.

(d) to design instructional strategies which will facilitate the teaching and learning of mathematics, at the Junior level.

Participants

Twenty teachers were selected by the Ministry of Education to attend the course. Eighteen attended, though the attendance varied each day from 17 to 15.

Content of the course

The lectures and discussions were based on the following topics:

- (a) broad aims and objectives of new mathematics.
- (b) the nature of the Junior school child, and the nature of mathematics.
- (c) learning and teaching mathematics.
- (d) organizing a mathematics programme.
- (e) evaluating the mathematics programme.

The main content areas covered were:

- (a) whole numbers
- (b) fractions and decimals
- (c) shapes
- (d) measurement
- (e) graphs

Models and methods of training

The course was non-residential and lasted for 13 days. Classes commenced each day at 9.00 a.m., and ended at 1.00 p.m. There was a 15 minute recess at 10.30 to 10.45 a.m.

Four sessions were conducted each day and a total of fifty were completed for the period.

Teachers' assignments included:

- (a) writing units of work, based on the main content areas
- (b) writing lesson plans
- (c) writing pupil work sheets
- (d) writing test items
- (e) developing enrichment activities
- (f) making teaching aids.

Generally the teachers showed very keen interest in all aspects of the work attempted. A rather businesslike atmosphere prevailed throughout, and on several occasions they worked beyond the stipulated times.

However it was felt that too much was done in too little time, and that the follow-up sessions were essential.

Training was provided by means of:

- (a) lectures supplemented by resource materials.
- (b) group discussions based on the lectures.
- (c) group assignments.
- (d) content lessons sessions.
- (e) content review assignments.
- (f) literature review assignments.
- (g) practical work sessions.

Follow-up and evaluation

Plans were made for immediate and frequent follow-up by:

- (a) the teachers in their teaching.
- (b) some responsible person, assisting the teachers in their efforts.

Most of the teachers, in the questionnaire given to them at the end, indicated that the course had helped them most with the planning of their mathematics lessons.

No micro-teaching was done, as it was difficult to get pupils from the schools as the course was conducted during vacation time.

Special features

This was a carefully planned, short, "one-off" course for a small group of teachers from one island. It was non-residential, as indicated by the timetable and held during the school holidays.

A commonly experienced consequence of the last point was that practical work with children was seldom possible.

Although the organizers were clearly aware of the danger of attempting too much in the time available, in fact this appears to have happened. Consequently it was decided to have follow-up sessions.

The supervision of the teachers in their school work was the responsibility of the appropriate Ministry officer. Fortunately, this officer was also the Course Director - assisted by a local primary school headmistress and a visiting college of education tutor.

Reference

1. Course Report - kindly made available by Isaiah Thomas Esq., Grenada Teachers' College.

3. THE CARIBBEAN MATHEMATICS PROJECT 1971-1975

Background

The Caribbean Mathematics Project (CMP) was, as its name indicates, a curriculum development project, but one in which teacher development went hand in hand with the development of teaching and learning materials.

As a close observer of the project wrote, while the project was still in action: "In any curriculum development project, one looks for outcomes in at least two fields, namely, new teaching materials and new skills in the teachers. The former is the easier, and many projects understandably concentrate on it; the latter is the harder, and much the more significant in the long term. Ideally the two aspects can go together, and even be seen as two sides of the same coin. That is the philosophy espoused by the CMP, and to which its way of working is steadily approximating".

Aims

The project aimed to raise the quality of mathematical education at Junior Secondary level by producing new materials for classroom use by a process in which a paramount role was played by the teachers concerned. The production of materials was thus seen as a by-product of a strategy whose main purpose was to generate skills and confidence in the teachers themselves. This, it was hoped, would be the most enduring outcome of the project.

Needs and priorities

The overall need and priority was to develop a realistic and relevant curriculum for the new 3-year Junior Secondary schools of the Eastern Caribbean that had taken over from the old all-age elementary schools. A teacher-

centred developmental process, which was in effect, in-service training "on-the-job", had been identified as the first priority in the execution of this programme.

Resources

The main agencies involved were the eight Ministries of Education of the participating islands; the University School of Education; UNESCO; the British Ministry of Overseas Development; the Peace Corps and the Centre for Educational Development Overseas (now part of the British Council).

The teaching staff comprised one Project Co-ordinator (University School of Education); three full-time consultants (expatriate); and a number of local island co-ordinators. The consultants each had responsibility for certain islands but operated as a team and worked together on teachers' courses and workshops.

Modes and methods of training

In each island a number of "Project teachers" were nominated and in the early days of the Project they met with their consultant for one day each month, island by island. There were also longer in-service courses held in the school holidays with teachers coming from four different islands. In a later phase a pattern of "mini-workshops" was developed involving all the Project teachers in the preparation, trial and revision of teaching and learning materials. Each workshop lasted for a week and took place at one of the Project schools.

The procedure followed in these mini-workshops were generally as follows:

First, in a pre-workshop period, a small group of Project teachers, with their consultant, would work on a theme on which it was planned to develop a unit, drafting materials and carrying out initial classroom testing.

Second, the workshop proper with all the Project teachers (usually about 20) from the

island, would use these materials to prepare lessons which were taught to classes of children, discussed and amended as desired.

Third, immediately following on the full workshop, a small group of the teachers with the consultants would meet for a 3-day writing session. On the basis of the previous week's work the materials would be revised and supplemented and take the form of a Unit. This was followed by systematic school trials over a period of a few months.

Fourth, the consultant and teachers' writing-group would meet again to consider the feed back from the trials and make any necessary further amendments. This latest draft of the Unit might again be further tested.

Finally, the Unit material would be presented to a central editing workshop of all Project staff with Key Project teachers and College tutors. The material was then prepared for publication.

"Measurement of Area" can be regarded as a typical Unit. It consisted of:

- (a) A statement of 29 detailed objectives of the Unit, in terms of what pupils should be able to do as a result of working through the Unit.
- (b) An initial evaluation which consisted of a set of exercises on the theme of the Unit to assess the pupils' readiness to learn new concepts and to acquire new skills.
- (c) Remedial work to be carried out individually or in small groups before work on the Unit if necessary.
- (c) A set of 22 worksheets on the theme of the Unit involving a variety of practical exercises under the teacher's guidance.
- (d) A final evaluation to assess the extent to which the original objectives had been achieved.

(e) A teachers' guide in the form of a 110 page booklet in duplicated form, the main parts of which were:

- (i) Background notes for the teacher on the topic.
- (ii) A glossary of terms.
- (iii) Resource material for supplementary work.
- (iv) The objectives of the Unit.
- (v) Teachers' notes on the worksheets.
- (vi) Lesson notes in a uniform pattern, for each worksheet.
- (vii) Notes on preparation of apparatus, including assignment cards and charts.

Follow-up and evaluation

In 1973-1974 the Project involved about 9,000 pupils and their teachers. The main goal was to produce materials for the second year of the programme in which a mathematics "laboratory" approach was used in which teachers and pupils used cheap, locally available materials collected in a box. The "box" provided pupils with essential activities for building mathematical concepts in a way which was not possible with a textbook.

A mini-workshop in 1974 developed materials for a laboratory approach to the teaching of geometry.

A major concern was to maintain the balance between, on the one hand, keeping the responsibility on the teachers for deciding on and producing the teaching materials, and on the other ensuring that these materials were in all respects sound and suitable for the children with whom they were to be used.

Since the Project as such - and with it the external assistance - came to an end in 1975, it has been of the greatest importance to

ensure that the development process begun should continue under local direction. This has meant that even more responsibility has devolved on the teachers though probably on a national rather than a regional basis.

Special features

Several interesting features emerged:

- (a) the very close relationship between the process of curriculum development and that of "teacher development" - the latter being regarded as the more important long-term goal.
- (b) the fact that even untrained teachers had participated usefully in the mini-workshops as staff members of the project schools.
- (c) the close and effective working relationship between the various agencies involved.
- (d) the key role of the three full-time consultants with responsibility both for materials production and teacher involvement through the workshops.
- (e) the extended schools trials, by the teachers, of the draft units, leading to revision and further trials as necessary.

Reference

1. Caribbean Mathematics Project materials and reports - CMP, c/o University of the West Indies, Bridgetown, Barbados.

4. THE KENYA HEADMASTERS' IN-SERVICE PROGRAMME 1968-1972

Background

In the early 1960s Kenya initiated a major effort to modernize its primary education - the so-called "New Primary Approach" (NPA). As this movement became more widespread, with large numbers of schools involved, the need for an in-service teacher training programme became a matter of urgency. In 1966, therefore, two major in-service courses were launched, one for primary headmasters, of whom there were about 5,000 in Kenya, and the other for unqualified teachers - about 8,000 in all. A new, comprehensive primary school syllabus was introduced in 1967.

Aims

As the Tutors' Handbook for the course puts it: "Too often the Headmaster of a Primary School considers that his responsibilities do not go beyond teaching a senior class, collecting school fees and distributing supplies. This In-Service Course is designed to challenge him to accept responsibility for the total programme in his school, and to provide the leadership required to make that programme an effective one ... and to work with determination towards becoming an enlightened leader in the educational affairs of his school and his community."

Needs and priorities

As plans were developed to improve the quality of primary education, the key role of the headmaster as a professional leader, especially in a period of curriculum change, was increasingly recognized. Thus the need was clear to upgrade his professional expertise to meet the challenge of a modernized educational system.

An in-service training programme for headmasters thus became a matter of high priority. The need, however, was on such a scale that a long-term plan with external assistance was essential. Further it had to be such that there was a minimum of disruption of normal school activities.

Resources

The agencies involved included the Ministry of Education and the Canadian Government through the provision and funding of an in-service training "team", 1966-1972.

The staff involved formed two main groups:

(a) a Canadian team of five who organized and designed the course including the preparation of course syllabuses and radio broadcasts in consultation with the Ministry of Education and tutors at Teachers' Colleges.

(b) a selected group of college tutors (local and expatriate) who were responsible for conducting the course, with one of their number at each of the eight colleges used, acting as Course Director.

In addition, contributions to the course teaching were made by Education Officers and Inspectors, whilst the Canadian team acted in a general advisory and consultative role.

The costs were shared by the Kenya Government (all local costs) and the Canadian Government.

Participants

The two courses were designed for primary school headmasters and unqualified teachers.

Content of the course

This comprised work in supervision, administration, and school management; also child study, and methods of teaching English, mathematics, science, history and geography. A daily

20 minutes radio broadcast supported the programme.

Modes and methods of training

Each tutor was provided with a detailed Handbook with timetable, course outlines, suggestions for methods of work in each subject, lists of useful reference books, audio-visual aids, etc. The course, as conducted in each of the 8 colleges, was thus fairly closely structured, although clearly in practice much depended on the competence and experience of the tutors involved.

Detailed suggestions were made in the Handbook for the tutor's guidance, both in general terms and also specifically in each subject area.

Tutors were advised to interpret their "lecture" periods as situations in which they demonstrated methods, and provided opportunities for the teachers attending the course to carry out practical exercises, to engage in discussion, make things and learn through experience. The principles explicitly emphasized were:

(a) for tutors

- having a clear purpose
- organizing carefully
- demonstrating practical processes

(b) for teachers

- learning by discovery
- participating actively in discussion and in other ways

The Headmasters' course was one of professional training spread over one year and comprising two residential periods at the selected Teachers' Colleges: one week during the April school holiday and two weeks during the August holiday. Additionally, each headmaster was required to complete a written assignment between the two residential periods and in this he was assisted by a series of sixteen radio broadcasts of 15 minutes duration each geared to the course. At the end of the August session each participant wrote a

"culminating exercise", which was graded. If successful, he was awarded a "Certificate of Attendance". By the end of 1971 over 4,400 headmasters had successfully completed the course.

There was emphasis, too, on the production of teaching aids and the fullest possible use of such college facilities as the Library and the Art and Craft rooms. The teachers were encouraged to make use of their extra-curricular time by organizing debates and discussion groups and inviting local government and community leaders to the college.

Follow-up and evaluation

There has been no formal follow-up as such to these courses. However, Education Officers and Inspectors regularly visit schools in their areas and there appears to be general agreement that the programme has been valuable in raising the professional competence of the headmasters and giving them a heightened sense of vocation. Meetings of headteachers with supervisory staff have also been held at local, district and divisional level.

Special features

By the end of 1972 very nearly all Kenya's primary school heads had completed the in-service courses and during this period some 8,000 unqualified teachers had also followed a somewhat similar programme, but extending over 2 years in all and including both professional and academic work, leading to the award of a teacher's certificate.

From 1973 the course was offered to deputy headteachers as well as to newly appointed heads, but continued in much the same form.

The courses for heads and unqualified teachers, held during two of the three annual school holidays, placed a considerable burden on the staffs of the teacher's colleges. On the other hand the involvement of college tutors in the courses brought them into closer contact with school staffs than would otherwise have been the case.

They were also considerably helped by the provision of the detailed Tutors' Handbooks and the availability of members of the Canadian in-service team in an advisory capacity.

The large-scale nature of the programme (without any disruption of school staffing) and thus the necessarily fairly brief residential training periods, argue for a continuing follow-up effort, especially as the numbers of field supervisory staff increase. Individual advisory school visits and locally-based short courses/conferences would seem to be a necessary extension of the 1966-1972 programme.

References

1. RITTER, A.C.E. - Kenya's Teacher Training Programme. Commonwealth Education Newsletter Vol. 2 No. 11 November 1970.
2. Kenya Institute of Education - Tutors' Handbook for Headmasters' In-service Course. Revised edition 1972.

5. THE UGANDA/UNICEF
TEACHER UP-GRADING
PROGRAMME 1967-1970

Background

There was a considerable development of in-service teacher training work in Uganda following independence in 1962, notably in relation to a new primary school English curriculum. Such work was boosted by the setting up in 1964 of the first full-time In-service College and in 1965 by the advent of the National Institute of Education.

However, most of the courses planned were of short duration and some, perhaps, of rather doubtful value. In 1967, however, with the offer of external financial aid, a much larger, longer-term programme was planned, of which the Grade I up-grading scheme was the biggest single element.

Aims

The main aim was to up-grade to Grade II status as many as possible of the 4,000 Grade I ("Vernacular Grade") teachers in the primary schools in a phased (9 year) plan, the first 3-year period of which would provide for about 1,000 teachers.

Needs and priorities

A new, modernized, primary school syllabus was introduced, on a phased basis, beginning in 1967. The new syllabus placed great emphasis on the teaching of English (the national language) from the first year of school and this put the Grade I ("Vernacular Grade") teachers at a disadvantage. However, many of these teachers were very experienced and competent within their limits and could, it was felt, benefit from further professional and academic education, and so play an essential part in a developing, changing, educational system.

Resources	<p>The two agencies involved in the programme were the Ministry of Education and UNICEF; the latter providing printing machines and paper, teachers' textbooks and reference books, costs of the residential courses and payments to course tutors.</p> <p>The personnel involved included the staff of the correspondence unit which consisted of a full-time head of unit, and part-time writers and markers. They also included teacher training tutors who were engaged for teaching on residential courses during holiday periods and members of the Ministry Inspectorate who visited teachers in their schools during the programme.</p>
Participants	<p>As the programme was specifically designed for Grade I ("Vernacular Grade") teachers, the only participants were from that group.</p>
Content of the course	<p>Both the need to improve the Grade I teachers' own English and the priority being given to the teaching of English in the schools meant that priority had to be given to this on the course. In fact, the first year was devoted almost entirely to intensive English study with emphasis on teaching method during the residential periods and on subject content in the correspondence sets.</p> <p>During the second and third years the other subjects of the Grade II pre-service teacher training syllabus were studied, the intention being to ensure as far as possible that the up-graded teachers would be recognized as in all respects equivalent to those who had followed the normal pre-service training course.</p>
Modes and methods of training	<p>The 1,000 teachers in the first group selected by written examination, followed a 3-year programme during which, in eight Teachers' Colleges, they spent 2 to 3 weeks in each vacation period on residential courses. Each selected College thus provided places for about 120 teachers from its region, usually working</p>

in 4 groups.

Each teacher was also required during term time - while doing his normal teaching job - to study by correspondence, sending in written work for marking each month and receiving in return printed answer guides. Regular weekly radio broadcasts supported the correspondence lessons.

The residential courses were conducted along fairly traditional lines, with the lecture/discussion approach generally used, but with opportunity also for some group and individual work.

In order to provide individual assessment, cumulative records were kept for each teacher, showing results achieved in correspondence work and also in the tests given at the end of each residential course. A final examination was set and marked by the National Institute of Education, the body which administers all teachers' examinations in Uganda.

Of the 1,000 teachers who began the courses in August 1967, 876 finally completed the course and passed the final examination in December 1970.

Follow-up and evaluation

This was informal, with members of the Ministry's Central and Regional Inspectorate seeing in the time available what they could of the teachers in their schools during the 3 years of the course.

The weekly radio broadcasts helped to keep teachers in touch, and it was sometimes possible for visiting inspectors to arrange short local group meetings with the teachers involved in the programme.

A major evaluation exercise was undertaken with UNICEF assistance. The plan was for small teams of evaluators, after a period of training, and of working to a carefully prepared observation schedule, to visit the teachers in

their schools at different stages of the programme observing their teaching performance.

The programme called for very considerable sustained effort on the part of the teachers, giving up the greater part of their holidays for 3 years and continuing correspondence studies whilst doing their normal teaching duties. Nevertheless morale was high and the fall-out very low for a course of this kind. Clearly the incentive of being up-graded to a higher status and so better pay was effective.

Work in the teachers' schools was not disrupted in any way as all the residential courses took place in school holidays.

Very few full-time staff were needed specifically for the project or for the correspondence unit. All the teaching on the vacation courses was done by existing training college tutors who, for the first time on in-service work, received payment for their extra duties.

This economical staffing arrangement meant, however, that those directly responsible for the course teaching were unable, because of their normal term-time duties, to follow up the teachers in their schools. This responsibility had to be undertaken by the Ministry of Education's inspectors as part of their normal field supervisory work.

The major evaluation project undertaken with UNICEF assistance ran into a number of serious difficulties and the report was delayed.

6. THE SWAZILAND IN-SERVICE TEACHER TRAINING PROJECT 1973-1978

Background	<p>A UNESCO-aided up-grading programme for over 500 untrained teachers in Botswana was conducted in the period 1968-1972. This project, consisting of a series of residential courses together with correspondence study and the use of radio (on similar lines to the Uganda programme) attracted a good deal of attention in neighbouring countries. In 1971 a group of senior education officials from Swaziland visited the Botswana project, located at the Francistown College, made a study of the work being done, and, as a result, a similar project came into existence in Swaziland in 1972, on the campus of a teachers' college. Several months were occupied in recruiting staff and materials, planning courses and writing the first years' correspondence assignments. The first group of students took up residence in July 1973.</p>
Aims	<p>These were to up-grade to full Primary School Teachers' Certificate level some 600 serving teachers who were either untrained or held only the Elementary Vernacular Certificate. These represented about one third of the total primary school teaching force. The full programme was to be phased over a 5 year period (see figure 2).</p>
Needs and priorities	<p>Priority was given to this up-grading project in order to raise the general academic and professional level of the least qualified third of the teaching force. At the same time, it provided a more practical, child-centred approach to the education of the younger children for whom these teachers were mainly responsible.</p>

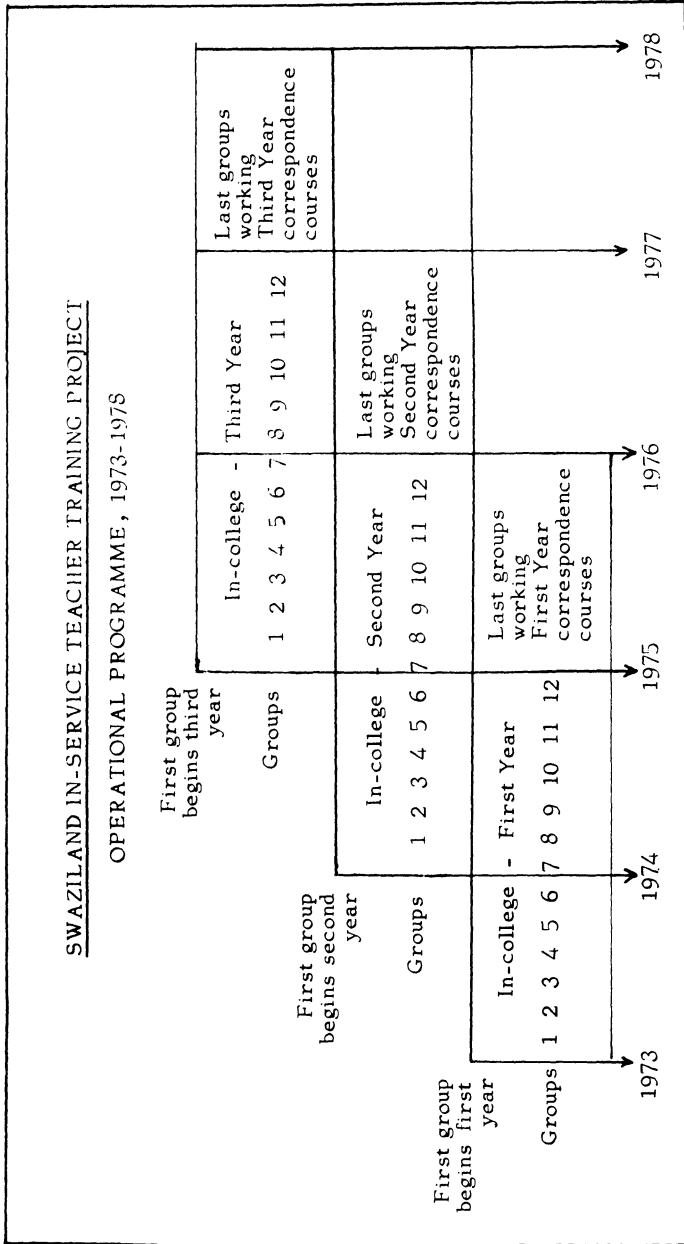


Figure 1

WILLIAM PITCHER TEACHERS' TRAINING COLLEGE - MANZINI

PROGRAMME OF STUDIES FOR IN-SERVICE TEACHER TRAINING COURSE, 1973-1978

Three Years' Study by Correspondence Courses in
Education, Language, Mathematics, Science, Social Studies

Supporting Activities

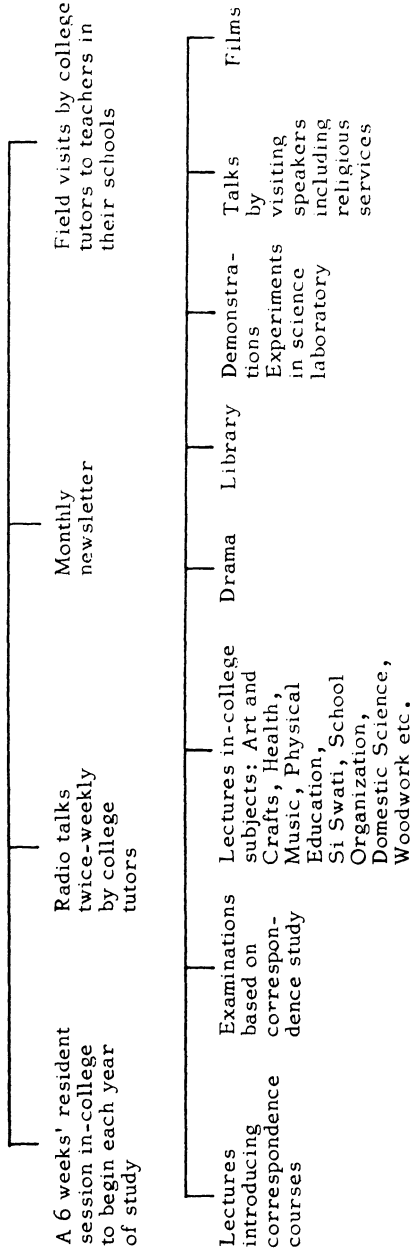


Figure 2

Whilst curriculum change was not envisaged as a function of the project, change did result from the involvement of in-service staff with teachers and their schools.

Resources

The agencies involved were the Ministry of Education; UNESCO (some staff members); UNICEF (correspondence unit equipment and materials; transport); and the British Ministry of Overseas Development (some staff and buildings).

The staff required included: Project Manager; Head of Correspondence Unit; ten tutors; clerical staff. At present (1974) there is only one Swazi national on the teaching staff. The Correspondence Unit works under considerable pressure and employs eight typing and ancillary staff. Part-time assignment markers are also employed.

Participants

These were the 600 serving teachers either without training or with only vernacular training.

Content of the course

The curriculum is in two parts: five 'core subjects' - education, English, mathematics, science & social studies; and a number of 'supplementary' subjects - teaching aids, Si Swati, music, home economics and physical education. About four-fifths of the time in the in-college course is spent on the core subjects, which are followed up by correspondence. The supplementary subjects are not included in the correspondence studies. (see figure 2)

Modes and methods of training

The syllabus in each subject is devised by the tutorial staff and takes into account both the academic and the professional needs of the teachers.

The programme of studies lasts for 3 years, each year being introduced by a residential 6 week session at the College during which the teachers (50 in any one group) are introduced to the course, including the correspondence

studies, and engage in discussions, demonstrations, laboratory and library work. In the second and third residential sessions, the previous year's work is examined and the correspondence work for the following year is introduced. Course members each complete a total of 40 assignments during the year which are returned to the College, marked and graded, and returned to the teachers.

There is considerable emphasis on practical activities during the course and their application is studied by regular visits to the local primary school which is used for demonstration and practice purposes.

The following summary of the Science Syllabus for the second year of the course provides a useful illustration of the kind of work being done:

"1. In-College Course

The acquisition of the necessary skills, techniques and organizational ability must be a major part of the In-College work. The emphasis in the second year In-College course is on the selection, interpretation and use of simple science activities for classroom application. The teachers have been introduced to selections of suitable activities in various topics, e.g. water, animals, plants in the first year, and they have been encouraged to attempt these with their classes. A large part of the second year six week course is given to:

- (a) planning ordered series of activities on a yearly or termly basis.
- (b) gleaning the materials for these activities from the already prepared activity sheets and assignments and from others to be written this year.
- (c) preparing and using materials and equipment to go with these class activities.

(d) learning to organize the classroom to best advantage when handling such science activities with children.

At least a session will be given to the proper use of simple carpentry tools. Such skills are very necessary, given the situation in most schools at present. We have found that the teachers, both men and women, tackle tasks involving the use of tools with enthusiasm.

Attention will also be given to the contents of the second year assignments, where difficulties might be anticipated.

"2. The Work in the Practising School

Throughout the year, the teachers in the school will be given plans of work in various topics, along the lines mentioned in the In-College Section above. They will be helped with the organization of the activities, and the preparation of materials for use with the children, so that our students can see the science activity programme in action on their weekly visits to the school.

"3. Assignment Titles

Assignment 9	Magnetism
Assignment 10	More about Plants
Assignment 11	Machines
Assignment 12	More about Animals
Assignment 13	Electricity
Assignment 14	Human Body II
Assignment 15	Earth's place in the Universe
Assignment 16	Travel above the Earth

School visits

During the science staff visits to our

teachers in the schools, special attention will be given to second year teachers who should be putting into practice, activity programmes planned on a term basis.

The organization of the classroom, involving placing of interest tables, storing of materials and equipment, planning rotating group activities for the class and integrating across traditional subject boundaries, are important areas with which the teachers will be given assistance. Lists of locally available materials have been issued to all teachers and schools and the staff will try to ensure that the headmasters supply the teachers with these.

"5. Radio and Newsletter

Up to the present time, ideas for the broadcasts and newsletter articles stem from points which arise during the course of the work. For example, articles presented for the Newsletter's previous issues have been:

- (a) Activity Science in the Primary School.
- (b) Primary School "Activity" Materials.
- (c) The Discovery table.

and radio broadcast titles transmitted in term 1 1974 are:

- (a) The Activity Approach to Science.
- (b) Using our Senses.

In future issues and programmes, ideas for class activities, limits on how to tackle certain topics with children, making and finding materials and equipment, and such practical issues will be

dealt with. It is important to maintain the relevance of such items by preparing them when they are needed."

Follow-up and evaluation

The follow-up element in the project is given considerable priority, as already indicated in previous paragraphs.

It is considered essential that the in-college courses of six weeks each, and the assignment work done by teachers in addition to their normal term-time teaching duties, should be supported by a variety of personal contacts. These include the twice-weekly radio broadcasts; the regular project newsletters; personal correspondence between tutors and teachers and, most important, the advisory visits by tutors to teachers in their own schools. As a recent project report puts it: "Practical help for and encouragement of the student in his, or her, own environment is the most successful way to ensure that real progress is made. The impact upon the schools and communities has been remarkable." During the first year of the project, tutors were able to spend an average of two days each week on such advisory visits. As the teaching load on in-college courses increases in the second and subsequent years, it is likely that this will be no more than one day per week - and this, of course, with a growing number of teachers in the project.

No strictly objective means of evaluating the project are envisaged as yet. More importantly, it is considered that a process of on-going evaluation through regular visits to schools, the checking of teachers' correspondence work and their work on the in-college courses will provide the means whereby progress can be assessed and any necessary modifications to the project programme can be made.

Special features

Most of these have already been referred to, or implied, but it may be useful to stress the following:

- (a) the extent of the pre-course planning and assignment writing, with most of the staff available several months ahead of the first course.
- (b) the location, with additional buildings, on a College campus with consequent mutual benefits-and problems.
- (c) the complexity of organization of the correspondence unit and the need for good supporting staff.
- (d) arising from the opportunity for the staff to meet and plan together beforehand, there developed a "team" effort amongst all staff pursuing a commonly agreed objective.
- (e) the very practical nature of the in-college course, including the extensive use of a local school for demonstration and practice.
- (f) the extent and thoroughness of the "follow-up" activities leading naturally to classroom trial of limited curriculum innovations.

7. INDIA
THE BOMBAY SCIENCE
IMPROVEMENT PROJECT 1970-1974

Background

India is committed to a programme of scientific advancement as a major means to national development and thus to raising the standards of living of its people. Consequently the improvement of science education at all levels is a matter of high priority.

In Greater Bombay, the Education Department of the Municipal Corporation set out in 1970 to prepare and implement an enriched, child-centred, science curriculum for its 1,100 primary schools catering for some 600,000 children in the 5-11 age range. Inevitably, a major element in such a programme was a massive re-training exercise for the 15,000 teachers concerned. (A roughly equal number of children existed in private schools).

Such a programme, had of necessity to be a long-term one requiring both professional expertise and very considerable administrative and financial support.

Aims

The overall aim of the project was to prepare a suitable primary science curriculum with supporting teachers' and pupils' materials, including science kits, and to try it out under classroom conditions with a view to eventual implementation in all the city's schools.

The particular objectives of the in-service training programme were stated as:

- (a) to acquaint the teachers with the methodology and philosophy associated

(b) to train the teachers in the classroom use of materials produced by the project.

(c) to help teachers in preparing audio-visual aids and models.

(d) to raise the teachers' level of understanding of basic scientific and mathematical concepts and skills by stressing logical reasoning, patterns and relationships, and by involving them in activities through the use of enquiry methods.

Needs and priorities

In terms of teacher training the first priority was seen to be the changing of teachers' attitudes to the whole business of learning and teaching at the same time as deepening their own scientific knowledge. As a project report put it: "The traditional method ... is "chalk and talk". Very often there are no facilities for teachers even to demonstrate phenomena, let alone allow the children to have the opportunity of finding out things for themselves. The idea that children can make their own observations, form their own hypotheses, then test them and so discover many of the laws of nature, has been completely alien to the teachers".

The immensity of the re-training problem necessarily meant a carefully phased long-term programme with concern in the earlier years to develop both practicable curriculum materials and effective forms of in-service training.

Resources

The agencies involved included the Municipal Council of Greater Bombay, the National Council for Science Education, the Government of India, the British Council and the National Science Foundation of the USA providing consultants.

The teaching staff of 24 included an equal number of full-time and part-time members.

The full-time members comprised selected teachers who had received special training in 1971 and 1972 to enable them to work as supervisors in the Project.

Participants

Those who shared in the project were the 15,000 teachers and 600,000 pupils in Bombay's municipally governed primary schools.

Content of the course

Teachers and children were introduced to and exercised in fundamental scientific skills such as observation, classification, inference, hypothesizing, etc.

Modes and methods of training

In 1971 one hundred and twenty teachers from the five major language groups were trained in the use of the materials for Standards I and II. In 1972 a further 250 teachers received similar training, plus an additional 40 who concentrated on the new materials that had been produced for Standards III and IV. Each session consisted of a three-week intensive workshop followed immediately by a one-week workshop for the production of teaching aids. These workshops were held during the school summer holidays, and finally, half way through the school year, short follow-up workshops were held for discussion of problems encountered. Also, all the teachers involved met once a month in their own language groups to sort out difficulties.

Later, the workshops were extended to six weeks in order to prepare teachers for work in the whole Standard I to Standard IV range.

To reach the objectives of the workshops work was carried out at two different but related levels. First, materials in the processes of science were given at the teachers' level and secondly these were related to the classroom situation.

A series of activities was designed to illustrate the many processes of science,

e.g. Observation

- (a) looking at a sugar cube coated with alum powder.
- (b) describing a Rs.5/- note, from memory.
- (c) observing copper chloride and aluminium foil, followed by the action of one on the other.
(all designed to illustrate the use of the five senses)
- (d) the many activities included in the teachers' guide I and pupils' book I - "Using our Senses".

Using this idea of the various processes involved in scientific method, further activities, with teachers working in small groups, were carried out in classifying, inferring, and hypothesizing at their own level followed by experiences using activities contained in the teachers' guides that could be done with primary school children.

A part of each day was devoted to mathematics - mainly new ways of teaching addition, subtraction, sets, area, time etc. The reason for including mathematics was because it was found that the science course needed the support of a practically orientated course in mathematics.

In addition to making their own teaching aids the teachers also made a number of local educational visits - to the zoo, seashore, factory etc. - to help them look at their environment. Materials collected during these visits were used afterwards in the workshop.

The whole programme was thus a very practical and functional one, designed to enable the teachers to implement in their own classrooms a more child-centred, enquiry-based, approach to science education.

Follow-up and evaluation

A great deal of effort was made by the project team in visiting, in their own classrooms,

teachers who had attended the workshops. With so many schools in a densely populated urban area, this was not such a physical, time-consuming, problem as is often the case. Nor was the cost of travel too great.

The purpose of the follow-up visits was:

- (a) to help the teachers over difficulties they encountered in implementing the new curriculum materials.
- (b) to evaluate the suitability and effectiveness both of the curriculum materials themselves and of the in-service training which the teachers had undergone.

A process of continuous evaluation was conducted throughout the life of the project.

In order to observe and measure the attainment of the objectives of the in-service training programme outlined above, two different evaluations were used; one relating to the first three objectives, and the other to the fourth.

The first evaluation exercise was conducted by means of two instruments: a structured personal interview with each participating teacher and an observation schedule completed during a lesson taken by the teacher. The main conclusions reached as a result of this evaluation were:

- (a) most teachers and pupils found the new methods more enjoyable and meaningful.
- (b) the teachers also found them more demanding and time-consuming, especially at first.
- (c) the change to activity-oriented group teaching was difficult, but worthwhile.

(d) there was, however, little evidence that these new methods had affected work in other subjects, even in Standards I and II.

(e) one third of the teachers were teaching the class as a whole; the rest were attempting group and individual work, but most were keeping rigidly to the experiences suggested in the guides and were not attempting to devise activities of their own or to allow children to play with and explore materials in their own way.

(f) most teachers were taking more pride in the appearance of their classrooms and making more use of visual aids.

This preliminary evaluation was followed by a later evaluation of the same group to provide firmer evidence of the project's effectiveness.

This second evaluation exercise took the form of an objective-type test of 32 questions for 280 participants administered at the beginning and end of two six-week workshops in 1973 and 1974. Its purpose was to discover if there was any significant change in the level of basic scientific and mathematical concepts and skills as a result of the workshops.

The general conclusion from this evaluation was that, on statistical evidence, there was a significant difference between pre-tests and post-tests, so that the workshop appeared to be achieving the objective aimed at. It is, perhaps, fair to comment that this might well be expected from an intensive 6 week workshop. It would be interesting to be able to compare the gain made with those from a shorter in-service course of only 1 or 2 weeks - the kind very commonly available.

Special
features

One such feature was the very close inter-relationship between in-service training and curriculum development (of the Caribbean

Mathematics Project); but materials in Bombay were written only by the Project team, who were mainly local teachers.

Also there was the essentially practical nature of the in-service programme though aiming at a change of approach and attitude on the part of the teachers. The organizers' difficulty, in view of the teachers' background, was "what to leave out".

Another feature was the intensity of the follow-up and evaluation exercises, helped by the urban location of the schools.

By June 1973 about 1,000 out of a total of 15,000 teachers had received some in-service training. Clearly a long-term programme was called for. In addition, in July 1974, the State the Maharashtra, with its 60 million people and 55,000 primary schools, decided to adopt the new science programme for Standards I to IV. This necessitated a massive in-service training project.

In a personal communication, the consultant stressed the vital importance of follow-up activity without which courses and workshops, however good in themselves, could be a waste of time. "Schools and headteachers can be cruel places, but at least they are the real situation, not the confines of the workshop."

References

1. The Bombay Science/Mathematics Improvement Project - Teaching Aid Centre, Gilder Tank, Bombay, April 1974.
2. BROOKES, John H. - Bombay Science Improvement Project. Science Education Newsletter, April 1973.
3. Project Profile - Educational Development International, July 1973.

8. NIGERIA
A PRIMARY EDUCATION
IMPROVEMENT PROJECT
BEGUN 1969

Background

In recent years Nigeria has been much concerned to improve the quality of the education offered in its schools, and more especially in its primary schools where, as an observer has put it: "what is now taught ... is often poor by any educational standards; at its best formal and unimaginative; at its worst inefficient, irrelevant and dull."

To this end a National Curriculum Conference met in 1969 and produced an agreed statement of national educational objectives, with specific objectives for each level of education. This was followed by the convening of workshops to translate these general objectives into detailed specific objectives for each subject and class, and also to produce outline syllabuses.

The primary workshop took place in 1971 and produced syllabus guidelines in six subject areas, as the basis for curricula to be devised and used experimentally at State level.

In the case of the northern states in Nigeria, work had, in fact, already begun in 1969, centred on the Institute of Education, Ahmadu Bello University, Zaria.

Aims

The overall aim was to produce a full experimental, child-centred primary school curriculum for pilot use in all the northern states and eventual large-scale adoption. But as "curriculum change depends on people, not paper" a major in-service programme was developed to ensure the effective implementation of the new curriculum materials in the schools.

In the earlier years of the project, this was concentrated on 66 project schools, 11 in each of the then six northern states, with a Teachers College acting as the local centre in each case.

Needs and priorities

First priority in this in-service programme was given to maintaining close and sympathetic supervision of the teachers in the project schools. The key people in this process were a group of "mobile teacher trainers", one based at each of the centres and responsible for the experimental schools in his area.

Resources

The main agencies involved were the six State Ministries of Education who were responsible for the payment of teachers and supervisors; the Institute of Education who undertook the preparation and trial of materials and their distribution together with in-service training; and UNICEF who provided the financial support for the Institute's work and for the transport of field supervisors.

The full-time staff employed consisted of one mobile teacher trainer for each centre and sometimes a full-time assistant as well. In addition, there were part-time-project co-ordinators at the Institute of Education, subject panel members, college tutors and inspectors.

Participants

The key to the project was the selected group of mobile teacher trainers entrusted with the task of implementing the new curricula and teaching materials with the teachers in the 66 project schools.

Content of the course

The courses, both central and local, were very closely geared to the curriculum materials - that is to the schemes of work, teachers' notes and pupils' materials including locally purchased materials such as cassava paste, market dyes etc. - for language, mathematics, social studies, science and health education. Clearly all concerned, trainers and project

teachers alike, had to be familiar with the nature and purpose of these materials. The courses, therefore, provided opportunities for study, discussion, demonstration and practice in such a way that, on their return to their schools, the project teachers were prepared to apply what they had learned in their own classrooms. Even so, it was felt that these short courses had attempted to do too much in covering the whole curriculum for any one school year and, consequently, local supplementary courses had sometimes to be run to remedy weaknesses.

The programme was so arranged that the new curricula were introduced experimentally year by year i.e. Class 1 in 1971; Class 2 in 1972 etc., with materials for each year prepared in advance and distributed to the schools in time for the new school year.

Modes and methods of training

In-service course work was carried out at two levels; first at the Institute, for the trainers i.e. college tutors, mobile teacher trainers and inspectors; then at the 11 local centres for the teachers in the project schools. These short courses were held each year during the school holidays in December and January and were followed immediately by the trial use of the new materials in the schools. During each year a workshop was held for the mobile teacher trainers who reported back on the use and suitability of the project materials in the schools.

Follow-up and evaluation

A report on the Project, said that it was when the experimental material got into the classroom that the most crucial work took place and the most unpredictable problems were encountered. This was where the work of the "mobile teacher trainers" who were mostly Nigerians, though there were some British teachers, was so important. With some partial assistance from local college tutors or inspectors, they had the task not only of supervising the new material, but of

distributing it, explaining it, and sometimes translating it; of running local courses for teachers, demonstrating in the classroom and proving informal evaluation of its effectiveness.

The mobile teacher trainers in other words, provided the constant help and reassurance in the field that was essential if the teachers were to be able to revise their whole outlook towards primary teaching in the manner that the new curriculum materials required. Teachers needed much help and confidence to forsake the safety of the formal routines which had been their whole experience of education and to embark on the uncertain waters of creative activities, group work, environmental studies and discovery science.

As already indicated, a process of continuous evaluation of the project was carried out, very largely by the mobile teacher trainers during their visits to the project schools. This informal evaluation sought to assess the suitability and effectiveness of the experimental curriculum materials. At the same time it was necessarily concerned with the in-service training programme mounted to prepare the teachers for their work.

The feed-back came during the annual workshops for the field staff and as a result of which the experimental materials were revised in the light of experience in the schools.

Special features

The Project was an example of the way in which centralized initiative (often the only practicable one) can gradually be devolved and modified to suit local conditions while retaining its fundamental character.

It provided a good example of working partnership between a University Institute of Education, Ministries of Education, schools and an international agency.

The mobile teacher trainers had a key role in ensuring close follow-up and supervision of the

project teachers in their schools. In a similar project in Tanzania, such staff based at teachers' colleges, had a limited pre-service as well as an in-service training role. Such an arrangement does much to keep the colleges in close touch with the realities of the school situation.

A matter for continuing concern is the adequacy of the administrative and financial support which a developing programme of this kind requires if it is to be fully effective, as also is the question of whether the rate of diffusion of the new curriculum materials to larger numbers of schools may not prove to be too fast in relation to in-service training capacity.

Reference

1. HAWES, H.W.R. - New Curricula for Nigerian Primary Schools. Overseas Challenge, No. 23, 1972.

Part 3

Conclusions

SOME CONCLUSIONS

The needs
the case
studies
reveal

With needs and resources varying so much from country to country it might seem presumptuous to attempt to formulate any general conclusions on the organization and execution of in-service teacher training in the developing nations. Yet certain problems recur over and over; the basic issues would seem to be common to all in-service programmes and so it may well be that a brief summing up of the main lessons to be learnt thus far might serve a useful purpose. These may be stated under the following two main headings:

(1) Planning and organization

Coherent
policies
incorporating
all aspects of
teacher
education

In-service teacher training should be thought of and planned as an integral part of the whole business of teacher education and training. This implies recognition of it as a permanent, continuing feature of the educational scene rather than a number of limited "ad hoc" exercises.

Agreed
priorities

As this involves a considerable commitment, both of finance and staff, priorities have to be clearly determined and acted on. Everything cannot be done at once.

Adequate
support and
back-up

Any major in-service programme requires an adequate administrative back-up. Requirements, such as accommodation, staffing, materials and so forth must be identified in detail well in advance and provided at the appropriate time. Professional staff should not find themselves having to carry out

time-consuming administrative tasks at the expense of their proper jobs.

Realistic planning

Planning of in-service training must be realistic, both in relation to resources and participants. Educational planners, administrators and those professionally involved should be jointly concerned in such planning.

Co-ordination of agencies and resources

In-service planning should ensure the co-ordination of all available agencies and resources (including external aid) and avoid duplication of effort.

Adequate time for preparation

Major in-service training projects require a reasonable pre-course period of time for staff planning and preparation of materials.

Suitable staffing

The staffing of in-service programmes is of the greatest importance. Suitable staff, full or part-time, must be identified and made available for sufficiently long periods.

Controlled extension of pilot projects

The extension of pilot projects to large numbers of schools should only be undertaken as both materials and teachers are properly prepared and the means of adequate continuing supervision are available. This is vital in the case of any project concerned with curriculum change.

Participation by groups of staff in an institution rather than by individuals

The involvement of headteachers, heads and members of subject departments (in secondary schools), or whole school staffs (in primary schools) should be considered as potentially more effective modes of in-service training than the participation of individual teachers.

(2) Execution of in-service training programmes

Realistic objectives

In any in-service programme the objectives should be:

- carefully considered
- realistic
- stated clearly and precisely
- reflected in the course programme
- capable of modification in the light of experience

A common though understandable weakness, especially in short courses, is the tendency to attempt too much in the time available. It is a temptation to be resisted if the course is to be effective at classroom level.

Availability of materials

Particularly in courses or programmes concerned with curriculum change, it is essential that new materials for teachers and pupils be available when required (both on courses and in the schools). Delays can and do occur, but can be destructive of morale.

Varied and practical methods

Methods of work should be varied and should be such as to provide teachers with the requisite experience, as well as the knowledge, for successful application in their own teaching situations. This is especially so where, as is often the case, they are being asked, in effect, not simply to adopt a new technique but to change their whole conception of the nature and purpose of education. The change from Dr Beeby's Stage II to Stage III or IV is unlikely to be made without an extended period of training and supervision, and is in any case at first not likely to be applied in teaching

situations other than those for which training has been given.

Supervised
follow-up

Close and helpful follow-up supervision is thus a "must" for almost all in-service projects, particularly those concerned with primary teachers and with curriculum change. Whenever possible this should be the responsibility of those, who have themselves participated in the course work as in the case of the Nigerian mobile teacher trainers. Such supervision, together with more formal methods, will provide the feed-back on the suitability and effectiveness of the in-service programmes and thus help in the process of revision as necessary.

BIBLIOGRAPHY

Britain

Cane, B. In-Service Training: A study of teachers' views and preferences, National Foundation for Educational Research, 1969.

Eraut, M. In-Service Education for Innovation, National Council for Educational Technology, 1972.

Johnson, D.J. Teachers' In-Service Education, Pergamon Press, 1971.

Schools Council, Curriculum Development: Teachers' Groups and Centres, HMSO, 1967.

Thornbury, R.E. (Editor) Teachers' Centres, Darton, Longman & Todd, 1973.

Watkins, A.R. (Editor), In-Service Training: Structure and Content, Ward Lock, 1973.

Developing
Countries

Beeby, C. The Quality of Education in Developing Countries, Oxford University Press, 1966.

Dodd, W.A. Teacher Education in the Developing Countries of the Commonwealth, Commonwealth Secretariat, 1970.

Erdoes, R.F. & Clarke, J.H. Correspondence Courses for In-Service Teacher Training at Primary Level in Developing Countries, UNESCO, Hamburg, 1971.

Pires, E.A. Primary Teacher Training in Asia, UNESCO, Bangkok, 1963.

Trevaskis, G.A. In-Service Teacher Training in English-speaking Africa, (a survey of work in 13 countries), Teachers' College, Columbia, USA, 1969.

UNESCO, In-Service Training and Primary School Teachers in Asia, UNESCO, Quezon City, Philippines, 1967.

UNESCO, Improving Primary Teacher Education in India, pre-service and in-service, contracts with all other Asian countries, National Institute of Education, Delhi, 1967.

UNESCO, Better Teachers. An experiment with In-Service Teacher Training conducted by the UNWRA/UNESCO Institute of Education, Beirut, UNESCO, Paris, 1970.

UNESCO, Report of the Regional Workshop on pre-service and in-service Primary Teacher Training in the Arabic-speaking members States of UNESCO, UNESCO, 1969.

UNESCO, Practical Guide to In-Service
Teacher Training in Africa, (Report of 1968
Nairobi Conference), UNESCO, Paris, 1970.

Note

The published literature on in-service teacher training, especially in the developing countries, is very scanty. It is also not easy to come by as most of it has appeared in the form of articles in such journals as:

Teacher Education in New Countries
(OUP - no longer published)

English Language Teaching (OUP)

Overseas Challenge (ODM, London)

Educational Development International
(British Council)

Science Education Newsletter
(British Council)

A good deal also is available only in unpublished project reports, some of which have been invaluable in the compilation of certain of the Case Studies in Part 2.

Project
materials
and
information

Printed and audio-visual materials relating to particular in-service projects are normally only available direct from the Agency (Ministry, University etc.) concerned in the country of origin.

A Curriculum Information Centre (for overseas) now operates, however, in the British Council at Tavistock House South, Tavistock Square, London, WC1. Here materials from many countries can be examined and information supplied by post in response to specific inquiries.

© Copyright 1977

Printed and published by
The Commonwealth Secretariat

May be purchased from
Commonwealth Secretariat Publications
Marlborough House
London SW1Y 5HX

ISBN 0 85092 128 7

