# Resources for Education and their Cost-Effective Use

Commonwealth Secretariat

# Resources for Education and their Cost-Effective Use

CONTRIBUTIONS TO

THE NINTH CONFERENCE

OF COMMONWEALTH EDUCATION MINISTERS

Commonwealth Secretariat

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## GENERAL INTRODUCTION

This volume contains four separate items dealing with "Resources for Education and their Cost-Effective Use". Originally, they were contributions to the Ninth Conference of Commonwealth Education Ministers where the subject was a major item on the agenda. They have been put together in this form to meet a variety of needs including those of research workers in the field of the economics of education and of education officials wishing to make cross-country comparisons of problems and solutions in the mid 1980s.

The publication begins with an overview of the individual country papers prepared for the Conference by Australia, The Bahamas, Bangladesh, Barbados, Bermuda, Botswana, Britain, Brunei Darussalam, Canada, Cyprus, The Gambia, Guyana, India, Jamaica, Kenya, Kiribati, Lesotho, Malawi, Malaysia, The Maldives, Malta, Mauritius, New Zealand, Nigeria, Papua New Guinea, The Seychelles, Sierra Leone, Solomon Islands, Sri Lanka, Swaziland, Tanzania, Tonga, Trinidad and Tobago, Uganda, and Zambia. For many readers this overview may be a sufficient indication of the ways in which Commonwealth countries are responding to economic constraints. Some, however, may wish to refer to the papers in full, and the Education Programme of the Commonwealth Secretariat will endeavour to meet requests for copies of individual country papers.

The next two sections of the publication consist of the working papers on this agenda item which were commissioned for the Conference. The title of the paper by Professor P R C Williams is "Locating untapped resources for education"; that by Professor Sanya Onabamiro is "Possibilities for reducing costs without sacrificing the quality of education".

During the Conference two working groups were formed to consider the subject, one concentrating on "the cost-effective use of resources" and the other on "additional resources for education". Their reports, which were adopted by the Conference as a whole*, are reprinted here and make up the final pages of this volume.

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*The Report of the Ninth Conference of Commonwealth Education Ministers is available from Commonwealth Secretariat Publications; price £2 post free by surface mail.

# Ninth Conference of Commonwealth Education Ministers

## Nicosia, Cyprus: 23-26 July 1984

OVERVIEW OF THE COUNTRY PAPERS

ON AGENDA ITEM II

RESOURCES FOR EDUCATION AND THEIR COST-EFFECTIVE USE

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# CONTENTS OF THE OVERVIEW

# RESOURCES FOR EDUCATION AND THEIR COST-EFFECTIVE USE: AN OVERVIEW OF THE COUNTRY PAPERS

## INTRODUCTION

1. This overview paper is based on the 36 country papers prepared by Ministers of Education at the request of the Commonwealth Secretariat as a major contribution to discussion on Resources for Education and their Cost-Effective use at the Ninth Conference of Commonwealth Education Ministers held in Cyprus from 23 - 26 July 1984.

2. Ministers of Education were invited to address themselves to the main areas of action that countries are using either to increase resources for education or to improve their cost-effective use. This overview has attempted to identify from the country papers two types of information:

A Common features and trends to the problem of limited resources for education.

B. Innovative solutions used by a few countries that may be of wider interest.

## BACKGROUND TO THE ISSUES

3. Public sector spending in most countries has been under substantial pressure in the 1980s for a number of reasons. The impact of global recession has been a particularly important factor in restricting the growth of education budgets in real terms and it has reversed an expansionary trend that prevailed in most countries during the independence decades 1960 - 1980. Studies indicate that apart from a few exceptions such as Zimbabwe, expenditure on education is at best remaining stable and in some cases is actually declining. Moreover, it would appear that Official Development Assistance is unlikely to be sufficient to compensate for domestic shortfalls during the present recession.

4. The papers reveal that financial stringency is beginning to bite almost everywhere. But the different bases on which the papers present this information makes comparison difficult.

5. Most countries claim no more than that they have been able to keep expenditure on education level. If inflation is allowed for, a fixed level of expenditure in fact means, as in the case of Malaysia, a decline in real terms.

6. Falling rolls, the result of declining population, have allowed a few countries to reduce educational expenditure: Bermuda and Malta are cases in point. In other countries similar demographic trends have been taken as an opportunity to make improvements. In Canada, falling enrolments have been viewed as an opportunity to increase the number and variety of services offered. There has been a substantial increase in Canada's educational expenditure during the past decade, though, because of other competing claims

on public expenditure, education's share of the national budget has fallen. Australia, which is also experiencing declining enrolments, has responded for the time being in the same way as Canada. In Britain, there has been in real terms a slight reduction in overall educational expenditure in response to a policy of restraint in public spending. However, Britain's figures conceal sharp reductions in some services such as school meals, school transport and the level of student grants and improvements or expansion in others.

ALTERNATIVE SOURCES OF FUNDING

7. Increased resources for education can be obtained in a number of ways, such as:

A. Increasing the overall share of the national budget;

B. Transferring financial responsibility to other institutions or individuals;

C. Letting institutions generate income;

D. Attracting development aid.

A. Increasing the Overall Share of the National Budget

i) Real increases

8. Very few country papers report a real increase in the allocation of national resources to education. The effects of world recession on national budgets, and the need to balance and reconcile political priorities have all had their effect. Countries without mineral oil production were the first to be hit when the cost of importing oil escalated sharply in 1973/74. Inflation followed for most countries, making it difficult to maintain development targets without heavy borrowing. As unemployment and recession increased therefore, funds for educational expansion were reduced and, for most countries, it became a matter of cutting back on educational expenditure or at best of marking time. The optimism of newly independent countries took a severe beating, added to which came widespread questioning of education's role as a national investment. In consequence, the almost automatic priority enjoyed by education in the allocation of national resources during the 60s and 70s largely disappeared.

9. Ever-growing competition for funds comes from defence expenditure, so much so that Kenya refers to the allocation to education and training as 41% of the civil budget. Other country papers do not distinguish between defence and civil budgets and so comparison is impossible.

10. Further competition for funds comes from an ever-increasing range of government ministries and services so that ministers of education often count themselves fortunate if they can maintain their existing proportion of the national budget. However, it would appear that most countries allocate some 15% - 20% of their national budget to education.

11. A few such as Lesotho, Uganda and Zimbabwe manage to allocate 20% or more of their national budget and some have even been able to increase in real terms the share to education. Zimbabwe is outstanding in this respect having increased its allocation to education from Z$112.5 million to Z$396.6 million between 79/80 and 82/83 - a phenomenal increase of 252 per cent. This kind of rise is not uncharacteristic of countries in the immediate aftermath of independence.

ii. Sharing the cost of education with other ministries

12. Many countries report increased expenditure on education and training by ministries other than education. Australia, for example, describes the increased federal, state and local government contributions to the Community Employment Programme, a job creation project that embraces several ministries. The Bahamas cites the role of the Ministry of Agriculture, Fisheries and Local Government and the Ministry of Youth, Sports and Community Affairs in promoting non-formal education. Co-operation of this kind is also reported by India and Mauritius. The phenomenon is probably much more widespread than the various reports suggest.

iii. Tapping other government sources

13. In Canada an initiative has been taken by the Province of Alberta which automatically increases government funding to education up to a ceiling of $80 million. This Advanced Education Endowment Fund matches dollar for dollar contributions from business, industry, organisations, foundations and individuals. Papua New Guinea has a similar 'kina for kina' scheme whereby the government adds one kina for every kina raised locally for particular education projects.

14. An interesting innovation for tapping government funds is described in the Sri Lanka country paper. In this case, half of all the money raised in the National Development Lottery conducted by the Ministry of Plan Implementation is allocated to the Scholarship Trust Fund for grants to university students. (see also paragraph 28).

B. Transferring Financial Responsibility to other Institutions or Individuals

15. This is the most widely reported means of finding additional funds for education and takes the form generally of passing on educational costs to one of the following:

i. the community;

ii. voluntary agencies and private organisations;

iii. commerce and industry.

i. The Community

16. A widespread educational practice reported by the Bahamas, Guyana, Malawi, Malaysia, Tanzania, Zambia and Zimbabwe is of community acceptance of responsibility for building and maintaining schools. In some cases the community provides everything needed to erect and furnish the building; in others, the building materials and school equipment are supplied by central government and the community provides only the labour.

17. Gifts and fund raising by community groups and individuals is a widely reported source of community funding. An outstanding example of this is the Harambee or community self-help movement in Kenya which, with the support of political and civic leaders, has built more than half of all the secondary schools put up in 1983 and staffed nearly one-quarter of them. Zimbabwe reveals that 70% of the capital cost of secondary schools in the country is met by parents and the local community. Malta mentions the institutionalisation of parental support by having parent-teacher associations in almost every government school and there are doubtless many examples of this elsewhere too.

These bodies contribute such things as prizes, books for school libraries, radio and television equipment and public address systems for the schools. The role of old students' associations is notable in some countries and Sierra Leone reports one such association building an endowment fund of one million Leones and others contributing to health centres, chapels and other special buildings. It also mentions the significant contribution that other groups can make, citing Le.21,337 raised in a very short time by the development fund committe of one school in order to build additional classrooms and a wall round the school premises.

18. Community assistance in the form of voluntary teaching and non-teaching duties is also found. Britain, for example, reports extensive use of voluntary teaching help for some of its adult literacy and basic skills programmes with about 24,000 volunteer tutors taking part. The Seychelles also makes use of volunteer teachers in its community centres.

19. Voluntary support of this kind comes in many forms. As already noted, much of it comes as labour to help with building, maintenance, teaching and non-teaching duties. But much comes from cash raised by gifts, trade fairs and other fund raising projects.

20. Many countries which have long sought for social reasons to provide free education have been forced to introduce charges. Some do so indirectly in requiring pupils and students to provide school stationery, textbooks, uniform and other equipment. Others charge tuition fees directly. In government schools, such fees do not cover the full cost of education. For example, Lesotho which has a well established system of charging fees estimates that only 30% of the expenditure on primary and secondary schools in the country is met by fees. But, in recent years, Britain has decided to charge 'economic' or full-cost related fees to overseas students attending further and higher education institutions. One possibly beneficial side-effect of this has been to draw attention to the real cost of education.

21. One consequence of the dilemma faced by countries with escalating costs for higher education on the one hand and relatively fixed resources on the other is the number of countries shifting the basis of higher education financing from a tuition-free basis to fees-cum-loans. Barbados, for example, introduced its Student Revolving Loan Fund (SRLF) in 1977 with capital amounting to US$ 1.2 million. Beneficiaries were qualified Barbadian students from families with limited access to resources to finance their post-secondary studies in fields determined to be of priority for the continued social and economic development of the country. The SLRF was not intended to provide higher education for all who wanted it, but only for those who needed assistance and only to those studying in fields established as manpower priorities by the government. Despite some teething problems encountered with the SRLF, Barbados enlarged the project in 1984 to incorporate a wider range of higher education provision and a larger number of students.

ii. Voluntary agencies and private organisations

22. There is a trend indicated in the country papers for governments to pass an increasing amount of the cost of schools to the private sector. Private schools are frequently the result of educational initiatives by religious bodies. Muslim countries such as Brunei, Malaysia and the Maldives have a large number of institutions with Muslim foundations offering education at different levels. Similarly, many developing countries in Africa, Asia and the Pacific have numerous christian church or mission schools. India speaks

of the need to encourage voluntary agencies; Malawi records its support for private secondary schools and its encouragement for them to seek financial support from charitable organisations both in and outside the country.

23. Some private schools have specially defined roles such as English medium schools or schools for expatriate children, and many countries have schools of this kind.

24. Another form of private venture, often associated with community enterprise, finds its expression in non-formal education. For example, the Tonga country paper reports the activity of the Niuola Women in Development Organisation which has 153 affiliated member organisations across the country all committed to improvement of the quality and standard of living of the people through the implementation of new ideas. This involves teaching and training. The test of skill mastery adopted by this organisation is when the trainee can teach the skill to another person who can then perform it satisfactorily. The cost of the educational activities of the organisation are borne by it and no liability falls to the Ministry of Education. Indeed the organisation relieves other ministries of expenditure also as, for example, in one project in which it was responsible for establishing a water supply, in co-operation with the Tonga Water Board, for the home village of Niuola. With the project successfully completed, the Niuola Women in Development Organistion assumed responsibility for the maintenance of the water supply and for the collection of rates.

iii. Commerce and industry

25. A number of ways in which commerce and industry help to finance education appear in the country papers. The Bahamas mentions that scholarship awards are offered by local private firms, industries, business and service clubs. Kenya, Malta and Sierra Leone report sponsorship by businesses or industries for individual students. In some cases, this sponsorship can mean simply payment towards the costs of training by others, but in others it includes responsibility for providing training. In Swaziland industry often makes voluntary contributions to the cost of educational projects if these occur in the locality of the industry.

26. An interesting initiative tried by the governments of Cyprus and Jamaica is described in the country papers. This involves a tax imposed on business and industrial firms specifically for education. In the case of Cyprus 0.5% of the total industrial wage bill is charged and used to train people for industry and improve the skills of those already working in industry. In Jamaica, in order to fund Human Employment and Resource Training (HEART) there is a tax of 3% of private sector employees' wages.

27. Perhaps the most innovative solutions to the transfer of financial responsibility by governments to other bodies is to be found in the papers supplied by Australia, Mauritius, Seychelles and Sri Lanka. Australia gives an example of how educational costs can be spread. It mentions how the construction of its second post-graduate school of business management at the University of Melbourne is being financed as a co-operative effort between the Federal Government, the University of Melbourne and the Melbourne business community. Mauritius reports the adoption of certain primary schools by private firms, hotels and banks. Such adoption results in these firms paying for such things as repairs, the replacement of equipment and the setting up of libraries. Seychelles has an on-going arrangement for spreading costs in in-service education whereby the Government provides a portion of the instructional cost; industry and commerce provides the balance together with

a portion of the time in which the employee is released for training: the employee also commits a portion of his own time for training.

28. Sri Lanka is the only country to report the use of national lotteries for raising funds for education. Mention has already been made of that country's National Development Lottery (paragraph 14). In 1981 the Mahapola Higher Education Scholarship Trust Fund, administered by a Board, was inaugurated to assist university students. A second nationwide annual lottery was launched and the proceeds from it are credited to the Scholarship Trust Fund. The money value of the scholarship is sufficient to cover part of the expenses of each holder. The allocation of scholarships is entrusted to the University Grants Commission which awards 90% of them on the basis of need and 10% on the basis of merit. The number of scholarships has grown from 423 in 1981 to 2,500 in 1983 and is expected to reach a total of 3,500 in 1984. Funding of this order is likely to be of much interest to other countries.

## C. Generating Income Through Institutional Activity

29. Income from institutions can be raised in three ways:

i. the sale of redundant buildings;

ii. hiring out premises and services;

iii. the sale of products.

### i. The sale of redundant buildings

30. Britain and Canada are the only countries to report this as a method of providing funds for education and their experience may be of use to other countries with declining enrolments. Britain makes the case for the disposal of redundant buildings by noting that 20% of the cost of maintaining each pupil in school is related to the repair, cleaning, heating, lighting and associated staff costs of school premises. It draws attention to how sensitive an issue the process of disposal can be with local communities. However, because of the significant savings that can be made, the Architects and Building Group of the Department of Education and Science co-operates with local education authorities in the development of cost-effective strategies designed to remove surplus places, improve retained buildings, reduce current expenditure and to release surplus land. The Ministry of Education in Ontario faced with similar problems to those experienced by Britain, has developed a set of procedures for identifying, cataloguing, and disposing of surplus sites. In Canada, at a regional level, an inventory of surplus sites and buildings held by school boards is assembled on a continuous basis, thus facilitating appropriate action by school boards.

### ii. Hiring out of premises and services

31. This means of raising funds for education is widely reported. In Bermuda the charges are small, being related only to caretaker and service costs. In Britain a thriving business has been developed by some universities through letting their facilities on a commercial basis. Brochures describing the facilities and charges available for conference organisers are advertised widely. Similarly lucrative marketing is carried out by universities in suitable locations and with appropriate accommodation to attract tourists in vacation time. Malta also reports the use of school buildings in holiday time as a source of income, mentioning in particular the use of schools with sea-side sites for children's holiday camps and the use of school playing fields and gymnasia for recreative use by various associations.

32. Income from the hire of expertise appears to be increasing. Universities from a number of Commonwealth countries have made staff available for consultancies for many years. Nigeria has formalised this by advising their universities to offer consultancy services within their fields of specialisation. The hire of institutional expertise is not limited to universities, however, and several countries report how other kinds of institutions derive income from the services they offer. Brunei, for example, offers the employment of students in training at the Sultan Saiful Rizal School of Buildings for essential projects that would otherwise be tendered out to contractors. Guyana, Jamaica, Malta, Seychelles and Zimbabwe all mention similar uses of institutional resources for generating income.

iii. The sale of products

33. Most of the countries which mention the hire of institutional services also note the income that is derived from the sale of products. Of course it is difficult sometimes to distinguish between a service and the end product of that service. In consequence, many of the countries that offer technical services such as building, carpentry, furniture making, plumbing, electrical installations, painting and decorating and automotive engineering also have an end product to sell. Brunei mentions the sale to the public and Government departments of products of the Brunei Arts and Handicrafts Training Centre. Canada refers to the sale of high quality courseware developed by the Educational Technology Program of Manitoba. Guyana mentions the introduction of productive work in schools with the aim of making them partly self-supporting. (See also paragraph 47 on the role of specialised production units). Jamaica reports the success of a similar enterprise in agricultural schools where income from the sale of produce offsets recurrent expenditure of the institution. Although not mentioned in its country report, Papua New Guinea gave an account at the Conference itself of a commercial loan taken out to purchase a coffee plantation to be used to provide early school leavers with work experience that would enhance employment prospects. The success of this project was outstanding and enabled not only the recurrent costs of the project to be covered but early repayment of the loan to be made also.

34. The Zimbabwe Foundation for Education with Production has assisted schools which espouse the philosophy that effective education is best derived from meaningful activity. These schools grew out of the liberation struggle. In the first phase, the students put up the buildings and installed the electricity, water and sewer services. In the second phase, students began to undertake commercial contracts which attracted income. Such projects enabled the students to apply what they learned in the curriculum and in this way not only to exercise their technical skills such as bricklaying, plumbing, electric wiring, carpentry but to gain experience in skills such as budgeting, planning, acccounting and marketing which are so necessary to success in running any small business. The Seychelles is pursuing a similar approach in its Polytechnic where already the Art and Design department is aiming at self-sufficiency and the Maritime Studies programme has been required to recoup the capital costs incurred with the purchase of fishing boats by selling its catch to the national parastatal body responsible for fish marketing.

D. Attracting Development Aid

35. Most countries acknowledge the role of development aid in helping to meet development objectives, but many draw attention to the fact that the expanding need for assistance together with the effects of world recession on donor countries have contributed to growing difficulties in obtaining development aid.

36 The importance of such aid, particularly to small countries, is reflected in the Swaziland paper which places international aid alongside government and community funding as a mainstay of educational provision in the country. If international aid were to be lost or even reduced, some countries would find it impossible to sustain their current level of educational provision.

37. Those countries such as Botswana, Lesotho, Swaziland and Tanzania with a refugee influx face added difficulties in funding education. For them, international aid and assistance from the United Nations High Commission for Refugees can be critical.

38. There are no special initiatives in this field reported in the country papers and no secrets for success in attracting aid. However, there is a need for bilateral aid to continue and for some kind of assistance to be available to poor countries which lack the resources for managing effective aid negotiations with donor agencies.

## INITIATIVES TO REDUCE COSTS

39. Although most developing countries would claim to be in the business of expanding education, not reducing it, the country papers show that, because of financial pressure, there has been much careful examination of how cost reductions can be introduced without impairing the system. Apart from the use of more cost-effective methods of providing education, which topic is dealt with in the next section, initiatives by member countries to reduce costs appear to fall into two categories:

A. Reducing inputs;

B. Reducing the cost of inputs.

### A. Reducing Inputs

#### i. Disposing of redundant buildings

40. In countries which have a surplus of school buildings, an obvious cost saving can be achieved by the disposal of these. This has been done by countries with falling enrolments such as Australia, Britain, Canada, Mauritius and New Zealand; but not without difficulty since local communities that have enjoyed neighbourhood schools naturally resent their closure and their children having to travel to other schools. Mention has already been made in the section on generating income from institutions of the action taken in Britain and Canada with this sensitive issue. If wisely executed, the disposal of redundant buildings is not only an opportunity to be rid of unnecessary maintenance and service costs but an opportunity to phase out buildings unsuitable for their purpose and to release resources for other purposes.

#### ii. Reducing the number of teachers employed

41. Just as falling enrolments provide an opportunity to reduce the number of schools, so also do they provide an opportunity to reappraise the number of teachers employed. And, since teachers' salaries can represent up to 90% of educational expenditure, any reductions in teacher recruitment and employment can give significant cost savings. Countries are understandably coy about reporting reductions in the teaching establishment preferring to

point to falling pupil enrolments as an opportunity to improve the quality of the teaching profession. But Mauritius notes that in the process of increasing pupil-teahcer ratios the Ministry of Education has decided not to recuit additional primary school teachers between 1985 and 1986 thus effectively reducing the overall number of teachers. The Seychelles also mentions how, by reducing by one period per day the number of formal periods of instruction supervised by trained teachers, the total number of teachers could be reduced by 14% with remaining recruitment being devoted to trained teachers. In this way an overall reduction in the teaching establishment resulted in an improvement in the quality of the teaching force.

iii. Shortening courses

42. Cost savings can be achieved by reducing the number of years pupils or students spend in school. This policy can achieve significant savings both in the need for accommodation and teachers. Tonga reports in some detail the results of a national committee commissioned to make proposals for the introduction of national examinations at Forms 5,6 and 7 to replace the present external examinations offered by New Zealand. This committee has recommended that with new and improved secondary curricula, pupils can achieve university entrance standards after only six years instead of eight as previously. Other countries report restructuring the number of years spent in primary education but for the most part are content to rejig the years in school rather than reduce them. India draws attention to the accelerated teaching it has implemented for out-of-school children aged 9 - 14 whereby learning is achieved in two years that in younger children would take eight. Nigeria reports a shortening of the B.Ed degree for certain undergraduates. (See paragraph 49).

iv. Reducing the range of subjects taught

43. Reduced costs can be achieved by reducing the curricular options in schools. This is particularly important in relation to secondary schools in rural areas where the number of pupils may not be sufficient to justify employing a large number of specialist teachers. Lesotho has faced this problem head on by establishing policy guidelines that secondary schools with fewer than 300 students should offer no more than eight subjects and that high schools with fewer than 450 students should offer no more than ten subjects.

v. Reducing standards

44. It is possible to reduce costs by reducing standards, but understandably countries turn to this as a last resort. However, Tanzania may speak for others who find the economic pressure of current times intolerable when it admits that because of lack of funds, most of its schools are run below minimum requirements.

vi. Reducing services

45. Many countries have been compelled by force of circumstances to re-appraise their provision of social services such as school meals, boarding, school transport etc. These services represent a substantial element in the educational expenditure of some countries. It is noteworthy, therefore, that a number, even those where political ideology or public preference is for their retention, are reducing the number of boarding schools and residential teacher training colleges. But Jamaica reports that, so important does it see the nutritional role of school meals to children's physical and mental wellbeing, that it is actually expanding the programme.

## B. Reducing the Cost of Inputs

46. There is some overlap between this section on reducing the cost of inputs and that which follows on improving the cost-effectiveness of educational expenditure. The distinction is largely one of emphasis and so, in this section, attention is focused on initiatives primarily intended to maintain effectiveness at reduced cost, while in the section that follows attention is turned to initiatives where the aim is for achieving greater effectiveness with the same money cost.

### i. Substituting cheaper inputs for expensive ones

47. If cheaper inputs are substituted for expensive ones, cost savings will follow and many countries report efforts to find these savings. Australia reports that as a result of national studies of school buildings during the past six years, construction costs have been reduced by 18% and that building quality depends more on the skill of the designer than on the cost per square metre. Reports of these studies are available and cover a wide selection of topics such as design, planning, materials and finishes, renovation, needs for art, science, special education and community use. The Gambia has a School Building Unit that has developed a standard plan for school buildings which optimises the use of local materials and labour. It provides buildings at half the cost of those put up by the Public Works Department. However, further research and experimentation by the Unit have brought about improvements to the design with less space wasted on circulation and more flexible auxiliary space provided. Experimentation with low cost windows and doors and the use of burnt brick for construction have reduced costs by a further 30%. Jamaica has developed standard plans for schools for 300, 600 and 1,200 pupils. Tanzania has encouraged low cost building on the grounds that more schools can be built for the same amount of money. Zimbabwe shares this aim and has pursued it by tendering school construction to local contractors who, on average, can build for half the price charged by large and international contractors.

48. Locally produced teaching materials are another way of substituting low cost inputs for expensive ones. Gambia has made impressive steps in this direction with its Book Production and Material Resource Unit which serves not only the formal system of education but also the non-formal. In contrast to some countries which have followed low cost production methods when producing instructional materials, The Gambia has found it cost-effective to use a small, highly trained and efficient staff using high technology equipment rather than labour intensive measures. Factors that its paper notes as important include standardisation of machinery, compatibility between the function of one machine and another, using cheap sources of supply and providing good storage facilities. Jamaica, Kenya and Zimbabwe all mention their production of low cost science equipment, the last offering science kits that enable schools to teach science without laboratories and at a fraction of the cost. In the same context, Nigeria reports the work of the Federal Science Equipment Manufacturing Centre, the National Education Technology Centre and various State Science Equipment and Resource Centres. The Seychelles and Uganda also note the cost-benefit of locally produced teaching materials.

49. One of the most frequently mentioned cost reductions occurs in relation to teacher training. One method is to replace residential training colleges with day institutions. However this approach presents serious problems for small countries and those with large rural populations. Another method is to dispense with the high cost of employing teachers to replace those withdrawn for training by conducting on-the-job training using distance education.

India's Centre for Educational Technology caters for thousands of teachers each year with its distance courses and Nigeria's National Teachers' Institute has the capacity for training 40,000 teachers per year on-the-job. But one of the most impressive training systems for teachers is provided by the Zimbabwe National Integrated Teacher Education Course which combines face-to-face instruction with distance education and on-the-job training and has by this means drastically reduced recurrent costs related to teachers' salaries. Nigeria has reduced costs in the training of some teachers by shortening courses. For example, holders of the Nigerian Certificate in Education are allowed to complete B.Ed degrees in two years instead of the three required of Higher School Certificate and 'A' level pass holders.

ii. Restructuring salaries

50. Most developing countries have rid themselves of the need to employ expatriate teachers on special contracts for primary education. Several still have a need for this expensive form of teacher recruitment at secondary level and in post-secondary education, but they are reducing educational costs whenever they can by replacing expatriate teachers with suitably qualified nationals.

51. While a number of countries admit to the method above for reducing the cost of education, none admits to another widespread means of cost cutting related to teachers' salaries. This occurs primarily in countries with substantial inflation and is brought about by salary increments and awards being set at less than the rate of inflation. The net effect is a reduction to the employer (usually the government) in the cost of teachers' salaries.

## INITIATIVES TO INCREASE THE COST-EFFECTIVENESS OF RESOURCE USE

52. It is clear from the country papers that member countries would prefer to increase resources for education but are realistic enough to accept that in the current world economic climate this is well nigh impossible. The initiatives reported in the country papers to improve the cost-effectiveness of resource use emphasise positive action in four important areas:

A. Maximising the use of buildings

B. Maximising the contribution of teachers

C. Maximising teacher support services

D. Maximising management efficiency

### A. Maximising the Use of Buildings

i. Efficient building design

53. Many countries would like to make more intensive use of their school buildings but find the cost of alterations to make them more flexible would be prohibitive. It is therefore interesting to note the research that has been carried out in a number of countries such as Australia, Britain and Canada into school building designs that focus on efficient utilisation. Australia mentions how she is actively promoting the adoption of new school building designs and concepts conducive to community use. Canada reports the difficulties of using buildings for school and community use where these shared functions were not anticipated and planned for by the architect.

54. Britain draws attention to an interesting experiment to provide maximum flexibility for science teaching at Bristol Polytechnic. In this case the only permanent elements are the load-bearing walls and, as a result of this, laboratory layout and classroom space can be quickly and cheaply altered by simply moving the demountable partition walls and rearranging the loose benches and storage units. The same principles can be applied to existing buildings by carrying electricity, gas and water services into spaces on overhead booms so that future conversions can be undertaken with a minimum of cost and inconvenience. Inefficiency occurs in many school buildings in over-generous provision of space used only for movement from one part of the building to another. Britain reports how such wastage can be reduced by good design.

55. Another source of inefficiency in buildings is peculiar to those countries which require heating in winter. Canada reports on useful work concerning improving the thermal efficiency of schools and this may be of interest to countries experiencing the problem.

ii. Merging small schools

56. Small schools are a problem to all countries which have low density rural populations and they are also becoming a problem to countries which are experiencing declining populations in their inner cities. They are not cost-effective because they make disproportionate demands upon resources, in relation to the number of children who use them. As a result, most countries are trying to merge their small schools to form larger units. But small communities do not welcome such mergers where they mean the loss of their school.

57. Barbados, Cyprus, Guyana and Malta are among those who report the problem and the point is made that where merging necessitates the provision of boarding facilities for some of the pupils who have long distances to travel, the additional cost of this may outweigh the cost-benefits of the merger. Consequently most mergers are implemented with only the provision of additional transport to enable children to travel daily to school. The introduction of boarding facilities is not usually the result of mergers; more commonly it springs from development policies to open up education in rural areas not previously served with schools.

iii. Sharing the use of school buildings

58. Increasingly, countries recognise the educational and economic benefits, that can be derived by sharing the use of school buildings. The most common type of sharing is where different groups such as 'shifts' of pupils or child and adult classes utilise a school building and its facilities at different times during the day. Less common is a sharing between the school and community where the community may utilise some of the pedagogical expertise of the school as well as the other resources while the school benefits from the skills and wider resources of the community. In the country papers, Bangladesh reports its aim to convert its primary schools into learning centres for the community; Cyprus mentions the use of schools for adult evening classes; Guyana describes how its university conducts evening courses in rural schools through its Extra Mural Department; Kenya relates the use of its schools for literacy programmes when necessary; Mauritius reports that it has opened its schools to the public for recreational and leisure activities and Swaziland how it has established Rural Education Centres at a number of its schools.

59. Only Sierra Leone voices the reluctance with which sometimes school heads and staff cooperate in such shared use of resources but this honest observation helps to highlight something of the administrative and security problems associated with the practice, such as teachers resenting having work removed from the blackboard by other users or equipment being damaged or stolen.

iv. Shift systems, the extended day and rotation of classes

60. Many countries report making use of the shift system in order to make more efficient use of school resources. The simplest shift system incorporates a morning session and an afternoon session in which one set of teachers teaches two sets of children. Real cost-benefit requires that the building or the equipment are used more intensively and teachers work longer than would normally be the case. There are obvious limitations to how far one can go along this path, but Jamaica who has had more than 12 years experience of shift systems in schools claims that they offer 50% savings in capital costs. She also claims that although shift systems have inherent social problems the space arguments outweigh these. Trinidad and Tobago does not agree and reports that the combination of household disruption and problems of security in the schools has curtailed the extensive use of shift systems there.

61. The extended day is a variation on the shift system and emphasises the period in which the building is open for work. The extended day spreads the load on special facilities such as the library, laboratory, canteen, etc. Jamaica has made extensive use of the extended day because of its potential for accommodating increased enrolment without introducing unacceptable hours for school attendance. By having the school open for more hours each day, use of specialist rooms and facilities can be spread over a longer time thus enabling more pupils to use them without overcrowding.

62. Rotation of classes, though practised in many countries, receives most comment in the country paper from Swaziland. Rotation enables enlarged enrolments to be accepted in schools without the need to increase the provision of buildings and other specialist facilities. For example, in a two-stream three-grade junior secondary school, Swaziland provides only four ordinary classrooms instead of the more usual six; careful timetabling enables classes to be taught in the specialist rooms at times when they are not required for specialist teaching. In a three-stream school, six classrooms are provided instead of the usual nine. Therefore there is a very substantial capital saving.

B. Maximising the Contribution of Teachers

63. The fact that in many developing countries, teachers' salaries account for up to 90% of the education budget makes the teacher a key figure in the cost-effectiveness equation. A number of ways are reported in the country papers for optimising the contribution made by teachers, the three most important of which are:

i. increasing pupil-teacher ratios

ii. increasing teaching loads

iii. improving the qualifications of teachers

It is useful, therefore, to examine the effect of these approaches to cost-effectiveness.

i. Increasing pupil-teacher ratios

64. Educational research has suggested that higher pupil-teacher ratios do not necessarily militate against effective learning. This conclusion has not yet enabled many countries to increase pupil-teacher ratios impressively since teachers' unions, understandably, do not readily accept the convictions of the researchers. But it has encouraged governments to try to establish norms for staffing ratios in different kinds of schools. In practice, ratios range in primary schools from about 20:1 to over 50:1, though Lesotho has managed ratios of 75:1 using teacher aides. In secondary schools ratios vary from about 18:1 to over 30:1. The Solomon Islands reports an increase in staff-student ratios in its teachers' college from 9:1 to 16:1 while Sri Lanka has gone so far as to formulate norms for the determination of staff requirements in university faculties ranging from 7:1 in medicine, dentistry and veterinary science to 18:1 in social science, education and law.

65. However, it seems unlikely that effective pupil-teacher ratios can be improved significantly from those that exist now without radical changes in learning systems for, as Kenya points out, there is a limit beyond which it becomes professionally counter productive to increase pupil-teacher ratios. This issue is dealt with more fully in the last section of this paper on alternative learning systems.

ii. Increasing teaching loads

66. Many countries expect 100% teaching loads from their primary school teachers and express concern at anomalies that exist in secondary schools whereby some teachers of specialist subjects have teaching loads as low as 50%. Botswana has sought to correct the anomaly of lightly loaded specialists by employing more secondary teachers who can teach two or more subjects. India is dealing with the issue by redeploying teachers who are not fully occupied.

iii. Improving the qualification of teachers

67. There is a widespread belief expressed in the papers that the most cost-effective way to maximise the contribution of teachers is to train them properly. Consequently, many papers report on efforts being made to cut the number of untrained teachers employed in schools and the need to provide in-service training for teachers on a regular basis throughout their careers.

68. The lower costs of in-service or on-the-job training for teachers as compared with those of initial training in residential institutions has resulted in widespread provision of in-service training in member countries. The Bahamas has a programme of vacation training for mature teachers. The Gambia has adopted a carefully planned upgrading course for unqualified teachers with strict criteria for selection. This course is run jointly by The Gambian Teachers Union and the Department of Education with assistance from the Canadian Teachers' Federation and The Gambia International Research Centre. Kenya has organised a number of successful crash programmes for reducing the number of untrained teachers. A feature of these has been the amount of distance learning built into the course enabling teachers to study with the minimum of disruption to their work.

69. Nigeria has taken distance methods for teacher education a step further with the establishment of its National Teachers' Institute. This Institute provides a route for any teacher to obtain primary teaching qualifications without attendance at a teacher training college. Zimbabwe has adopted in ZINTEC the use of distance learning with a proportion of residential training

as the method for training the very large numbers of teachers required for its huge school expansion programme.

70. The need for training for special groups such as science and technology teachers is widely recognised and many countries have programmes for these. Recognition of the need for training principals and vice principals is not so widespread and so the account of this in the country paper from Trinidad and Tobago is interesting.

C. Maximising the Use of Teacher Support Services

71. Teacher support services include all those parts of the education system that provide teachers with the materials they need, that support them with the skills and resources they lack, and encourage them in their professionalism. Such support services include curriculum development centres, materials production units, teachers' centres, educational resource centres, and equipment repair and maintenance services. They also include the advisory service of departments of education and those professional associations that have a concern for the quality of teaching in educational institutions.

i. Instructional materials production

72. The fat years of the international educational publishers have passed and there is now a much greater concentration on home produced teaching materials. Curriculum development centres have spearheaded this change and have in many countries been responsible for writing and producing the textbooks and other materials now used in the schools. Bangladesh reports the close collaboration of its School Textbook Board and the National Curriculum Development Centre and a similar pattern of cooperation between bodies involved in getting teaching materials into the schools is to be found in many other countries.

73. The Gambia has a highly efficient Book Production and Material Resource Centre as do Lesotho, Swaziland and Zambia. Kenya has an Educational Media Service producing radio broadcasts and a School Equipment Service. Small countries with their small education markets are particularly difficult to serve economically and some have found cooperation with neighbouring countries a useful solution.

74. Many countries have discovered that production costs for teaching materials can be substantially reduced where local materials are used in their production. As a result, many countries such as Botswana, Nigeria, Seychelles and Uganda have established low-cost production units for science and other equipment formerly imported.

ii. Resource and service centres

75. Britain was the first country to promote the teachers' centre concept as a professional centre run by teachers for teachers. Since then many countries have experimented with the idea and reached various conclusions as to the kind of centre that best meets their needs. In some countries, the role of the centre has been to provide resources rather than professional and moral support as was the initial concept in Britain. As a result, so called teachers' resource centres, now found widely in the Commonwealth, offer a wide range of compromise between professional and material support.

76. Nigeria has established some very large comprehensive teachers' resource centres which incorporate curriculum development units, materials production, extensive library resources and advisory services. Such centres tend to be used by teachers for in-service training rather than on the informal basis of the original teachers' centre concept. Malaysia has four educational technology centres to stimulate the application of educational technology throughout the country and her rural libraries help to promote the reading habit and acquisition of knowledge of both adults and children. Centres are generally seen as a cost-effective way of using limited resources.

77. One of the problems experienced by developing countries, especially small states, is the need for service and repair centres for technical equipment. Nigeria refers to this problem in its paper and describes how the Federal Science Equipment Manufacturing Centre at Enugu was established not only to provide training in the manufacture of scientific equipment but in its maintenance and repair. Not many other countries have followed this path; instead they have left the private commercial sector to provide this necessary support.

iii. Advisory services

78. There is an inherent conflict of interests for advisers who share responsibility for assisting teachers professionally with that of assessing their performance. It is important, therefore, that where advisers act in a teacher support capacity, they should be independent of the Ministry of Education inspectorate or, at least of inspectorial duties.

79. In the Commonwealth, most advisory support for teachers comes from ministries of education, but increasingly, professional associations and teachers' unions are recognising the important role that they can play in the professional development of teachers. It is noteworthy, therefore, that reference is made in the country papers to the role of the Canadian Teachers' Federation in helping other countries with in-service teacher training.

D. Maximising Management Efficiency

80. Cost-effectiveness of educational resources can be seen in terms of optimising the relations between input costs and output benefits. Efficient management can affect the equation significantly.

81. An issue that receives considerable attention is that of centralised versus decentralised administration. Several countries have highly centralised systems of educational administration and many like Mauritius have strengthened this tendency by setting up centralised purchasing units for school supplies in order to benefit from large scale operations. On the other hand, a number of countries see merit in decentralised administration because it places responsibility for education more firmly in the hands of local communities. This contrast is more apparent than real because, in many countries, centralised and decentralised administration operate quite harmoniously together. For example, in Britain the Department of Education and Science is responsible for major policy matters relating to education, while local education authorities employ teachers and manage schools. Canada also harmonises the centralised aspects of federal administration of education with the autonomous character of provincial ministries of education and school boards.

82. In the management and administration of educational resources there are three areas of special significance:

i. Management of teachers

ii. Management of buildings

iii. Management of equipment

i. Management of teachers

83. Mergers between small schools are usually implemented to make more efficient use of teachers. In larger schools, efficient use of the skills and qualifications of teachers can usually be achieved by careful timetabling. In this way schools do not have under-employed teachers seeking to justify, as the Botswana paper remarks, why they should be permitted to teach even fewer periods. Instead, teachers are fully occupied teaching what they are best able to do and undertaking their fair share of other duties.

84. Researchers frequently comment on the relatively small part of the teacher's day that is devoted to activities that actually use professional skills. A number of countries such as Canada have sought to improve matters by employing teacher aides to carry out routine, non-professional duties. Teacher aides also make it possible to increase pupil-teacher ratios very considerably as Lesotho has discovered; but it is important for teachers to be given training in how to use teacher aides efficiently if the potential cost-benefits of this method are not to be wasted.

85. A further possible cause of economic inefficiency in the employment of teachers is over-qualification and its associated cost implications. It is clearly wasteful in economic terms to train a teacher in skills he does not need; all the more so if the teacher then receives higher pay. There is scope therefore for examining teacher training programmes in the light of actual school needs and offering in-service training for teachers whose specific duties call for knowledge of skills they do not yet possess.

ii. Management of buildings

86. School buildings are often inefficiently used. For example, many are open for only six hours or less each day, five days per week, and forty weeks per year. This is a gross under-utilisation of a large capital investment. Country papers suggest various ways in which buildings can be more fully used, including shifts, the extended day, rotation of classes, shared use with the community and the hire of premises. The increased cost-effectiveness that these practices offer does not happen automatically; it results only from careful planning and good management. It is incumbent, therefore, upon all who have responsibility for the administration of school buildings to consider carefully how to make their use as cost-effective as possible.

87. Bangladesh proposes school mapping to ensure that schools are only built when absolutely necessary and Australia requires any agency wishing to put up a new school to provide proof of its viability. Certainly it is a serious waste of resources to build schools that are under-utilised.

iii. Management of equipment

88. Considerable costs are incurred by holding spares for equipment used by schools, particularly where the equipment is sophisticated and expensive in the first place. The most direct way of reducing this element of cost is to standardise equipment as far as possible to avoid the necessity of carrying spares for a wide range of equipment. A spin off from such a policy is that it is easier to provide teachers with 'hands on' training in the use of this

standard equipment and to offer printed guides as Australia does on how to make the most of it in the classroom. The Bahamas, Bermuda and Mauritius each mention the benefits of bulk purchasing standardised items. In addition, repair and maintenance is easier to arrange if the range of equipment is limited.

89. By wise purchasing decisions and good management large sums of money can be saved. Good control of what is owned can also reduce losses through theft and breakage. It can also ensure that institutional equipment is used by teachers who know what it is best suited for and know how to operate it with care and skill. There is surely a message here that good management pays.

## ALTERNATIVE LEARNING SYSTEMS

90. Three kinds of project reported in the country papers characterise the radical and experimental thrusts of countries searching for a system of education that can achieve its aims with a sustainable level of expenditure.

A. Instructional Management by Parents, Community and Teachers

B. Distance Education

C. Computer Assisted Learning

### A. Instructional Management at the Primary Level by Parents Community and Teachers (IMPACT)

91. Two Commonwealth countries, Bangladesh and Jamaica, are currently testing this system for primary education pioneered in The Philippines and Indonesia. Under it, children in grades 4 to 6 are used for teaching children of lower grades using specially prepared modules based on the curricula and textbooks. The senior children learn in peer groups using the learning modules and receive instruction from the teacher. At the heart of the system are the learning modules devised on the principles of programmed learning and kept in the learning resource centre.

92. Because of the involvement of peers, parents and other members of the community in the process of instruction, IMPACT is able to raise pupil teacher ratios to four or five times what is normal in primary schools thus potentially reducing unit costs dramatically.

93. Because progress through the system depends on frequent prescribed tests which assess each child's competence in using what has been learned from the study modules, it is possible for children to progress at their own pace. This flexibility is of advantage to bright children and also to slow learners. It also benefits children who miss work because of temporary absence due to illness or claims on their labour by the family because, on their return, and with help from the teacher, they can "catch up" on what they have missed. On the other hand, it fragments education, and overstresses 'testable' knowledge and skills.

94. Because the learning resource centre is the only part of the system that requires a formal building, the children can learn in inexpensive shelters put up by parents and the community and thus save considerable capital costs.

95. By freeing the teacher from the many administrative and child minding tasks undertaken by teachers in conventional schools, the IMPACT system allows teachers to give individual attention to children and give much more time to the professional aspects of teaching.

96. The potential advantages of the system are many, though there are obvious difficulties to be overcome. It will be interesting to learn from Bangladesh and Jamaica after the trial period has been completed how they view its possible incorporation as a new way of providing primary education in their countries.

## B. Distance Education

97. This system of educational provision has had phenomenal growth in recent years. Whether or not it can be used is not in doubt for distance education has been successfully used at primary, secondary and post-secondary levels in member countries.

98. Australia and New Zealand were pioneers of distance education at primary level. In Australia, the School of the Air provided children in 'the outback' or remote rural areas with two-way communication with first class teachers on a one-to-one basis. The Correspondence School of New Zealand provided all the trappings of a normal school, including school uniform, for children living in places that prevented them from attending the more usual kind of school.

99. Canada's Correspondence Education Branch of the Ontario Ministry of Education is reported in the country paper as the largest distance education enterprise in Canada and the fourth largest in North America offering secondary school courses in English and French to some 70,000 students in 161 schools.

100. Britain's Open University is probably the best known distance learning institution to offer degree courses but it is now joined by other universities around the Commonwealth offering degrees by correspondence.

101. The fact that distance learning can be used to teach a wide range of subjects including science and technology has been proved beyond doubt and country papers such as those of India, Kenya, Nigeria and Zimbabwe report on the extensive use of this medium for teacher training.

102. What of the future of the system? It seems inevitable that the system will continue to be used by countries to give access to people who for various reasons are unable to attend conventional educational institutions. At present, the cost (even using distance methods) of providing education for such people has restricted the use of distance education for this purpose largely to wealthier countries. But the cost savings that distance education offers where economies of scale can be found, mean that its use is likely to grow substantially not only in wealthy countries but in poor ones too. The fact also that its flexibility makes it ideal for providing crash programmes for up-grading teachers' qualifications as has been demonstrated with success in Kenya, Swaziland, Tanzania and Zimbabwe would seem to assure its future.

## C. Computer Assisted Learning

103. The huge expansion of the use of computers in the four years since the Eighth Commonwealth Education Conference suggests that computers will assume an increasingly important role in the latter years of the twentieth century.

104. Are computers to be something that students study and master or are they to become part of the system by which they learn? There is not enough reported in the country papers to provide an answer to this question and these are early days of experimentation even in countries that already have made extensive use of computers in education. Britain reports very briefly on four years' experience of its Micro-electronic Education Programme (MEP). The aims of the programme are to investigate the most appropriate ways of using the micro-computer as a teaching aid and to stimulate the introduction of associated new elements in the school curriculum. Some 500 educational computer programmes have so far been produced, covering a wide range of subjects, including both the sciences and humanities, and at both primary and secondary level. By the end of the current financial year some 50,000 primary and secondary Advisers will have received training for MEP. There is already an operational information network comprising 14 regional information centres and four special Education Micro-electronic Resource Centres.

105. Canada has carried out a considerable amount of research into computer learning and the Provinces of Alberta and British Columbia have developed a computer network that enables universities in these provinces to use the system effectively for student studies.

106. India is actively engaged in investigating the potential of micro-computers ir education as are other member countries such as Malaysia, Nigeria and Singapore. If these studies can convince governments that the computer is an effective teaching aid with great potential, then it is likely that the computer with its inexpensive microchip components, may play an increasing role in reducing the cost of educational provision. Perhaps the answer to the role of the computer as an alternative system for learning will be clearer by the time Commonwealth Ministers of Education meet again at the Tenth Conference of Commonwealth Education Ministers in 1987.

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# Ninth Conference of Commonwealth Education Ministers

## Nicosia, Cyprus: 23-26 July 1984

AGENDA ITEM II

RESOURCES FOR EDUCATION AND THEIR COST-EFFECTIVE USE

# LOCATING UNTAPPED RESOURCES FOR EDUCATION

Working Paper
by
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CONTENTS

# RESOURCES AND THEIR COST-EFFECTIVE USE: LOCATING UNTAPPED RESOURCES FOR EDUCATION

## INTRODUCTION

1. Education systems are operating under severe financial constraints. In most Commonwealth countries demand for education is strong and unsatisfied, and the authorities have a long agenda of qualitative improvements which they would like to introduce. But there is no room within national budgets to satisfy these demands.

2. There are five main possible ways out of this impasse:

   i. to raise additional resources, financial and in kind, for education

   ii. to increase the purchasing power of the education budget by buying education inputs more cheaply

   iii. to reduce the level of services provided

   iv. to use the resources for education, particularly teachers and buildings, more efficiently within systems as they are at present

   v. to adopt radically new systems and technologies of education.

The first of these approaches involves attempts to increase the supply of resources. The second could be regarded as both supply-increasing and demand-reducing. The third and fourth would involve reducing demand. These four are in no sense mutually exclusive. Even the last approach is more amenable to piecemeal introduction than it might appear, so it is not a complete alternative to the others. The paper discuses each of the five strategies in turn and a final Appendix provides a summary list of measures to close the resource gap in education.

3. This paper concentrates most attention on the first and fourth of these strategies, which correspond to the title themes of the Conference. It touches only lightly and extremely briefly on the last of the five approaches. But even within the context of present systems and technologies a basic conclusion is that there are unexploited resources to be tapped for educational development. This is in spite of the fact that the traditional sources of financial and material inputs for education cannot be counted on to increase substantially in real terms in the years ahead. The most important of the resources still to be exploited are not additional public and private monies lying elsewhere in the economy and society, though efforts to locate and tap such resources must certainly continue. Rather the greatest potential is that which lies under our noses in the education system itself, and in particular

   (a) resources within schools and colleges, notably teachers and buildings, that are not presently being used with maximum efficiency and

(b) students' own capacity for independent learning.

To take advantage of each of these requires a careful examination of the incentive system operating in the education system. A particular need is to create a situation where education managers in ministries, schools and colleges are motivated to maximise the productivity of expenditure on education.

4. The background to the discussion is the growing pressure on resources. Educational expenditure has been increasing, for several well understood reasons:

i. above all, the growth of enrolment, reflecting both the rising school-age population in most Commonwealth countries (though no longer in all age groups in the more industrialised ones) and higher school participation rates among those expanded populations

ii. rising prices of goods, materials and services used in education including upward revisions of salary scales

iii. in less developed countries a tendency for average unit costs to rise as the result of attempting to enrol ever more marginal and remote groups of learners, in the course of efforts to attain universality of attendance

iv. in some industrialised countries a rise in unit costs in situations of falling rolls where the teacher numbers and buildings cannot be reduced at the same rate as the numbers of pupils drop.

v. the inevitable shift in the balance of enrolments towards the more expensive secondary and higher education levels and towards more costly specialised disciplines with a technical and vocational orientation

vi. the effect on the salaries budget of a better qualified teaching force. This effect is particularly marked in cases where teachers are paid differential amounts principally according to their qualifications, rather than their actual seniority or job responsibilities. If formal education qualifications among entrants to the teaching profession are rising, any close link between qualifications and pay implies automatic increases in average salaries of teachers.

vii. improvement and extension of educational provision, including longer periods of schooling, higher allocations of resources per class and per student, and new services and schemes.

viii. in some countries a higher proportion of the education system than hitherto is now publicly managed, following absorption of private schools into the state system (though this paper will also note some recent contrary trends).

## I. RAISING ADDITIONAL RESOURCES FOR EDUCATION

One can consider this in terms of (a) finance (b) non-financial resources.

### I.A. FINDING EXTRA MONEY

5. The education authorities would naturally like to meet increased educational costs by raising more money for education. Indeed educational expenditure continues to rise almost everywhere in real terms. The only countries that may find it possible to reduce the amount of real resources spent on education and training are those whose education systems are now contracting in size, mainly for demographic reasons.

6. In seeking additional funds for education one can look in four main directions:

i. Additional domestic public revenue

ii. Private sources including firms, foundations, and individuals

iii. Education institutions' own earnings

iv. Receipt of development assistance.

### I.A (i) Additional Domestic Public Revenue

7. The absolute volume of resources devoted to education may increase, but will it rise in line with the increased needs and demand? In only a very few countries does it seem likely that the proportion of education budgets devoted to education and training will continue to rise as dramatically as a decade or two ago. The great increase in public spending on education, in absolute terms and as a proportion of both national budget and GNP, between the 1950s and early 1970s was largely associated with growth of school-age population and rising expectations of access to education on the part of the population. In less developed Commonwealth countries the advent of independence strongly reinforced the pressures of demand. Education was much higher in the list of priorities for newly independent governments, conscious of manpower requirements for localisation and economic growth and responsive to the wishes of their electorates, than had been the case with their colonial predecessors. The same pressures are observable today, for example in Zimbabwe, which has raised quite dramatically the proportion of its budget and GNP devoted to education. But in less developed Commonwealth countries which have been independent for longer periods, the rate of growth in educational spending has tended to taper off.

8. Generally the economies of Commonwealth countries are under great strain, public indebtedness is rising, and additional resources for education are not at all easy to come by. Moreover the claims on public expenditure from other sectors are high. In particular defence and security, and the repayment of external debts,have been claiming larger proportions of public expenditure than hitherto, leaving a smaller share available for social services like education. It remains true that although the main source

of any extra expenditure devoted to education will probably continue to be public tax revenues and public borrowing, these are not likely to be sufficient to relieve the sense of severe financial constraint besetting education nearly everywhere.

I.A (ii) Private Sources

Contributions to State Education

9. The possibilities of private contributions to education are basically of two kinds: first that individuals and private organisations will contribute to the public sector of education by means other than taxes, and second that the non-government sector of education may expand its operations. The major non-tax source of private contributions to the public education system is fees and charges levied directly on students and their families. Generally the trend has been to phase out tuition fee payments in public education for those levels of schooling where attendance is more or less universal. It appears both fairer and more efficient to use tax revenues for funding in these cases. But even at these universal levels the education authorities increasingly find themselves having to impose on students and parents direct charges for textbooks, learning materials, sports and games, music, development funds etc., to meet some of the material costs of operating schools.

10. At the higher levels of the education system, where educational opportunity has to be rationed, a stronger case is found for levying charges on students or their families. Such education confers on the fortunate minority considerably better earning opportunities than the majority of the population enjoys. To the extent that the benefits of their education are thus privately appropriable and can be 'captured' by individuals in the form of subsequent higher earning power, it seems more justifiable to ask students to contribute towards the cost of their education. However it does not necessarily follow that there should be a full-cost charge, since the privately appropriable benefits are not the only benefits. Broad public benefits also accrue to society from educating its young people. The logic of this case, recently argued by the Commonwealth Standing Committee on Student Mobility, is not always accepted in respect of students from abroad. Some countries have very considerably increased their revenue from education by raising tuition fees for overseas students, though not without imposing costs on other governments and - to the extent that students from abroad have been driven away - causing loss of benefit to themselves.

11. The imposition of tuition charges on home students meets strong political resistance. This opposition may not extend so fiercely to board and lodging charges perhaps because people see that families would in any case have to bear these expenditures were their children not enrolled at an education institution. A number of countries therefore require students to pay completely or partially for board and lodging, offering scholarships and bursaries to help those who are most hard-pressed financially.

12. A new financial device being applied increasingly in respect both of living costs and, sometimes, tuition fees is the student loan scheme. A recent World Bank study has reviewed

experiences with such schemes, and concluded that they are feasible in developing countries, but need to be well planned. They are certainly no substitute for other cost reduction measures, and produce only marginal - if any - savings at first. It goes without saying that student loans are more acceptable to the population at large when they involve assisting students to cover types of expenditure that they are already obliged to meet, than when they are introduced concurrently with charges for services that students previously received free.

13. Other private financial contributions to the education sector may come from religious organisations, charitable foundations and trusts, firms and individual donors. Associations of former students, and parents' associations, have been prominent in raising funds. In some countries collective efforts by village communities also constitute important sources of recurrent expenditure for schools. But such fund raising from private sources is generally earmarked for equipment and materials or for renovating school buildings and constructing additional facilities; the ongoing salary costs for teachers and other staff in state schools cannot normally be financed in this way.

Development of the Independent Sector

14. Resources for education may also be found through the expansion of the independent sector of education itself. Private schooling covers a great variety of different types of institution. There are schools under the sponsorship of religious bodies; schools run by trusts, including international schools; community schools financed by voluntary contributions and fees; schools and training establishments run by economic enterprises; private proprietorial institutions seeking to make a profit; schools organised by minorities. Yet other varieties may be found outside these main groups. In some countries a large part of the school system is managed or owned by non-government bodies. There are few private universities in the Commonwealth, but at secondary level one finds much wider private provision. In Bangladesh, as an example, a large part of the secondary system is in non-government hands. Some private provision is found at the primary level and nearly everywhere a large part of nursery schooling is in non-government hands. Beyond the regular school system most countries have extensive private systems of commercial training, training schemes in firms and private tutorial colleges.

15. The extent of the independent sector of education is not simply a matter of low public confidence in the state systems, though that may account for the increasing resort to private education in some countries. Actually it is difficult to generalise about private sector quality in relation to the public sector; in several countries the private sector contains both prestigious schools of high quality but also some of the worst educational institutions. Recourse to poor quality private schools may be forced on parents by lack of state facilities. Equally communities, recognising government's inability to make adequate school provision at primary or secondary level, may take matters into their own hands by starting voluntary unaided schools, awaiting the day when governments will be able to take these schools over. This has been a very noticeable tendency in parts of East Africa where Kenya's 'harambee' schools are perhaps the best-known example.

16. Countries will take different views on the desirability of encouraging private schooling, according to their political philosophy. But many governments appear to have come to the view in times of financial stringency that private and voluntary efforts can be a useful complement to their own programme. Much thought however needs to be given to the best ways of marrying government with private and community funding, and to defining the correct balance between the autonomy of decision making by independent school management bodies on the one hand, and the need to ensure that they behave in a socially responsible manner towards the students and parents they serve. Can support for self-reliance initiatives be reconciled with the maintenance of equality of opportunity for example, given that wealthier communities are able to be more self-reliant? Member countries of the Commonwealth have rich experience in this area and the Conference may see merit in developing an exchange of comparative experience of Commonwealth countries in the regulation and supervision of community and other private schools.

17. One cannot leave private education without mentioning the great expansion of private coaching/tutoring in many parts of the Commonwealth. The resort to private tutoring is fuelled by anxiety over examinations on the part of students and parents and some loss of confidence perhaps in the ability of the public system of schooling to 'deliver' exam passes. Teachers for their part, under the pressure of falling real salaries which fail to keep pace with inflation, are eager to increase their earnings from this source. A demand from well-to-do and even average income parents for access to extra tuition for their children is matched by the need on the side of teachers to earn extra income from coaching and private tuition. A system grows up which is little talked about but which, at least in the towns of some countries, begins to rival the formal school system in terms of the amount of teacher effort and parental funds invested in it. The strain of long hours in the classroom for both pupils and teachers is a disturbing phenomenon, but reform is obviously difficult when both teachers and parents find the private tuition system necessary and mutually convenient.

I.A. (iii) Education Institutions' Own Earnings

18. A few weeks ago a small paragraph appeared in the British press announcing that seven universities in the United Kingdom were now each earning over £1 million a year from letting out of premises for conferences and other activities. The same possibilities would not necessarily exist in countries where there is no large private and non-government sector with organisations actively seeking venues, conferences and courses. However it is but one example of a widening trend for educational institutions to examine ways of raising revenue to support themselves. Much of this revenue-raising effort is comparatively low-level local activity in the form of school social events and open days often in conjunction with parents and the local community. One must regard all these activities as a small but useful source of finance at institutional level, but as of only marginal importance for the system as a whole.

19. In several countries schools and colleges also raise revenue through production units, having a part-training and part-revenue raising function. The Country Papers refer briefly to some examples. But where such cases have been more fully written up, there generally seems to be more information on the value or quantity of the output produced, than on costs, including the commitment of unpaid staff. Consequently it is not always clear whether such activities are in fact cost-effective. To the extent that the production of goods and revenues is meant to be incidental to an education and training function, economic and financial viability is perhaps a secondary consideration. But where education institutions are required as a matter of policy to meet a large part of their revenue needs from economic activities, a full financial costing is indispensable. This is another area where case studies would be useful, to identify the kind of conditions under which school production can be a profitable source of finance for education.

I.A (iv) Receipt of Development Assistance

20. The outlook for foreign funding of education is not particularly good. It appears that the world community will be hard put to it to sustain educational assistance at its present levels, and there will certainly not be much prospect of shortfalls in funds being met from this source. World Bank funds have been under considerable strain, and there are current difficulties over the International Development Association's (IDA) replenishment of funds. Regional development banks are becoming more active in education, usually in vocational education. Development assistance is quite crucial in some smaller countries, with low public revenues and shortage of foreign exchange. But there are basic difficulties in using foreign aid for education. Usually the funds are tied to imports whereas much of the finance needed by education systems is for local costs. There is also a bewildering variety of different programmes and agencies and it is not easy for small countries to keep in touch with possible sources of help. One of the roles that the Commonwealth Secretariat can perhaps most usefully play is as a broker, helping to bring together needs and resources in the field of international educational assistance.

I.B. TAPPING RESOURCES IN KIND

21. Financial resources are seldom 'spare', since they can quickly be diverted to some alternative use and both public and private organisations have many priorities for the spending of funds. Are there however resources in kind to be tapped, free of charge or at very low cost?

22. The principal such resource is the time that parents and voluntary workers may be able to give free of charge to the education system. Volunteers may be used in schools and in non-formal education activities, such as adult literacy programmes and programmes for youth. Not all of the available help is sufficiently expert or specialised to be fully effective, and training of volunteer personnel may be required if full advantage is to be taken of the resources offered. For example, training in pedagogical and communication skills is valuable if it is intended to use local craftsmen to instruct in practical

subjects in schools.

23. Military personnel or national servicemen may possibly contribute another source of 'free' labour for education. In several instances national service schemes are used to help to staff schools and to run literacy classes.

24. Personnel are not the only resources which education may hope to tap on a below-cost basis. Church buildings or community halls may be offered for schools and nursery classes. Unused open ground may be available for use as playing fields. Even specialised recreational facilities like football pitches, tennis courts, gymnasia, swimming pools may be available in school hours for educational use at times which do not conflict with community demands on the facilities, these being mainly in evenings and weekends. Waste products from factories could provide materials for use in the classroom. The radio and television station perhaps has air time which can be made available at marginal cost to education, because the basic overheads and running costs of the broadcasting service are already covered by regular programmes.

25. There are many opportunities in this area for enriching the life of the school both by securing access to amenities and at the same time bringing schools and colleges into closer working relationships with the community. It needs an entrepreneurial head of institution to see the opportunities and to seize them, and it is experienced heads closely linked with the community in which their institution is located who will be most successful. Are heads given sufficient freedom to engage in activities of this kind?

## II. BUYING EDUCATION INPUTS MORE CHEAPLY

26. In the introduction to this paper many factors causing cost escalation in education were noted, one of which was rising prices. Could this process be reversed and countervailing price reductions be achieved? Bulk purchasing is an obvious possibiliy particularly where orders are opened up to competitive tendering. Some of the Country Papers from the Caribbean region refer to bulk purchasing of books and materials where a large scale order can be considerably cheaper, particularly where competitive quotations are sought. Standardisation of textbooks allows longer print runs and much cheaper unit costs. Contractors may put up buildings more cheaply if a large consolidated project with several schools and sites is put together. The use of education's bargaining power vis-a-vis suppliers of educational goods and materials is obviously extremely important in obtaining goods for the educational system at reasonable prices. By use of the tender system competition can be encouraged among suppliers and more advantageous deals can be struck.

27. A second device by which resources for education have been obtained more cheaply is by allowing the real value of teachers' pay to erode under the savage pressures of inflation. It is probably this process more than any other that has allowed governments to 'get by' in the face of resource shortage. In very many countries teacher salaries fail to keep regular pace with rising prices. Salary revisions are made but they are made

late and at infrequent intervals. Therefore the parity value of teachers' salaries is restored either not at all or only momentarily. When they do regain parity with other salaries or the price level, it is only a matter of months before the lagging behind resumes and the situation deteriorates again. In the most traumatic situations teachers fail to get paid at all for several months in succession: and their pay, when it finally arrives, is in currency debased by the amount of inflation.

28. Teachers have to react to such pressures: and they do. Teacher dissatisfaction increases and teaching comes to be seen not so much as a career, but more as a convenient stopping place on one's way to something financially more rewarding. In a thriving economy, with alternative employment opportunities, teacher wastage rates rise. For teachers who stay in the profession the problem is to make ends meet. What they may do is combine teaching with another job outside education - and this is a cause of much teacher absenteeism and lethargy on the job - or to take two jobs within education. How can two jobs in education be achieved? One possibility is to teach two shifts, perhaps in different public institutions; or to teach one shift in a state school and another in a private college. Whether or not such activity is within the regulations,it may be condoned by those who understand the teachers' plight. The other possibility of a second job is for teachers to engage in private tutoring after school hours. As has already been remarked this has become substantial business in some education systems and offers teachers much higher rewards than their 'base' job as a classroom teacher for a regular session.

## III. REDUCTION OF EDUCATION PROVISION

29. If additional resources cannot be found, the next logical possibility of closing the gap between desirable provision and available resources is to cut down on the scale or nature of provision by eliminating dispensable services. In some of the industrialised and newly industrialising Commonwealth countries the patterns of demographic development are such that the education authorities now expect the size of some or all sectors of the formal school and college system to contract. But a drop in pupil numbers does not always translate very readily into a possibility of cutting education expenditure, for three reasons. First there may be some loss of economies of scale when the system reduces in size. Where class sizes in single-stream rural schools for example drop from an average of 35 to 25, few salary savings would be effected, as Professor Onabamiro demonstrates for drop out in Nigeria. In any case political difficulties of closing schools are well known, and there are very good social reasons why such a policy should not be pushed too far. Second there are contractual obligations to teachers and other employees which are not easily or cheaply dispensed with: the pace of contraction is bound to be more difficult and probably slower than the pace of expansion. Moreover there is a real danger of loss of quality in the process: promising young applicants cannot be offered jobs, the best of the serving personnel are the ones who can most easily leave to obtain alternative work outside the education service, and the staff who remain may not be the most able or motivated. Third, there will be strong pressures from within the education system, and perhaps also from

the public, to redeploy 'saved' education resources so as to improve conditions within the schools and colleges. Instead of taking teachers and buildings out of service they propose smaller classes, more specialist accommodation, shorter teaching hours. To take advantage of such opportunities is tempting, but it does not reduce education spending.

30. Enrolment decline is not of course the norm among Commonwealth countries as a whole. Most Commonwealth countries are in a position where universal education has not yet been achieved, and of continuing demographic growth. What possible reductions of expenditure can they make?

31. The basic choice in reducing provision is between cutting down on pedagogical inputs to the schools - teachers, equipment, textbooks and other things directly affecting learning activities - and reducing the "social services" associated with education, such as meals, clothing, transport, residential accommodation. The main pedagogical casualty of cuts in services tends to be reduction in funds for books and materials and for maintenance expenditure on buildings and grounds.

32. Given a choice, the education authorities would generally prefer to find economies in the non-educational activities. Apart from their own vested professional interests, there is a certain logic in regarding 'social' expenditures on meals, clothing, transport as a basic parental responsibility. Of course the line cannot always be firmly drawn between 'educational' and 'social' expenditure since it is well known that an adequate diet for example, is basic to a child's ability to learn. In some countries the cost-effective use of resources will be attained not by cutting out school meals, but by providing them. Many Commonwealth countries in Asia and Africa have found better nutrition (e.g. in the form of school meals in Botswana and in India, free supply of milk in Kenya) an important factor in supporting better attendance and enrolment rates and an improved capacity to learn.

33. The issue of boarding versus day facilities is a recurring one in educational debate in many countries. There is no doubt that student residential provision is much more expensive than day provision, both in recurrent costs and in capital costs, as much experience from Africa shows. Residential provision for teachers is also a very expensive item, and in many World Bank funded projects for example, one notices that a high proportion of the capital cost is accounted for by staff housing. Repeated statements of intention to convert boarding schools to day,or residential universities to non-residential,have proved difficult to translate into practice. The complications are partly the lack of fit between the present distribution of population and the existing network of schools. Some rural areas cannot meet Ministry specifications of minimum viable school size, being unable to muster enough correctly-aged children. It is also true that a system of day schooling, based on local catchment areas, presupposes rough equality in standards of schools. If quality varies widely from area to area within a day system, parents in the catchment area of a poor school will demand the right to transport their children out, to another school. A boarding school system, justified in terms of the

needs of children in sparsely populated areas, may actually turn out to draw its main support from well-to-do city parents.

## IV. MORE COST-EFFECTIVE USE OF RESOURCES

### IV.A COST-EFFECTIVENESS

34. To the extent that recent cost increases are unwelcome and unplanned, governments will of course attempt to neutralise their effects. However some of the extra expenditure is associated with increased benefits, and in its relentless pursuit of expenditure reduction, cost-effectiveness analysis must also take into account the benefits side of the equation. The difficulty in education is of course to measure outputs. When there is even argument as to whether children learn any more in classes of 25 than of 35 pupils, educators must despairingly wonder whether and how they will ever convincingly prove the efficacy of reforms their experience tells them are worthwhile. Because of the difficulties of measuring beneficial outcomes, it is tempting for educational administrators to concentrate on reducing spending; hoping that education output, however defined, can be maintained in the face of such cuts. The country papers submitted for this Conference tend to have the same emphasis on cost reduction as the principal approach to achieving greater cost-effectiveness. But there may be instances where the loss of benefits associated with expenditure cuts exceeds the saving.

35. Thus the pursuit of cost-effectiveness is about increasing effectiveness as much as it is about reducing costs. Education managers pursuing greater cost-effectiveness should be interested in all the following types of situation, and not just the first two, which tend to dominate attention when budgets are under pressure:

i. Same or greater effect for less expenditure

ii. Marginally less effect for much less expenditure

iii. Greater effect for same expenditure

iv. Much greater effect for same or marginally more expenditure.

36. The last case serves to remind us that there will be instances where additional expenditure yields disproportionately high benefit. For example a well-tested programme like the Reading Recovery Programme, mentioned in the New Zealand paper, involves additional expenditure on teachers and materials. But in terms of the enhanced capacity of children to benefit from their later education, such a programme has been shown to reduce educational wastage significantly and may thus be extraordinarily cost-effective. Again, extra money spent on books and materials for pupils, or on storage space in the classroom for school equipment, might enhance quite markedly the productivity of the existing heavy expenditures on teachers' salaries. Another instance where additional expenditure might yield a high return is the addition of an extra year's schooling, perhaps to consolidate the fragile acquisition of literacy in a system previously offering the majority only four or five years

of primary schooling.

37. A cost-effective approach may have different practical implications in different countries, or in the same country at different points in time. For example, in Singapore there is active discussion of the possibility that full-day schooling might be preferable to shifts in that country's changing circumstances. Lagos State in Nigeria is reported to have abandoned shifts as soon as possible after introducing them. But other countries have quite recently adopted shift schooling; Cyprus, with its refugee problem, being a case in point. One country may in its own circumstances find the introduction of shift schooling cost-effective; while another values the relative costs and 'effects' of shift and full-day attendance differently. An equal concern in each case for cost-effectiveness may result in diametrically different policy prescriptions.

38. The example of shift schooling is a reminder that when cost is discussed, one should always ask - "cost to whom?" Some arrangements which are expenditure-saving to Ministries of Education may impose heavy social costs on others and may meet opposition for that reason. For parents the 'child-minding' functions of school are not unimportant, and it may be inconvenient to have small children out of school for half the day if shift schooling is introduced. Similarly merging of 'uneconomic' primary schools may impose heavy burdens of travel-time on families having to escort young children to school, and may deprive rural communities of the important focal point that a primary school represents.

39. It is equally pertinent to raise the "cost to whom?" question within Government. Savings to a particular ministry or organisation may be realised only at great overall cost to Government. Take the example of teachers' housing which in some Commonwealth countries falls to Government to provide. It frequently happens that the Ministry of Education finds it economic to build houses for teachers instead of renting houses from the private sector. The Ministry obtains capital funds 'free' from the Treasury, and is not required to service the capital it is using through recurrent expenditure on its budget. Yet the cost of rented accommodation has to appear there. So, for the Ministry, new construction makes eminent sense; even though the opportunity cost for government of tying up capital in teachers' houses (instead of investing in agriculture or industry) is much higher than the cost of renting houses from the private sector.

## IV.B COST-SAVINGS IN EDUCATION: PRINCIPLES AND APPLICATION

40. At the risk of oversimplifying, one can say of education systems that the main output is pupils' learning; that teachers' salaries account for most of the recurrent expenditure; and construction of buildings for most of the capital expenditure. Then the basic strategy of cost reduction is to maximise the number of pupils taught per unit of teacher and space input: or, expressed differently, to minimise teacher and building costs for each batch of pupils taught.

41. This will be achieved to the extent that

(a) the pupils' timetable extends over the minimum reasonable time period in respect of teacher-contact and space-use

(b) each unit of teacher time or of timetabled space is used to service the maximum feasible number of pupils at acceptable standards

(c) as much operational time as is possible, at reasonable cost, is provided by teachers and buildings

(d) cheaper teacher and space inputs are as far as possible substituted for more expensive ones

In terms of practice the implications of these principles, ignoring for the moment any loss of educational or social effectiveness, would be as follows:

*(a)* *Pupils' timetable to be restricted to minimum reasonable time period as regards teacher-contact and space use.*

42. The implications are:

i. the length of each pupil's learning day/week/year, or course length in years, should be reduced as far as possible.

ii. within the period of pupils' timetabled curriculum the proportion of time spent with teachers or in using expensive teaching space should be reduced

- the teacher-intensiveness and space-intensiveness of pupil learning should be minimised. To economise demands on teachers there could be more resort (see the Seychelles paper) to independent learning, more supervision by older children etc. using the monitorial system (of which perhaps Project Impact in the Philippines/Indonesia is the most dramatic contemporary example).

- the time required in teaching spaces might be reduced perhaps (where feasible in hot climates only!) by teaching classes out of doors for some of the time, or by requiring pupils to undertake independent study (homework etc) at home.

iii. part-time courses should be substituted for full-time at those levels where it is feasible, and student teachers should be trained in-service, on the job, instead of in college for as much of their courses as possible.

*(b)* *Each unit of teaching time or timetabled building use should service the maximum possible number of pupils at acceptable standards.*

43. The implications are:

i. registered class size must be sufficiently large for economic-operation and this involves the formation of adequately sized teaching groups

- the official norms for class size being set in the regulations at a reasonable level
- merging of classes or even of schools to obtain groups of more economic size, closer to the norms
- specialisation of schools and colleges and concentration of teaching of certain subjects and options at a limited range of institutions to produce larger learning groups
- multiple learning groups in a single unit of teaching space, including one-teacher schools in appropriate circumstances

ii. once formed, size of groups actually taught to be close to registered class size. This implies limitation of amount of splitting of classes into smaller teaching groups for practical subjects, options, individual tutoring etc. Cost-saving clearly conflicts at this point with pedagogical considerations.

(c) *As many units of operational time as possible should be provided by teachers and buildings.*

44. The implications of this would appear to be:

i. longer hours for teachers to be brought about by

- norms for teaching loads in periods per week or weeks per year to be increased
- such norms to be enforced
- where teaching load norms cannot be attained in one school because teachers are too specialised in relation to school offerings
  - make teachers peripatetic, to work in more than one school, or
  - train the teachers (initially or through retraining) to handle more than one curriculum subject, to avoid the root problem of over-specialisation.

ii. more hours of space-use from each available teaching space by

- longer school day, or more days and weeks per year possibly requiring reorganisation of academic year (four-term year etc?)

- more periods per day of use of each teaching space. (i.e. higher utilisation rates) achieved by:

  - better timetabling to ensure near-continuous use of teaching spaces using such devices as staggered lunch-breaks, staggered starts and finishes to school day

  - using any excess supply of teaching spaces thus created, by increasing pupil intakes

  - shared use of space by different learning groups (non-reservation of space for particular learners) through e.g. rotation of classes within a single shift; double and triple shift systems; access to space by other schools which are short of facilities; offering space to evening classes and community education organisations.

  - creation of specialised centres (science, practical subjects) close together and unable to afford separate expensive facilities

  - versatile design so that teaching space can as far as possible serve a variety of subjects and educational purposes.

45. The feasibility of lengthening teacher hours is very different from that of extending hours of use of physical space. In the case of teachers, there are limits to the possibilities of cost reduction by extending teacher hours. These include physical limits (human exhaustion) and the political limit of teacher willingness to accept longer working hours. Indeed many countries, Cyprus among them, have, under teacher union pressure, reduced norms for teaching loads. It is natural for teachers to seek a reduction in their hours in response to general rises in living standards in the society around them or as a defensive response to threats of teacher unemployment. But reduction of norms for teaching loads is not of course compatible with cost reduction unless teacher remuneration is reduced at the same time. Even a raising of the workload for teachers would not help solve the cost problem if the extra hours had to be paid for at standard hourly rates or at some enhanced overtime rate. In that case savings could only be realised by bringing up to the norm those teachers already drawing a full salary for below-average teaching loads.

46. Increasing the load on school facilities is less problematical. Classrooms and laboratories do not complain at being asked to operate 50% longer hours in a day; nor do they have to be paid extra for so doing! There could be some additional short-term costs of cleaning, lighting, caretaking, and long-run costs of extra maintenance; and if use by several shifts is involved in extending the hours of operation of a building, then extra costs of storage space (lockers etc) will be involved. But generally considerable capital savings would be possible from extending the time periods for which buildings are in use; and in urban situations the resultant economy in land use may be

as important a cost-reduction factor as savings of expenditure on construction itself.

*(d)* *Substitution of cheaper inputs for more expensive ones.*

47. The implications include:

i. conserving scarce and expensive staff inputs for specialist tasks, perhaps by using student monitors, teacher aides, or unqualified teachers to perform more routine duties

ii. using specialist facilities like practical rooms and laboratories etc only for practical work and being careful to shift to general classrooms those instruction periods which do not need specialist facilities. Not all science lectures, for example, need to be in laboratories

48. In addition to the foregoing a number of other possible forms of economy are worth mentioning. Measures to reduce waste through proper stock control, monitoring of water and electricity use, are one obvious approach. Savings may be made by limiting the grant of study leave with pay to improve qualifications. A more far-reaching reform, but a formidable task to implement, would be a change in salary structure to remunerate teachers on the basis level of responsibilities held (as, e.g., in England and Wales) instead of by qualification. Since the number of responsibility posts is determinate, whereas the numbers obtaining higher qualifications is open-ended, this gives much better control over future levels of salary expenditure, particularly at a time of qualification escalation.

## IV.C OBSTACLES TO MAKING ECONOMIES

49. Even though the foregoing list of ways to make savings in education may not be fully comprehensive it represents a formidable agenda. Most of the ideas are in no sense new and so the interesting question arises as to why many well known ideas are not more widely applied. A few possibilities which immediately suggest themselves are:

i. Management incapacity for realising savings and for expenditure control.

ii. Social costs of some expenditure reduction measures, resulting in public hostility to such measures.

iii. Professional reactions to educational aspects of cost-saving measures.

iv. Lack of incentive for teachers and school managers to engage in cost-saving.

### IV.C (i) Management Incapacity

50. One major reason for non-implementation of cost-saving measures may be that managements lack specific skills in time-tabling and cost analysis, or they lack basic management tools including information systems, to enable them to discharge their

responsibilities effectively. In some cases the regulations and norms to keep educational expenditure at reasonable and manageable levels exist; but they are not applied. Expenditure trends develop locally, unknown to the central authorities, and local expenditure decisions are taken which have not been centrally authorised. Even where these conform to the regulations, staffing norms etc of the system, they may be beyond what is financially sustainable at a particular moment of time. Systems are required for reporting and analysing expenditures on a unit-cost basis and for matching expenditures with budget categories. In many countries the data collection and recording system is inadequate to the task in hand with discrepancies between the system of basic statistical returns and budgetary categories. Many of the cost-saving measures mentioned in this paper rashly assume an adequacy of basic data for management. Some of the Country Papers (notably that of New Zealand) point up the relationship between data improvement and the achievement of cost-effectiveness.

IV.C (ii) Social Cost Factors and Parental Resistance

51. The point has already been made earlier that some of the expenditure-reduction possibilities outlined in this paper involve heavy social costs. This obviously applies to all those measures which indirectly transfer expenditures on pupil maintenance (accommodation, feeding, clothing etc) from the public sector to parents and communities. But beyond this it applies to some extent to any measures which

(a) remove schools and colleges physically further from students' homes, thus raising their costs in time and money of acquiring education. Consolidation exercises, to obtain economies of scale in more viable institutional units, inevitably involve some distancing of home and school or college.

(b) reduce school hours of young children, particularly in urban areas where mothers are more likely to be in paid jobs and children are less safe roaming unattended.

This underlines the need (a) to take a broad view of social welfare when planning education savings and to be ready in some instances to give precedence to non-economic considerations (b) to accompany cost-saving measures by intensive public consultation and information.

IV.C (iii) Professional Concern over Educational Aspects

52. Professional concern over educational aspects of savings must also be considered. There are at least two categories of educational effects to be considered. The first arises from any diminution of learning as a direct result of 'diluted' access to instuctional resources - larger classes producing less teacher attention per pupil, less physical space per pupil, fewer books, a narrower curriculum through reduction of options or elimination of resource-intensive practical activity. The second set is psychological losses, impacting on learning, from a loss of sense of security and community in schools. Many of the cost saving measures touched on in these pages involve shifting and recom-

bining pupil groups and teachers in the interests of 'efficiency'. The class of children that is never stable, always on the move between teachers, classrooms, and even schools, ever changing times of attendance from week to week or term to term, may pay a certain price in emotional insecurity and deprivation. School is no longer a community of stable social relationships: it may become - perish the thought - a mere 'learning station.' It seems possible that teachers resist some cost-saving measures because of the threat they see to educational standards and their own loss of identity and security in a larger more impersonal school. Teachers' lack of enthusiasm for devices like rotation of classes is well known.

IV.C (iv) Lack of Incentives for Teachers and School Managers

53. The factors mentioned in paragraphs 50-52 constitute reason enough perhaps to feel gloomy about the prospects of cost-saving in education. There appear to be too many pressures, and too many excuses, standing in the way of getting anything done. But isn't that to take too cynical a view? Teachers are professionals and human beings as well as trade unionists. School managers have a personal stake and pride in running a successful and respected institution. As taxpayers, parents understand the need to conserve public resources and to operate schools with economy.

54. Perhaps a major fault of our cost-reduction strategies is that they are too often imposed 'against' teachers and administrators and not 'with' them. Any one entitled to claim expenses knows the difference between expenditures registered when expenditures are fully reimbursed (first class travel and hotels unfortunately inescapable) and when a fixed monetary allowance or entitlement is paid ('bucket shop' tickets and staying with friends suddenly become real possibilities). By extension, could greater discretion be given to school boards, heads of institutions, individual teachers to exercise greater freedom in choosing and purchasing inputs for education? How realistic is it to substitute a resource entitlement system for an earmarking/reimbursement system? Could schools be given a basic allowance of funds/teachers and be told that they can apply any savings to improving the amenities of the institution? Can grant conditions for schools incorporate some kind of incentive systems which rewards effort and savings? Do present systems penalise the school that makes savings, by confiscating its surplus and setting its pruned expenditure as next year's budget baseline? Do we operate a system of capital spending which tolerates prices for government building contracts so high that they enrage community leaders and religious managers of schools who know that, using direct labour and their own supervision, they could have built for a third of the price?

55. It is no use being naively starry-eyed about these possibilities and overlooking the complex issues involved in devolving responsibility for financial decisions to local levels of management. Autonomy in decision-making also involves freedom to mismanage, so careful provision for systems of accountability and monitoring of performance is needed. If efficient schools can keep some of their savings for ploughing back into better educational provision, won't the gap between well-managed and

poorly-managed schools increase, with resultant inequality and unfairness to pupils unfortunate enough to have a poor manager as head? Would systems be flexible enough to take account of the fact that some colleges and universities might face inexorable cost rises for reasons beyond their control, while others had real potential for effecting savings?

56. These issues are real enough. But they do not negate the case for seeking partnership with teachers, heads and school managers in attempts at cost reduction. It is certain that without their co-operation substantial improvements in cost-effectiveness cannot be made. If they can see possible benefit to themselves, their schools and their pupils, their response is likely to be positive. This whole area of devolved management responsibility combined with accountability and management control is one where Commonwealth countries clearly have much experience - in the independent as well as the public sector of education - worth sharing.

## V. ALTERNATIVE LEARNING TECHNOLOGIES

57. The final range of possibilities is to reconstruct learning systems themselves as a way of reducing costs. Some radical prototypes exist but it is not yet clear in all cases under what conditions they are widely applicable. One thinks of course of Zimbabwe's ZINTEC scheme and the similar programme for producing UPE teachers in Tanzania; or of Britain's Open University. But many of the other examples which come to mind - some of them abortive - are from beyond the Commonwealth. Project Impact from Indonesia and the Philippines has been mentioned: it is designed to economise on regular teachers by using teacher aides and volunteers, peer group learning, and heavy recourse to resource banks of printed materials. There was the large-scale ETV project in Ivory Coast, seeking (but not apparently succeeding) to replace part of the regular teacher function by television beamed into every primary school. There is Ramkhamhaeng Open University in Thailand with nearly half a million students being educated at a fraction of the cost of the regular universities, and now being succeeded by the newer Sukothai University.

58. The essence of all these schemes is essentially the same. They seek to capitalise on perhaps the least exploited of all resources in education, student energy and student time. Are education systems so busy 'instructing' that they provide insufficient time to learn? The possibilities of extending independent study are very various and would seem to have the dual virtues of educational merit and cost-effective potential. Within schools the emphasis is likely to be more in personalised learning, individual mastery of knowledge and skills, and the possibility of using independent study periods to free teachers for more individual tutorial work and remedial teaching in smaller groups. The one- and two-teacher primary school, handling several grades in a single classroom, becomes a viable proposition if there are adequate materials, audio- and visual aids, to keep several disparate groups occupied while the teacher concentrates on a particular age- or ability-group. At secondary level many possibilities open up if schools have well-stocked libraries which students are taught to consult and use, and if the school timetable makes provision for supervised

periods of independent study. The proposition only appears financially unrealistic if one overlooks what is being spent on teachers' salaries, a small part of which could finance such a system. One moves on to systems of part-time attendance and evening classes, suited more to youth and young working adults than to children. At the apex, so to speak, of the system, but not necessarily the most cost-effective of all, stand the 'open universities' using radio, television and correspondence. On the horizon, revolutionary communications and information technology open up extraordinary prospects of learning. They challenge the teacher less with redundancy than with the prospect of new professional tools and a new role.

59. With budgets under pressure, but with ever increasing numbers seeking education at the very expensive upper secondary and tertiary levels in both general and vocational education, I believe that it is to learner motivation and learner time we must look for the most underused resources for education. Those are the resources which our educational strategies should above all seek to tap in their effort to create systems of education which are more cost-effective.

## APPENDIX

## SUMMARY OF WAYS TO CLOSE THE RESOURCE GAP IN EDUCATION

I. RAISING ADDITIONAL RESOURCES FOR EDUCATION

A. FINDING EXTRA MONEY

(i) Additional Domestic Public Revenue

(ii) Private Sources

Contributions to State Schools

- Tuition fees
- Other charges (for academic and non-academic services)
- Private gifts

Development of the Independent School Sector

(iii) Education Institutions' Own Earnings

- Production units
- Other earnings

(iv) Receipt of Development Assistance

B. TAPPING RESOURCES IN KIND

- Time of personnel
- Buildings, materials, services

II. BUYING EDUCATION INPUTS MORE CHEAPLY

(i) Bulk purchase and competitive tendering

(ii) Erosion of salaries through inflation

III. REDUCTION OF EDUCATION PROVISION

(i) Scaling down size to reflect demographic decline

(ii) Cutting education expenditure

(iii) Cutting social expenditures, including residential provision.

IV. COST-EFFECTIVE USE OF RESOURCES

A. GREATER EFFECT THROUGH IMPROVED PRACTICE

B. COST-REDUCTION

IV.B COST REDUCTION

(i) Reducing Pupil Contact Time with Teachers and Buildings.

- Shorter learning day/week/year and shorter courses
- More independent learning by students
- More extra-classroom learning
- Part-time element of courses to be increased especially for teacher trainees

(ii) Teachers/Buildings to Service Maximum Number of Pupils.

- Norms for class sizes to be set at economic level
- Merging classes and schools
- Specialisation of institutions and concentration of studies
- Combining learning groups and one-teacher schools
- Limitation of splitting of classes

(iii) Extending work period of Teachers and Buildings.

<u>Teachers</u>

- Higher teaching loads and enforcement of same
- Peripatetic teachers working in more than one school
- Training teachers in more than one subject

<u>Buildings</u>

- Longer timetabled school-day
- Higher utilisation rates through improved time-tabling
- Shared use of space
  - rotation of classes
  - shifts
  - sharing of facilities by two or more schools
  - using school buildings for evening classes
- Creation of specialist centres

- Design of multi-purpose classroom space

(iv) Substitute Cheaper Inputs for Expensive Ones.

- Substitute student monitors, teacher aides, unqualified teachers for fully qualified teachers in routine tasks

- Restrict use of specialist rooms etc. to forms of instruction requiring them

- Use 'free' student labour for cleaning and maintenance tasks on institutional compounds

(v) Miscellaneous Measures

- Cut out waste through better management

- Substitute leave without pay for leave with pay, for educational personnel undergoing further training

- Restructure salary scales

(vi) Better Management

- Improved expenditure control based on better information

- Greater incentives to educational managers cut costs

V. ALTERNATIVE LEARNING TECHNOLOGIES

# Ninth Conference of Commonwealth Education Ministers

## Nicosia, Cyprus: 23-26 July 1984

AGENDA ITEM II

RESOURCES FOR EDUCATION AND THEIR COST-EFFECTIVE USE

# POSSIBILITIES FOR REDUCING COSTS WITHOUT SACRIFICING THE QUALITY OF EDUCATION

Working Paper by
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He was Minister of Education in the Western Region of Nigeria in 1960 and Professor of Zoology in the University of Sierra Leone from 1969-73. Since 1977 he has served as Chairman of the Implementation Committee for the National Policy on Education in Nigeria.

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Education Programme
Human Resource Development Group
Commonwealth Secretariat

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CONTENTS

# POSSIBILITIES FOR REDUCING COSTS WITHOUT SACRIFICING THE QUALITY OF EDUCATION

## I. INTRODUCTION

1. Three major questions are usually considered in relation to the use of a nation's resources for education:

(a) What resources should be devoted to education as a whole when compared with competing demands, such as infrastructure (e.g. roads, bridges, military establishments), other social services (e.g. health), and extension services (e.g. for farmers and small scale industrialists)?

(b) How should these resources be allocated among the various levels and types of education, including non-formal education?

(c) How best can cost-effectiveness in the use of resources be achieved in any given line of expenditure on education? In other words, how can the quality of education be maintained or improved while the cost per student, or per teacher, is maintained or reduced?

2. This paper focuses on the third of these questions in a search for cost-reducing possibilities that do not entail a sacrifice in educational results. In this search there is much that Commonwealth countries can learn from one another.

3. As a preliminary, the paper explains why and how the need has arisen for measures to be taken to achieve maximum cost-effectiveness in the utilization of resources available for education. This is followed by an outline of some of the methods being adopted in Commonwealth countries in pursuance of this goal. Finally, some conclusions are presented.

## II. WHY THE NEED ARISES

### Educational Development in Developing Countries

4. In the developing countries the need to ensure optimal utilization of educational resources has not always been as important as it is now. During the colonial period only limited numbers of educated people were required to meet the needs of the administration, and in most colonies only a fraction of the school-age population went to school. Training programmes were easily tailored

to meet such limited needs. For example, in Nigeria a ten-year plan (1) designed to take effect from 1944 proposed to expand the number of elementary school pupils in the country from about 340,000 to about 511,000, and the number of secondary school pupils from about 6,000 to about 11,000. However, before the decade was over, a new constitution had been promulgated, dividing the country into three regions. In one of these - the Western Region - the decision was made to introduce free primary education in 1955, and in that Region alone primary enrolments rose from 456,600 in 1954 to 1,080,300 in 1959 and secondary enrolments from 9,000 to over 22,000 in the same period.(2) It was clear that the public demand for education far outstripped the expectations of the colonial authorities.

5. Following independence this trend of rapid educational expansion took a nation-wide dimension. This was apparent even before the universal primary education scheme (UPE) was launched in 1976 as the following table shows:

Table 1. Enrolment in Primary, Secondary and Teacher Education in Nigeria - 1973 and 1976 (3)

| Year | Primary | Secondary | Teacher Training |
|---|---|---|---|
| 1973 | 4,747,000 | 449,000 | 47,000 |
| 1976 | 8,260,000 | 827,000 | 154,000 |

6. In India the story is much the same. In the three decades of planned development following 1951 (i.e. four years after independence), the number of educational institutions more than doubled, while the number of teachers and students went up by about four times. Planned expenditure on education rose from Rs. 153 crores in the first plan to Rs. 1,330 crores in the fifth plan (4). Even more spectacular was the expansion that occurred in Zimbabwe on attaining independence in 1980. Before that time only 337 out of every 1,000 black children had primary education. Of these, only 60 went to secondary school, 37 reached Form IV, and less than three reached Form VI. The total primary school enrolment in the year preceding independence was about 820,000. Three years later it exceeded 2 million. Such trends cannot but have repercussions on the economies of Commonwealth countries, as the next section will show.

## The Implications of Mass Education

7. The economic implications of mass education for a developing country are illustrated by the example of Nigeria.

8. As we have seen (Table 1), primary school enrolment at the time of the introduction of UPE was over 8 million. By 1980/81 it had reached 14 million. Secondary and tertiary education had

also risen, and, as Table 2 shows, the recurrent expenditure was over six billion naira.

Table 2. Recurrent Expenditure on Education in Nigeria 1980/81 (5)

| | | |
|---|---|---|
| Primary: | (14 million pupils) | ₦1,984 million |
| Secondary: | (2.4 million students) | ₦3,400 million |
| Tertiary: | (155,450 students) | ₦1,011 million |
| | Total | ₦6,395 million |

9. It was in the euphoria of the oil boom that the expansion began, with the government of the day undertaking not only to make primary education free and universal but to provide libraries, science equipment and materials, and inexpensive textbooks. There were to be craft schools, junior secondary schools, and a technical college for each local government area. Opportunities for self-education would be provided by means of correspondence courses, radio and television lessons, and evening and holiday courses.

10. But the boom did not last. By the end of the 1970s the money-flowing years were coming to an end. In 1980 the income from oil amounted to over US$ 26 billion. Three years later it was down to half that figure, and Nigeria found itself in grave financial difficulties. In no other sector was the impact felt as deeply as in Education, on which Government had committed itself to giant programmes which it could no longer implement.

11. At the launching of UPE in 1976, 2.9 million children had been enrolled into Class One. In June 1982, on the completion of their six-year course, 1.8 million came out of school, 1.02 million of whom were enrolled three months later into Form One of the newly established junior secondary schools. In compliance with the new National Policy, arrangements had to be made to teach these pupils such pre-vocational subjects as woodwork, metalwork, electronics, mechanics, typewriting and home economics in addition to the core subjects taught in conventional grammar schools. To procure the necessary equipment, some US$ 127 million was needed, but the country was not in a position to foot the bill and arrangements had to be made to obtain a soft loan to be repaid over a long period.

12. Looking into the future, one can see two other crises looming ahead for the country. In 1985 about 1 million pupils will leave the junior secondary schools. It is expected that about half of them will proceed to senior secondary schools and technical colleges, and a further tenth to teacher-training colleges. In other words, by 1985 provision will be required for the further education of nearly three-quarters of the junior secondary school leavers. Three years later the boys and girls who started the UPE scheme in 1976 will be old enough to seek admission to higher education institutions. If the proportion of primary school entrants who go on to gain admission to universities remains at

3%, and if another 3% go to polytechnics and colleges of education, provision must be made for a total of 260,000 first-year students in September 1988. Indeed, the total enrolments in universities, polytechnics/colleges of technology, and colleges of education may increase to 818,900 by the 1991/92 academic session.

13. There is little likelihood that the economic situation will improve significantly in the next few years. The problem facing Nigeria therefore is how to carry out the planned educational programmes in the face of dwindling financial resources. This is a problem that all Commonwealth developing countries are familiar with in different ways and in varying degrees.

14. In the section that follows, consideration is given to a number of examples which provide some indication of the wide range of cost-effective measures being undertaken in the field of education throughout the Commonwealth. Some are drawn from Nigeria; others from those of the country papers prepared for the Conference which were available when this paper was written. The measures are grouped in four sections: buildings and plant; organisational alternatives; the provision of educational materials; and alternative funding methods. The section concludes with a study of the drop-out problem in Nigerian primary schools and its effect on recurrent expenditure.

## III. WAYS OF ACHIEVING IMPROVED COST-EFFECTIVENESS

### BUILDINGS AND PLANT

#### Converting Single-Sex Schools into Co-educational Schools

15. At the time that the educational systems of Commonwealth developing countries were being established it was often the policy to establish separate schools for boys and girls. From the point of view of cost-effectiveness, the difference between mixed schools and single-sex primary schools was not significant. However, it assumed importance for secondary schools where well-equipped science laboratories and libraries had to be provided.

16. In Nigeria, the conversion of long-established single-sex schools into co-educational schools, which began about 30 years ago, was done very slowly in order not to offend parents' susceptibilities. First, girls were admitted into practical laboratory courses in boys' schools. Next, girls were admitted into upper classes of boys' schools as full-time students. Finally, girls were admitted into such schools along with boys from Form One. Even now, however, some secondary schools still remain exclusively for boys and others exclusively for girls. Here is a case where tradition militates against cost-effectiveness. It is interesting to note that in Barbados, the Government has taken the bold step of converting practically all single sex schools into co-educational schools.

Merging Small Schools

17. Merging small schools is another way of effecting economies. Thus, in Nigeria where denominational schools particularly in rural areas often had less than 20 children in a class, the Government passed a law setting up Local Educational Area Authorities which took over these schools and merged them into viable units. Teachers then had full classes to handle and money was saved.

Multi-Purpose Accommodation

18. The joint provision and dual use of educational buildings has achieved valuable cost-effectiveness in Britain where the Department of Education and Science has produced a number of designs for schools which can also be used for community sports and recreational activities. Many universities in Britain and other Commonwealth countries open their residential facilities to conference organisers in the vacations.

New Laboratory Designs

19. Also in Britain a new type of science laboratory design has been developed. It has two features. First, the only permanent elements of the building are the load-bearing external walls. Second, the furniture, fittings, and service arrangements are as far as possible separate from the building shell in which they are accommodated. By these means, the interior lay-out can easily and quickly be altered to meet new needs as they arise. All that has to be done to change the size and lay-out of a laboratory is to move partition walls and re-arrange the benches and storage units.

ORGANISATIONAL ALTERNATIVES

Adopting A Shift System

20. In coping with large school enrolments with limited classroom accommodation, many governments have resorted to the shift system. For example, in Sierra Leone, some schools have two shifts, and some college buildings are used for adult education classes in the afternoons. But the system is not popular. Complaints are made about the misuse of school facilities by the children of the second shift who are regarded as "strangers". More recently, Zambia has adopted the shift system with the Lusaka experiment (1983). Though its cost-effectiveness cannot be conclusively assessed before the end of 1984, preliminary indications appear to be encouraging.

21. In the Bendel State of Nigeria, the system was adopted in 1979 to cope with the doubling of secondary school enrolments. Morning school lasts from 8 a.m. to 1 p.m. and afternoon school from 2 p.m. to 6.30 p.m. There are, however, several drawbacks:

(a) Teachers are generally opposed to the scheme as it imposes a daily rhythm to which they do not easily adapt.

(b) Classroom furniture deteriorates rapidly.

(c) The school grounds cannot be used for sports and recreational activities in the afternoons owing to the distraction that would be caused to the students of the second shift.

(d) Parents at work cannot be sure that their children are spending their time gainfully during the shift when they are not in the classroom.

(e) A headmaster cannot think of the institution as being his school as he shares its use with another headmaster. This may have an adverse psychological effect on the performance of his duties.

22. Indeed, the value of the shift system became so problematical in Lagos State that it was abandoned, and new schools were built to cope with the 100% transition rate from primary to secondary schools.

Rotating Classes

23. In primary schools as well as in most secondary schools of Nigeria each class is allocated a classroom of its own (the home classroom principle). This arrangement is feasible as long as a substantial part of the educational programme can take place in an ordinary classroom (which is generally the case at primary level). When the need for specialised rooms (laboratories, workshops, art rooms, etc.) increases, however, the arrangement becomes less satisfactory.

24. The alternative to the home classroom is the rotating class system. This takes advantage of the fact that when a group of students goes to a science laboratory, or a technical workshop, or to physical training, it leaves its classroom empty. By constructing the school timetable in such a way that another group of students occupies that classroom at that period, classroom space is used instead of being wasted, and capital costs are reduced. It has been calculated that by using the rotating class system, the average-use-factor can be raised from 30% to 62% in a two-stream junior secondary school and to 72% in a three-stream school. However, it should be noted that as no class under the new system can claim a classroom as its own, student lockers have to be provided for the students' books.

25. It must be pointed out, too, that the change from the home classroom to rotating classes has other important implications. For example, schools need to be specially designed to take advantage of class rotation. Thus, two-stream junior secondary schools in Swaziland consist of four classrooms, a multi-purpose room, a general utility library, a science laboratory, a technical workshop, and a home economics block. Under the old system, six classrooms would have had to be built. Similarly, in Nigeria the number of classrooms for a four-stream junior secondary school can be cut from 12 to seven, giving a saving of some 10% in construction costs.

Space Allocation and Timetabling

26. This procedure, recently devised in Britain, uses a computer programme to carry out simultaneously the dual tasks of setting up a timetable and allocating rooms. Two polytechnics which have adopted the system have been able to increase the frequency of use of their teaching rooms from 64% to 81% and to timetable cross-disciplinary activities in a way that would not have been feasible by traditional methods.

Alternate Year Intake

27. With an area of 102,535 square kilometers and a population in 1981 of 7,059,100, Sokoto State in Nigeria has an average of only 69 people per square kilometer. Large areas of the State are very sparsely populated. Moreover, with an enrolment ratio of only 44% in 1980/81, primary schooling is less developed than in any of the other States of the Federation. For these reasons the education authorities found it difficult to get sufficient intake into most of their primary schools. They have therefore introduced a system by which some schools enrol primary grade one pupils every second year or at even greater intervals. Thus in the 1980/81 school year there were 3,867 primary schools but only 3,364 grade one classes.

28. The statistics for four Local Government Areas given in Annex A demonstrate the effect of the policy of alternate intake. (6) Officials from the State Ministry of Education confirmed that no problems were encountered when parents who wanted to register their children for admission into primary school were told to come again next year.

Alternate Work and Study

29. In Malta, the University Act was amended in 1978 to make it mandatory for students to work and study at alternating periods during their undergraduate years. To operate the new scheme, the University year now starts in mid-February with half of the student intake entering the work phase while the other half goes into the study phase. After 5½ months, the two groups change places. In this way both physical and human resources are utilised to their maximum capacity.

Training Teachers on the Job

30. The introduction of UPE in Nigeria posed a serious problem for teacher training. Because the conventional teacher-training colleges could not cope with the numbers required, the Federal Government established the National Teachers' Institute (NTI) at Kaduna with the specific purpose of providing courses for the bulk of the untrained teachers. In addition, a scheme was planned whereby the NTI, in collaboration with six Institutes of Education attached to some of the country's universities, would train a substantial number of "lead teachers" whose task would be to help untrained teachers after school hours. However, this scheme has yet to be put into practice.

31. Meanwhile, some Institutes of Education in the country are independently organising the up-grading of Grade II teachers who

remain on the job to enable them to qualify for the Grade I Teachers' Certificate. The Institute at Ibadan has conferred this benefit on over 6,000 teachers within the past four academic sessions with a considerable saving of costs, as Table 3 shows. The Institute at Zaria is doing the same on an even larger scale for teachers in the Northern States who cannot be spared from their jobs.

Table 3. Up-grading Grade II Teachers to Grade I by the Institute of Education, University of Ibadan, Nigeria, while on the job

COST BENEFIT ANALYSIS

| | | | |
|---|---|---|---|
| (a) | Total number trained in 1983/84 | | = 2,045 |
| (b) | Salaries of the teachers if they had had to be withdrawn from their schools | 2,045 x ₦1,500 | = ₦3,067,500 |
| (c) | Amount charged by the Institute of Education @ ₦250 per trainee | 2,045 x ₦250 | = ₦ 511,250 |
| (d) | Difference between (b) and (c) to reflect the saving to the nation | | = ₦2,556,250 |

32. In the Bahamas the Government has set up the Mature Teachers Programme to train teachers on the job. Participants are teachers over 30 years of age who, every year for four years, spend part of their summer holidays on a vacation course. This provides them with the opportunity to become trained teachers at a cost substantially less than that of a conventional teacher training college.

33. In order to cater for the explosion of primary school enrolment following independence in 1980, Zimbabwe has embarked on a bold scheme for training up to 3,000 teachers a year on the job. This, the Zimbabwe National Integrated Teachers Education Course (ZINTEC), takes place in three stages. In the first, which lasts for 16 weeks, the teachers attend a residential course at specially created ZINTEC Regional Colleges. This is followed by a period of ten school terms during which they are sent to schools and continue their studies through distance learning with the assistance of tutors. The third is another residential course of 16 weeks, again in the ZINTEC Colleges, at the end of which they sit their qualifying examinations and pass out as fully-trained teachers. The cost-effective value of the ZINTEC programme is that it economises on residential training and puts trainees in the field where shortages exist.

34. Tanzania has evolved a three-year Distance Teacher Training Programme to cope with the problem of training 40,000 teachers for its UPE scheme. Using radio broadcasts, recorded cassettes, correspondence courses and occasional face-to-face tuition, the programme has been found not only to be effective but also to be less costly than traditional teacher training methods.

35. Mention should be made of a unique training course being run at a college in the northern part of Sierra Leone under the sponsorship of UNDP/UNESCO. The course is designed to produce people who are qualified not only as teachers but as Community Social Workers. By preparing them to perform a dual role in the community, Sierra Leone has been able to achieve economies in government spending.

Curriculum Design

36. Curriculum design has been applied to the achievement of cost-effectiveness in the Seychelles by devoting a portion of the day to activities (including reading/writing periods and extra-curricular activities) which are not teacher intensive. By this means the number of formal periods of instruction has been reduced by one per day while maintaining the overall number of hours children attend school, and teacher requirements have been reduced by approximately 14%. A further advantage is that as fewer unqualified teachers have had to be recruited, teaching quality has been raised.

37. Prior to 1982 in Nigeria, secondary schools were of three distinct types: grammar, technical or commercial, with curricula to match. However, with the establishment of the universities, the grammar schools acquired unprecedented prestige, being virtually the only channel through which university admission could be obtained. As a result, between 1960 and 1976 the number of grammar school students rose by 691,000 (i. e. from 135,400 to nearly 827,000) while the number of secondary technical/vocational school students rose by only 22,000 (from 5,000 to 27,000). But as the universities were never able to admit more than 16.5% of the school-leavers in any one year, much of the investment in grammar school education could be termed "anti-cost-effective".

38. Mainly for this reason a new secondary education system was introduced in 1982. It is in two tiers - junior secondary for three years, and senior secondary for three more years - with the curriculum combining elements of grammar, technical and vocational schools. Thus for junior secondary school students there is a core curriculum consisting of mathematics, English, two Nigerian languages, science, social studies, art and music, practical agriculture, religious and moral instruction, and physical education, plus two options from the following pre-vocational subjects: woodwork, metalwork, electronics, mechanics, local crafts, home economics, and business studies. By modifying the secondary school system in this way so as to ensure that students are much better prepared to secure gainful employment than they were before, the cost-effectiveness of their education has markedly improved.

Correspondence Courses for Secondary Education

39. It is usual to associate correspondence courses with adults who are striving to up-grade their education while earning a livelihood. But in Zimbabwe the magnitude of the educational programme launched after attainment of independence in 1980 compelled the Government to extend the services of a correspondence course to secondary school students. In part the scheme is intended to meet the special needs of ex-combatants who were

engaged in the nationalist struggle during the years they should have been in secondary school. In addition, it caters for those primary school leavers who, despite the increased enrolment, are not absorbed into secondary schools. In 1983, over 70,000 students in this category have availed themselves of the advantage of learning by correspondence. A third of each correspondence student's fee is paid by the Government. All in all, the cost to the Government is Z$150 per student per annum, whereas the cost to Government of maintaining a student in a conventional school is Z$900. It is the view of the Government of Zimbabwe, however, that the scheme may have to be modified by some form of integration with the conventional secondary education system in order to remove the inferior status which the students undergoing the scheme believe to be attached to it.

## THE PROVISION OF EDUCATIONAL MATERIALS

### Bulk Purchasing

40. Bermuda has taken advantage of its proximity to the United States to purchase consumable materials and teaching aids in bulk from big commercial houses there. Quotations are sought from about five or six suppliers but when the contract has been awarded to a particular supplier, considerable savings are achieved by buying from one source.

41. Another country to have recorded considerable savings through the bulk purchasing of school supplies is the Bahamas where the Government supplies materials to all Departments and Ministries (including Education) through a central purchasing unit.

42. A cost-effective system similar to bulk purchasing is adopted in Malaysia. When applied to school building, it ensures uniformity and standardisation in quality, and reduces the cost of materials. It also cuts down the number of suppliers the Ministry of Education has to deal with and results in reduced costs.

### Low-Cost Teaching Materials and Science Kits

43. Barbados, in collaboration with eight other territories in the Caribbean, has been involved in a scheme sponsored by USAID to provide instructional materials for teachers and students. So as to improve the teaching of science, workshops were organised at which teachers identified the important areas for the various age levels and then proceeded to prepare the required materials. Those produced so far would have cost much more if they had had to be bought on the open market.

44. Another example relating to science comes from Nigeria where the Government has established a Science Equipment Manufacturing Centre which achieves savings by making simple laboratory apparatus for secondary schools instead of importing it. There is also

a National Education Technology Centre which produces low cost materials, broadcasts educational programmes on radio and television, and trains educational broadcasters and visual aid specialists.

45. In order to teach science to the greatest number of students with the least outlay of money, Zimbabwe has evolved the Zim-Sci Project. This enables teaching to be done without a conventional laboratory. Instead, apparatus and chemicals are packed in a portable metal cupboard and sent out to schools. A fully packed cupboard, which costs only Z$1,500, can be used to perform experiments for a class of 40 pupils and serve as a functional substitute for a laboratory which would cost Z$60,000 to build and equip. Moreover, national examinations indicate that pupils using Zim-Sci Kits have performed as well as those with access to conventional laboratories.

## Sharing Library Resources

46. In its National Policy on Education, the Government of Nigeria undertook to provide junior libraries for primary school children. To implement the spirit of the policy, a pilot scheme for sharing library resources is being carried out at the University of Ibadan. Under this scheme, a Multi-Purpose Media Resource Centre provides library services to a number of institutions clustered in a network around Ibadan. The Centre consists of a number of service divisions. These are:

(a) A library collection and Book Depot Division responsible for the centralised selection, acquisition, and processing of books for all types of educational institution.

(b) An Audio-Visual Division containing learning packages suitable for various institutions and the equipment for projecting them.

(c) A Production Division capable of reproducing books and learning materials and teaching aids.

(d) A Specimen Collection Centre for both Science and Social Studies.

(e) A Language Development Centre where manuscripts and supplementary readers in indigenous languages can be obtained.

(f) A Mobile Library Resource Materials Section for supervising and supplementing the book collection in schools in the local area.

(g) A Training and Research Division to organise in-service training programmes for teacher librarians and library assistants.

47. In terms of cost-effectiveness, advantages are gained by centralising the acquisition and processing of books. As yet the scheme is being run on an experimental basis, but it is hoped to establish a Centre in each Local Government Area.

## ALTERNATIVE FUNDING METHODS

### Community Self-Help in the Provision of School Buildings

48. During the era of colonial administration, the construction of school buildings was frequently the responsibility of the local community. Thus, in Nigeria, from the middle of the 19th Century it was customary for the members of a village wishing to have a primary school to erect the building themselves and make the classroom furniture.

49. This custom unfortunately fell into disuse about 30 years ago with the introduction of the first free primary education scheme in the old Western Region when the Government provided all the required school buildings at their expense.

50. Following the introduction of UPE in 1976, the Federal Government undertook to reimburse the money spent by State Governments on school buildings. However, by 1981, the Government was no longer able to continue this procedure, and it set up a Panel to look into alternative sources for financing education. The Panel's report, issued in 1982, said that offers by local communities to provide school buildings and other educational infrastructure should be warmly welcomed. But so urgent has the situation become that the various State Governments no longer wait for offers but actively solicit them from the community, and, in some States, the response has been very encouraging. Elsewhere in the Commonwealth the pattern is similar. Thus, to meet increasing demand for more secondary school places in the Family Islands of the Bahamas, communities are encouraged to assist in the building of schools by means of self-help projects. In Tanzania UPE was made possible by a system in which the Government provided the building materials, the teaching equipment and the teachers, and the people organised themselves into volunteer communities to put up the buildings. In Malaysia a pilot project for classroom construction has cut costs from $35,000 to $14,000 per classroom

### Funding Policy

51. In New Zealand a fundamental shift in funding policy is underway. It consists of replacing "earmarked grants" tagged to specific proposes by untagged grants which give local authorities much more flexibility over expenditure. Under the former system, apart from living within their grants, there was no onus on controlling authorities to review the effectiveness of their spending decisions. Now, aided by the provision of computerised information on a monthly basis, the authorities are able to analyse and control their expenditure more efficiently. In addition, the

system has been instrumental in bringing about new cost-effective procedures, e.g. holding in-service training courses for teachers on a local basis instead of on a national basis where residential accommodation was required. However, it should be noted that the effectiveness of educational funding is not considered solely in terms of unit costs, and that educational effectiveness is considered as well as cost-effectiveness.

## Research

52. When new educational programmes are launched, their cost-effectiveness is often unpredictable. In some cases, research can make a valuable contribution to the planning process. For example, in New Zealand it was found that some 20% of children being taught to read were having difficulty in mastering the Government-supplied Primer. As a result of research a method of overcoming the problem has been devised, and the cost of implementing it on a nation-wide basis calculated. In this way the information needed to make rational policy decisions can be provided.

53. Another instance of the use of research to achieve cost-effectiveness comes from India where the National Council of Education Research and Training conducts a national talent search examination every year to discover young Indians with special abilities. These are given special scholarship awards to enable them to develop their intellectual potential. With the introduction of mass primary and secondary education in developing countries, the talent of brilliant students may never be revealed unless efforts are made to identify it. The speed with which India has been able to develop new technologies and embark on the space programme testifies to the success of its talent search project.

## Income-Generating Educational Activities

54. Throughout the Commonwealth there are many examples of revenue generation within educational systems. For example, in the Seychelles, vegetables grown in school gardens, and eggs collected from school poultry, contribute food-stuffs for the school meals programme. At higher levels of education the Maritime Studies Programme of the Polytechnic has been organised to make substantial catches from the sea with a view to recouping the cost of the fishing boats. In addition, the Art and Design Department designs prototypes of objects for future mass production.

55. In Nigeria, the concept of generating income from educational activities has been developed to a high pitch in one of the secondary schools in the Ondo State where the students are organised into clubs: the Farmers Club, the Poultry Club, the Furniture Club, the Electricians Club, the Tailors Club, the Correspondence Club, the Bakers Club, etc. A student cannot belong to more than two clubs but must belong to at least one. Each club receives the initial capital it needs from the school and has a bank account into which it pays the proceeds from its commercial activities. Experience shows that by the time a club has been operating for about five years, it can expect to be sufficiently well established to acquire an air of professionalism. To take two examples, the Bakers Club

has been able to meet not only the needs of the staff and pupils but to sell its produce in the town market, and the Furniture Club was successful in winning a tender to supply classroom furniture for another school. Yet the academic performance of this school, as shown by the yearly national examination results, is not below average.

Student Revolving Loan Fund

56. In Barbados, where students are not required to pay fees for their university education, it became evident in the mid-1970s that rising costs coupled with increasing demand for student financing were becoming a strain on the Government's resources. Accordingly, a revolving loan fund has been established by which students can obtain long-term loans at low rates of interest. In this way, students with limited financial means are not denied opportunities leading to higher levels of personal and national income. They are pleased with the scheme, as is the Government which is able to channel applicants to those studies which will enhance the implementation of the country's manpower development plans. Moreover, the principle that students should contribute to the cost of their education has been clearly established.

THE DROP-OUT PROBLEM

57. Until the introduction of free primary education in Nigeria the drop-out problem was not of great significance. There were two reasons for this. First, up to that time, those children whose parents could afford the fees were not allowed to drop out, and those whose parents could not afford the fees did not attend. Second, those parents who were opposed to Western education on religious and cultural grounds sent their children to Koranic schools.

58. With the introduction of free primary education, however, a massive drop-out phenomenon began. This has been analysed in three studies. One of the findings is that in three cohorts of primary school pupils (1959/64, 1960/65 and 1961/66) the wastage rates were very close (52.2%, 55.4% and 58.0%). A second finding is that a child in a hamlet school has only a 15% chance of finishing his primary education, or a 42% chance if he lives in a slightly bigger village. This must be considered in relation to the fact that villages with populations under 1,000 contain over 50% of the country's primary school children.

59. The following causes of large drop-out rates have been identified:

(a) The Rural Area Factor. Most of the primary schools are situated in rural areas. Teachers in rural primary schools are less qualified than those in urban areas. So children in those schools are less well taught and less motivated towards education. The incidence of drop-out is therefore heaviest among them.

(b) Education not being Totally Free. Some parents expect education to be entirely free. On finding

that they have to pay for uniforms, books, mid-day meals and occasional levies, they become disillusioned and withdraw their children.

(c) Loss of Child Labour. To many parents the loss of their children's labour, particularly at the planting and the harvesting seasons, constitutes a serious economic loss.

(d) School Discipline. Some children find school discipline alien to the free-and-easy, happy-go-lucky, drum and dancing atmosphere of village life. They fail to adjust, and leave.

(e) Lack of Gainful Prospects. Children who see school-leavers with no work to do consider it not worth while to spend another year or two in school only to join the army of the unemployed.

(f) Children's Home Attitudes. Many of those children whose parents did not attend school are not sufficiently motivated by their families to stay and complete their schooling.

60. It is the opinion of the author of one of the surveys (7) that, over the period 1961/71, up to a quarter of the entire bill of primary school teachers' salaries was lost through shrunken classes caused by the drop-outs. The recurrent cost implications of drop out at the primary school level for the first UPE intake up to Class 6 of 1981/82 is worked out in Annex B of this paper. It shows that total teachers' salaries per primary Class 6 teacher increased by 65% due to drop outs.

61. How, then, can the drop-out problem be cured? One possibility is to up-grade the quality of schools in rural areas so as to induce teachers to remain there instead of seeking posts in the towns. Another is to launch a public enlightenment campaign to inform people that education cannot be entirely free. A third is to encourage teachers trained in modern methods of handling children to introduce their pupils gradually into the regime of the school through the medium of plays, games, singing, dancing and story-telling. In addition, it is hoped that the introduction of the new secondary education structure in which children will pursue pre-vocational courses in woodwork, metalwork, electronics and mechanics, will motivate pupils to complete their education.

## IV CONCLUSION

62. Governments have an obligation to ensure that the money they allocate to education is well spent. Those responsible for formulating and implementing educational policy need to ask themselves such questions as: Can savings be made in expenditure without lowering the quality of education, and, if so, where can they best be made and at what point will they become counter-productive? Are changes needed in the administrative system so as to actively promote cost-effective measures? What contribution can improved teaching methods, innovative training procedures and new technologies make in extending the provision of education or raising its quality while lowering costs per pupil or per teacher?

63. However, the responsibility cannot rest with governments alone. The problem of educational financing cannot be overcome unless its very basis is critically examined.

64. Today's younger generation have been born into a world in which free education at all levels has come to be regarded as their birth-right notwithstanding the rapidly rising cost of education brought about by inflation, the impact of the world economic recession on the finances of their countries, and the claims of other sectors of government for a just share of national resources. Commenting on public attitudes towards education, particularly higher education, one of Nigeria's University Vice-Chancellors recently said "We regard education as a meal ticket, for securing a job and in other materialistic terms. It is the ladder for climbing most conveniently to the elite group, to improving the standard of living, to having a "fair share of the national cake", to wielding power, to making it."(8)

65. In these circumstances education must be seen as a joint venture whereby those who benefit most directly from it see themselves as co-partners in an enterprise towards which it is appropriate that they should contribute. Students, parents, employers and the communities in which they live must help to maximise the cost-effectiveness of the education system which they rightly demand. Are there contributions which the community can make more effectively than governments? Are there costs which can be carried by individuals, families and communities to their own benefit and to the benefit of the system as a whole?

66. In exploring these and similar questions, countries will have to draw in the main upon their own experience and resources. Yet at the same time, as members of the Commonwealth, they should not overlook the opportunities that exist for them to benefit from one another. With their common heritage, shared values and close connections, Commonwealth countries are uniquely capable of exchanging information and expertise, and of co-operating in the solution of mutual problems. As the country papers show, a wealth of experience exists on the implementation of cost-effective measures in education. Commonwealth countries have much to share, and it is my hope that the Cyprus conference will be instrumental in making the knowledge gained in individual member states accessible to all.

ANNEX A

PRIMARY SCHOOLS, CLASSES AND PUPILS (GRADES 1 TO 3)

IN FOUR LOCAL GOVERNMENT AREAS OF SOKOTO STATE, NIGERIA 1980/81

| Local Government Area | Number of Schools | No. of Classes in Grades 1-3 | | | No. of Pupils in Grades 1-3 | | | Pupils per Class in Grades 1-3 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Argungu | 116 | 104 | 64 | 103 | 4382 | 2269 | 4133 | 42.1 | 35.4 | 40.1 |
| Gwandu | 188 | 170 | 104 | 199 | 6876 | 3764 | 6815 | 40.4 | 36.2 | 34.2 |
| Tambawal | 100 | 76 | 85 | 64 | 3034 | 3416 | 2300 | 39.9 | 40.2 | 35.9 |
| Yabo | 710 | 96 | 106 | 73 | 3862 | 4349 | 2929 | 40.2 | 41.0 | 40.1 |

ANNEX B

RECURRENT COST IMPLICATIONS OF DROP OUT AT PRIMARY LEVEL*

1. Pupils who drop out from school increase educational costs partly because the cost per pupil rises when the number of pupils per class falls, and partly because those resources devoted to the education of pupils before they drop out are largely wasted.

2. A study of seven States in Nigeria revealed the following average drop-out rates in each of the six grades:

| Grade | Per Cent |
|---|---|
| 1 to 2 | 18.0 |
| 2 to 3 | 11.6 |
| 3 to 4 | 7.6 |
| 4 to 5 | 2.1 |
| 5 to 6 | 7.4 |

By Grade 6 the over-all 'survival' was 60.7% of the Grade 1 intake: in other words, 39.3% dropped out.

3. The extent to which the drop out affected the cost per pupil has been demonstrated in respect of teachers' salaries. In order to simplify matters, the calculations were based on an initial enrolment of 80 pupils, i.e. the intake into two Grade 1 classes. Using the drop-out progression rates given in paragraph 2 above, it can be seen from the table on page 18 that the number of pupils per class drops from 40 in Grade 1 to 24.5 in Grade 6 (column 3).

4. Assuming one teacher per class receiving salary and allowances at Grade Level 05 (Grade II certified), step 4 on the 1983 salary scale, the annual emoluments per class total ₦2,786. For a Grade 1 class with 40 pupils, the cost per pupil is ₦69.60. For a Grade 6 class with only 24.5 pupils it rises to over ₦113 (column 4).

5. The two-stream school taken from this example has a total of 359 pupils in all six Grades (column 1). The total salary costs for the 12 classes are ₦33,408, giving an average unit cost of ₦93.06 per pupil. Had there been no drop outs, 480 pupils would have been educated for the same sum, that is for ₦69.60 each.

6. To demonstrate the cost-increasing effect of drop-out, the number of school leavers produced out of a cohort of 1,000 beginners has been calculated. With an overall drop out of 39.3% of the original intake, 607 out of every 1,000 beginners reach Grade 6 (column 5). The total salary cost of ₦69,600 for 1,000 pupils in Grade 1 is also required for each higher grade because the classes, despite the loss of pupils, are still not small enough to be merged. The total amount of ₦417,600 for six grades has to be spent to produce 607 Grade 6 leavers, i.e. ₦688 for each pupil completing primary school. Had all 1,000 beginners reached Grade 6, the cost would have been ₦417.00 per pupil.

continued/...

* Federal Ministry of Education, Science and Technology/UNESCO Planning Team, Lagos, May 1984.

## RECURRENT COST IMPLICATIONS OF DROP-OUT AT PRIMARY LEVEL OF EDUCATION

| Grade | Number of Pupils | Number of Classes | Pupils per Class | Teachers' Salaries per Pupil (₦) | Number of Pupils in a Cohort of 1,000 | Salary Costs for Pupils in Cohort (₦) |
|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | 80 | 2 | 40.0 | 69.60 | 1,000 | 69,600 |
| 2 | 66 | 2 | 33.0 | 84.36 | 820 | 69,600 |
| 3 | 58 | 2 | 29.0 | 96.00 | 725 | 69,600 |
| 4 | 54 | 2 | 27.0 | 103.11 | 670 | 69,600 |
| 5 | 52 | 2 | 26.0 | 107.08 | 656 | 69,600 |
| 6 | 49 | 2 | 24.5 | 113.63 | 607 | 69,600 |
| Total/ Average | 359 | 12 | 29.9 | 93.06 | 4,478 | 417,600 |

Salary costs are calculated at constant (1983) prices.

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Federal Ministry of Education,
Science and Technology
Lagos
Nigeria

June 1984

# Ninth Conference of Commonwealth Education Ministers

## Nicosia, Cyprus: 23-26 July 1984

REPORTS

OF THE TWO CONFERENCE WORKING GROUPS

ON AGENDA ITEM II

RESOURCES FOR EDUCATION

AND THEIR COST-EFFECTIVE USE

Commonwealth Secretariat
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# *Appendix A:* Reports of the Working Groups

**REPORT OF WORKING GROUP A**

Chairman: Hon. R. Wickremesinghe, Minister of Education, Sri Lanka.

**The Cost-Effective Use of Resources**

1. Introduction

1.1 The group agreed that the term "cost-effectiveness" is not easy to define to the satisfaction of all and should not be restricted solely to financial considerations, i.e. saving money. Achievement of objectives, educational quality, and maximum use of facilities are of paramount importance.

1.2 The group recognised that problems differ from country to country, in some cases very much so. Recognising that the most appropriate use of alternatives to improve cost-effectiveness in education depends on many factors unique to national situations, the group decided to concentrate its attention on two aims. The first was to draw to the attention of governments various policies, projects, and experiences which appear promising as successful cost-effective innovations and deserve further study. The second was to suggest areas in which Commonwealth educational co-operation can play a useful role, and in particular to suggest specific projects of study, consultation and training for action by the Secretariat's Education Programme in both 1984-85 (for which £25,000 is available through funds provided by the Secretariat's Commonwealth Fund for Technical Co-operation) and subsequently. All suggestions below apply to all levels of education.

1.3 One of the observers in the group suggested that the discussion should be much more oriented to policy considerations and follow up the Secretary-General's comment that "the sad state of education budgets today can be traced rather directly ... to monetary and economic policies, and also to the resource-devouring defence policies of the world's wealthier and more powerful nations".

2. The Design and Use of Educational Facilities

*Physical Facilities*

2.1 Many examples were put forward, including some variations on proposals in the country papers and the working papers.

2.2 In the design of schools, appropriate consideration should be given to factors such as climate and the use of local materials. For example, in dry climates certain classes can use the shade of a tree. Only a large wall is needed for protection from the sun at certain times of day. Besides being economical this can encourage harmony with nature.

2.3 It was recognised that ideally a single classroom should be used solely by one class. This would enable pupils to leave their books in school at night; also make greater use of blackboards etc. In areas as diverse Cyprus, Tanzania, and New Brunswick in Canada, there has been experience in the use of schools as community centres, in particular of facilities such as auditoriums and playgrounds being used by community groups.

2.4 An expensive item may in the long run be more cost-effective than an apparently cheaper alternative. For example, in Malawi low-cost furniture introduced several years ago did not last very long. Malawi is now producing furniture with stronger structures so that it will have a longer life.

2.5 Common facilities can often be built on a smaller scale. For example, to reduce the size of dining rooms there can be shifts in the meal times of students.

2.6 A straightforward operation and maintenance service should be available.

*Shift Systems*

2.7 Shift systems have both educational and social penalties, though their contribution to cost saving is self-evident. The shift system has come to stay in Malawi.

2.8 Some school buildings can be used at night for teacher training, or for a shift starting in the late afternoon as well as in the morning. However, the experience in some countries has revealed that parents of children in the later shifts are not enthusiastic about their children going to school other than in the traditional time period.

2.9 The following recommendations were adopted:

*A.1 The Secretariat should assist member countries to develop more efficient and more appropriate building structures, which are neither expensive nor difficult to maintain and which emphasise greater use of local materials. In consultation with Unesco and other appropriate bodies, selective initiatives such as information dissemination or an experts meeting should be undertaken by the Secretariat.*

*A.2 The various experiences recorded in the country papers, and the suggestions put forward in the working papers and the discussions, should be developed into a comprehensive catalogue of essential information and references, and be published and distributed. (The format should be developed by the Secretariat.)*

*A.3 The Secretariat should undertake work in the area of the cost-effective use of educational resources on a long-term basis, including on the use of community resources, low-cost teaching equipment and ways by which the foreign exchange problems faced by member countries can be surmounted.*

*A.4 The Secretariat should assist member countries to strengthen their individual and collective planning and research capacities (including perhaps through regional bodies) in order to undertake the necessary development or greater use of improved physical facilities.*

## 3. The Role of Teachers

3.1 In view of the burden of teachers' salaries there may be a need to spend more money on equipment, training etc. so that the costs of teachers' salaries can become more cost-effective.

3.2 The working group agreed that any change, especially in the short term, in the cost of teachers' salaries and its very high proportion of recurrent educational expenditure, was virtually impossible to achieve. Therefore it becomes all the more important that teachers and educational managers become better able and more motivated to carry out tasks and make decisions which involve choices in the use of alternative techniques, and that appropriate training should be provided.

3.3 The proportion of their time that trained teachers devote to professional tasks should be maximised. Teacher auxiliaries/aides can often be used for certain roles which trained teachers have traditionally undertaken. Optimum cost-effective use of teacher aides involves their use in various levels of management and administrative tasks, including the management of resources at all levels.

3.4 It is important to assess teacher-pupil ratios in regard to the subjects being taught. Some subjects are easily communicated to large numbers of students at the same time. Others require group activities with teachers having a reduced role. Still others require individual teacher/student consultation.

3.5 Because many teachers, particularly those in primary schools, also teach in adult evening classes, they should be acquainted with adult education methodology.

3.6 The following recommendations were adopted:

*A.5 The Commonwealth Secretariat should study the expanding role of teachers and the potential of teacher aides and disseminate comprehensive information to member countries.*

*A.6 Special grants should be provided for upgrading training.*

*A.7 The Secretariat should assess the feasibility of instituting a special award (similar to the present CASTME award) to recognise proposals of teachers which actually lead to greater cost-effectiveness in educational provision.*

## 4. Alternative Learning Techniques

4.1 Distance learning should be viewed as an additional tool to assist in making teachers more effective, rather than as a substitute for teachers.

4.2 The group recognised the world-wide revolution in educational technology and its potential in developing member countries. For example,

in Jamaica more physics teachers can be trained through the use of video. However, it was recognised that although there is considerable potential in utilising new technologies, they are generally very expensive and have unforeseen consequences, and a backup service is necessary regarding operation and maintenance. Foreign exchange implications are substantial.

4.3 The educational outcomes of programmes directed at large sectors of the population through mass media should be reviewed, e.g. Botswana's extensive experience in the use of radio should be made available to other member countries.

4.4 An observer (from the Commonwealth Association of Science, Technology and Mathematics Educators - CASTME) referred to the information in the Jamaica country paper on the distance learning project being run in conjunction with the University of the West Indies and funded by a grant from the Commonwealth Foundation. He said that preliminary study by the UWI clearly indicated that the use of a satellite can reduce the cost of training teachers in the small island states of the Caribbean.

4.5 The following recommendations were adopted:

*A.8 The Secretariat should develop a bank of information and analysis of major alternative learning techniques introduced in member countries and elsewhere. This information should be widely disseminated to enable member countries to use and adapt it for their own needs and circumstances.*

*A.9 The Secretariat should undertake a study analysing fundamental issues relating to the introduction of distance education. These include:*

*(a) Why is distance education successful with highly motivated adults?*

*(b) Why is it that the major introduction of distance education in the Ivory Coast in the 1970's failed?*

*(c) What kinds of infrastructure (e.g. electricity telephone) are necessary preconditions for the successful implementation of distance education?*

*(d) To what extent does this approach and others rest on the mistaken view that good teaching is a process of one-way communication to a passive audience?*

*A.10 The Secretariat should provide technical assistance to enable developing member countries better to assess questions related to a decision to introduce new educational technology, including the new and revolutionary use of micro-electronics in communication.*

*A.11 The Secretariat should consider undertaking a feasibility study of the relevance to other Commonwealth regions of the CASTME/UWI project, if it proves to be cost-effective.*

## 5. Planning and Management Implications

5.1 Management skills are needed if existing resources are to be used in the most cost-effective way. This applies at all levels of education systems whether the administrative unit is a small school or a large

institution. Consideration needs to be given to the provision of additional opportunities for appropriate education and training for administrators in order that the most cost-effective use of resources, including human resources, is achieved.

5.2 The importance was stressed of analysis and appraisal of any suggested innovations or measures designed to improve cost-effectiveness. This is necessary in order to decide which is the most appropriate measure and under what kinds of circumstances.

5.3 The challenge is how to decide in a particular situation which measure is most cost-effective. Hence, there is a need for training in techniques necessary to acquire satisfactory judgement in the use of available and potential resources in the light of cost factors and the intended results.

5.4 Decision-making is very important in effective leadership, and is a necessary component in the training of educational managers to enable them to be able to make more cost-effective use of available educational resources.

5.5 In considering alternatives designed to improve cost-effectiveness in education, the group recognised the need for essential information in order to be certain that the promise of greater cost-effectiveness can be fulfilled. Ministers are always being asked if any particular innovation will be more efficient, and evidence is needed, including on alternatives. Ministries of Education must have a capacity to undertake the necessary analysis and research or be able to secure it.

5.6 The following recommendations were adopted:

*A.12 The Secretariat, in consultation with the Commonwealth Council for Educational Administration (CCEA), should survey the range of training possibilities on cost analysis for educational administration. (In order to assist member countries to improve their overall planning and management capacities, the survey should also include leadership skills, supervision, and decision-making abilities.) Theoretical studies leading to qualifications and "on the job" training should both be investigated, including the possibility of assigning a designated number of awards in the Commonwealth Scholarship and Fellowship Plan for administrators and managers at all levels of education systems.*

*A.13 The Secretariat should consider the possibility of assisting and facilitating initiatives for the exchange of administrators (including school principals, deputy principals and ministry personnel) between Commonwealth member countries, in order to exchange ideas, solve common problems and improve management skills.*

* * * * * * * * * * *

## REPORT OF WORKING GROUP B

Chairman: Hon. T.R.B. Donahoe, Minister of Education, Nova Scotia, Canada.

### Additional Resources for Education

1. Additional Government Resources

1.1 Recent economic recession has presented countries almost everywhere with problems of finance. For some the position has been aggravated by rising costs of goods and services, debt crises and disasters such as war, drought, famine, floods and hurricanes.

1.2 The cost of responding to such disasters and dealing with the human problems they bring has made unexpected calls on limited national resources and reduced what is available for education. In a number of cases this has led to repeated reductions in allocations to education. For many countries, rising birth rates and their consequences for education expenditure have made further demands and pointed to a future of economic stringency. Only in countries blessed with natural wealth and in those newly independent countries where educational expansion has received political priority have educational budgets increased significantly.

1.3 Since the need for increased educational resources is felt by most countries, but especially by those which currently have relatively low primary school enrolments, it is important to consider where these increased resources may be found.

1.4 One possibility is the raising of an educational tax. For example, Jamaica has instituted such a tax whereby everybody in employment pays 1.0 per cent of wages to an education fund. Another possibility lies in loans which governments may take out to establish educational projects which are income generating.

1.5 While it is possible to reduce the cost to education budgets by transferring some educational responsibilities to other ministries such as labour, agriculture, transport and works, health, social services, or even defence, such devices add no new money for government services; they simply transfer costs from one department to another. Similarly, any attempt to attract funds to education by undertaking responsibilities normally performed by other ministries can only achieve a book transfer of resources with no real gain to the government. That is not to say that rationalising what ministries of education do brings no benefits. Considerable savings are possible through processes of rationalisation of human and fiscal resources and it is true to say that 'a pound saved is a pound found'. In this regard, governments which do not already possess established systems for monitoring expenditure, should do so because of the effect they have on increased efficiency.

2. Non-Government Resources

2.1 Many countries have found help with financing education from non-government sources as the following examples show.

2.2 *Lotteries.* Sri Lanka has national lotteries, proceeds from which contribute to scholarships for higher education.

2.3 *Loans.* An example of a different kind of non-government source of finance is to be found in Papua New Guinea where a Schools Board of Governors took out a private loan to purchase a coffee plantation which now generates a significant income from the cultivation and marketing of coffee and provides a work entrance facility for early school leavers. Private loans taken out by institutions and repayable student loans for higher education are increasingly common, but the latter only increase revenue to the government if they replace previous government grants or are not part of a government revolving loan fund. Clearly, revenue from such limited schemes is not likely to reduce greatly the heavy total cost of education to governments.

2.4 *Fee Payments.* A more significant contribution now comes from community sources. The reluctance of many governments, for reasons of equity, to charge fees for education has brought its own dilemmas. Increasing costs of education and static or reducing resources have forced on many countries the introduction of fees. Sometimes their introduction has come in the form of payments to the "education development fund" or as physical education or music charges. Elsewhere, the need for parents to share in the cost of their children's education has been recognised and there has been an acceptance of such requirements as the provision of pupils' textbooks and school stationery.

2.5 *Material and Financial Contributions by Communities.* Many countries have self-help programmes or arrangements by which local communities release resources not normally available to governments. The contribution that communities make varies enormously, including fund raising, the provision of labour and skills to build and maintain schools, and help in schools with administrative tasks and with teaching and non-teaching supervisory duties. While such co-operation is voluntary it must be admitted that the pressures on individuals to participate can sometimes be quite compelling.

2.6 *Community-Owned Schools.* While some communities have resented the introduction of fees for what once was enjoyed free, others have shown remarkable enthusiasm for contributing towards the cost of institutions with which they can identify. In several developing countries more than half the schools are funded privately. Outstanding in community-owned schools in Commonwealth countries has been the harambee movement in Kenya whereby local communities have voluntarily built and staffed hundreds of primary and secondary schools, village polytechnics and institutes of technology. It is difficult to quantify the contribution from local communities to the cost of education, but one estimate in Kenya puts the harambee element without teachers' salaries as high as 60 per cent.

2.7 *Matching Contributions.* On a national scale there are sound reasons for supporting pump priming practices such as Papua New Guinea's "kina for kina" scheme whereby the government adds one kina for every kina raised locally for particular educational projects.

2.8 *Supporting Associations.* Community action in support of education can take many forms and operate at different levels. At the level of groups of interested individuals, such as parents' or old students' associations, substantial funds have been raised to pay for new buildings, libraries, transport, equipment, supplies and amenities for schools. Community action can operate at institutional level where co-operation amongst institutions enables a spectrum of courses to be offered that would demand additional resources if offered by each institution. It can also operate at inter-governmental level enabling one country to

benefit from expenditure made by another. The principle of sharing amongst interested parties is an important one for enabling limited resources to go further.

2.9 *Churches and other Religious Bodies.* These have a long record as providers of education and are still a major component of private education in the Commonwealth. In a number of countries the proportion of non-government to government schools is increasing and would seem to reflect a growing willingness by governments to pass on, where possible, some of the financial burden of education.

2.10 *Firms.* Educational funding from private firms occurs in some member countries, taking the form of scholarship awards, prizes and the donation of equipment and teaching materials to schools. There would appear to be scope for more support of this kind by industrial and commercial firms, especially at secondary and post-secondary levels. It should also be noted that in many countries industrial and commercial firms have their own in-house training facilities to prepare technicians for their firms, thus making a substantial contribution to their countries' technical education provision. Some firms also identify future employees and prepare them for senior or specialist roles by scholarship awards in their own and other countries.

## 3. Generating Institutional Income

3.1 The most common cost-reducing step taken by residential institutions is to grow all or part of the food consumed by their students. The sale of crops also brings income to the institution as, for example, schools in Guyana have earned substantial amounts through the sale of farm products. But in this context it is important to note the possible conflict of competition with local producers. Cleaning, maintenance, and even building by students is also widely practised. It is important where considerable sums of income are handled by institutions that their accounts are audited so that students and other interested parties have full confidence in the accountability of the institutions.

3.2 The provision of manufactured products and other services by institutions as part of the educational process is a further development of the generation of institutional income. The Brigades of Botswana have been an outstanding example of this principle, some claiming to support themselves entirely from the proceeds of contracts. The Foundation for Education with Production (FEP) is an organisation now seeking to establish the principle in a number of countries in Africa and Europe. Critical to the success of enterprises of this kind is the quality of management and it should be no surprise to learn that most of those institutions that have succeeded have had people in charge who had fine leadership qualities and outstanding entrepreneurial talents.

## 4. Development Assistance

4.1 In many countries the educational sector experiences difficulty in attracting development assistance. In consequence the aid that comes is too little or too late.

4.2 In the past, development assistance has too often placed recurrent cost burdens on recipients. Both donors and recipients need to scrutinise very carefully the budgetary implications of any proposed project.

4.3 The problems that some countries face in getting the aid they need stems from a number of causes. In some cases, especially in small states with limited resources, the process of attracting aid could be improved if assistance was available with identifying appropriate aid agencies, in making their requirements known and in formulating project proposals.

## 5. Recommendations

5.1 Working Group B makes the following recommendations:

*General*

*B.1 A study should be conducted on a cross-country basis of the experience within the Commonwealth of raising additional and alternative funds for education.*

*B.2 The Commonwealth Secretariat, at the invitation of and with the support of selected governments, should arrange for a study to be carried out which would identify and analyse the educational resource gaps that exist and suggest appropriate measures for bridging those gaps in specific situations.*

*Development Assistance*

*B.3 In view of the continuing difficulties in the educational situation in many Commonwealth countries, development agencies should be urged to increase their contribution to member countries.*

*B.4 Associated with this, it is proposed that the Secretariat develop a register of particular kinds of assistance that member countries are prepared to offer, and identify, where appropriate, national and regional institutions that can contribute this assistance.*

*B.5 The Commonwealth Secretariat should investigate the needs of member countries for an aid brokerage service that would assist them in the successful attraction of the aid they need.*

*B.6 The Commonwealth Secretariat should devise means for assisting developing member countries in obtaining school equipment and materials which present import and currency exchange problems.*

*B.7 In some small countries used to centralised government educational funding, the need may be felt for updating administrations, including school administrations, in new management techniques concerning educational finance. The Commonwealth Secretariat should explore the possibility of arranging the assistance necessary for this, using Commonwealth funds.*

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