Caribbean co-operation for curriculum development and reform in teacher training

R.W. Morris and L.F. Thomas

Study prepared for the International Educational Reporting Service
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Caribbean co-operation for curriculum development and reform in teacher training

by R.W. Morris and L.F. Thomas

Study prepared for the International Educational Reporting Service

Unesco — Paris 1980
REG 142, later to be called RLA 142, was the code name given to a regional project, involving 15 Caribbean countries all pledged to support each other in an enterprise whose main purpose was to upgrade the initial preparation of teachers for junior secondary schools.

Funded by the UNDP and UNICEF, and co-ordinated by the University of the West Indies, the project brought to the Caribbean the expertise of 23 Unesco specialists; it trained 54 West Indian counterparts; it further extended developmental experience to 150 co-tutors; it established a Multimedia Production Centre which continues to serve the region; and it left a legacy of over a hundred documents bearing upon contemporary approached to curriculum building in mathematics, science and the language arts. In addition, the project pioneered new approaches to teacher education, both pre-service and in-service; it developed new techniques for up-grading personnel involved in educational administration and supervision; and it opened new windows on librarianship and the custody of learning resources generally.

This case study traces the evolution of the project from its source in a problem of catering appropriately for young people of secondary age through its five most active years to the present. It highlights the particular approaches to innovation from which, it is believed, others might profit, and it directs readers to the particular documents evolved by the project which may be of interest to them as specialists.

The Secretariat of the International Bureau of Education expresses its keen appreciation of the work of Robert Morris, erstwhile Director of the Continuing Mathematics Project of the British Council for Educational Technology, in the University of Sussex, and of Leton Thomas, Acting Permanent Secretary (Education), in the Ministry of Education and Health, Saint Lucia, West Indies, in producing the study. The authors are, of course, responsible for the choice and presentation of the facts contained in this book, and for the opinions expressed therein, which are not necessarily those of Unesco and do not engage the responsibility of the Organization. Similarly, the designations employed and the presentation of material throughout the publication do not imply the expression of any opinion whatsoever on the part of Unesco concerning the legal status of any country or territory or of its authorities, or concerning the delimitations of any country or territory.
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I. The setting

Bounded on the south by the coasts of Colombia and Venezuela, on the west by the Central American republics, and on the north and east by the Gulf of Mexico and the Atlantic Ocean, the Caribbean countries form an island chain which extends over 2000 miles from Belize on the mainland to the islands of Trinidad and Tobago, the most southerly members of the archipelago. So extensive is the Caribbean region that if its map were to be superimposed upon the map of Europe so that Belize was placed over London, then Jamaica would fall close to Danzig in the Baltic, Trinidad would be at Odessa on the Black Sea, while the Windward and the Leeward islands would form an arc far to the east of Moscow.

The Caribbean countries fall naturally into related groups according to their former dependence upon Britain, the Netherlands, France or upon the United States. This study is concerned with the first group, sometimes referred to as the English-speaking group. It comprises 15 countries: Antigua, the Bahamas, Barbados, Belize, the British Virgin Islands, the Cayman Islands, Dominica, Grenada, Jamaica, Montserrat, St. Kitts-Nevis-Anguilla, St. Lucia, St. Vincent, Trinidad and Tobago, and the Turks and Caicos Islands.

These communities are not large. Their total population is under four million. Of this total Jamaica alone accounts for over two million, and Trinidad and Tobago for over one million. Barbados is the largest of the other 13, with a population of a quarter of a million. The smallest community is that of the Turks and Caicos Islands — about 6,000. Small though these communities are, several islands have already reached the maximum sustainable density of population. This is because the majority of the Caribbean islands are of limestone formation, which does not retain enough water to grow a sufficiency of agricultural crops.

The communities, too, suffer from a high level of unemployment, from a scarcity of skilled manpower and from general poverty. With the exceptions of Jamaica and Trinidad, which produce exportable quantities of bauxite and oil respectively, the communities are without mineral resources. So they depend upon agricultural products — sugar, rum, citrus fruit, bananas, coffee, etc., — and upon the tourist trade.
According to the World Bank Atlas of 1977, the annual gross domestic product per capita of the communities ranged from $580 in St. Lucia to $2,000 in Trinidad and Tobago, figures which compare very poorly with that of the US Virgin Islands ($5,050).

Most of the 15 are now self-governing and independent, but all are autonomous in the matter of education provision. Yet collectively they subscribe to the maintenance costs of the University of the West Indies. So it is upon this University that the English-speaking countries predominantly rely to meet their needs for personnel with graduate and post-graduate qualifications. And it is to the Institute of Education of the University that they look for the validation of the work of their teacher training colleges and for help with continued training of teachers in service. To this end the resources of the Institute are divided among three campuses, one at Mona in Jamaica, one at Cave Hill in Barbados, and one at St. Augustine in Trinidad.
The main impediment to the progress of the English-speaking communities of the West Indies is, in a word, scarcity. It has already been pointed out, there is a scarcity of natural resources, and a scarcity of water hampers agricultural development. Industrial development — another possible way forward — is, for the present, obstructed by the scarcity not only of persons with the necessary technical and technological skills but also of persons who, as potential factory workers, have an adequate functional command of the English language.

Of these three basic scarcities, only the third can be mitigated by the educational process — provided the supply of teachers is adequate in quantity and quality. In the mid-sixties this was not the case. Nor were the education systems of the English-speaking countries geared at that time to providing education appropriate to the needs of the communities. The prevailing systems were to all intents and purposes an inheritance of the period of colonial governments, and they had not kept pace with educational developments in the United Kingdom during the two previous post-war decades.

Broadly speaking, there were two types of schools, primary and secondary, but the latter were not accessible to all children. They admitted only a selected few — the four to ten per cent of the relevant age group who qualified for entrance to them through a competitive examination, which the children took between their 10th and 12th birthdays. For the 90 to 96 per cent of children who failed to win a place in a secondary school, the only alternative, generally speaking, was to remain in their primary schools. So primary schools, in default of other provision, were, in effect, all-age schools. That is to say they catered for the majority of children whose ages fell within the brackets of compulsory school attendance — 6 to 14 years of age.

Already, however, in the mid-sixties, governments were aware of the deficiencies of their education systems, and were making (with some governments beginning to implement) plans to provide children of secondary age with more appropriate education. Barbados was bringing into being a system of comprehensive secondary schools, and already had seven of them built and in use. Jamaica's plan was to build 50 junior secondary schools, and, in the mid-sixties, 16 of them already existed. Trinidad and Tobago was aiming to provide by 1977 accommodation in junior secondary schools for about 75 per cent of the chil-
dren in the age groups 12, 13 and 14. St. Lucia was planning both to build comprehensive schools and to reorganize the curriculum of older children in all-age primary schools.

In the middle of the last decade, therefore, the education systems of the English-speaking countries of the Caribbean were undergoing change with a view to providing a secondary type of curriculum for all children in the age groups 12 to 14, in whatever kind of school they happened to be — comprehensive, junior secondary or all-age. The most pressing need therefore was to develop appropriate curricula, particularly in what were seen to be the key subjects, mathematics, science and the language arts, and to so equip teachers in service and students preparing to teach as to ensure the implementation of the new curricula.

To develop new and relevant curricula is in itself no easy task. To ensure implementation is much harder. In the Caribbean context, the task of implementation was likely to be an exceptionally formidable one.

On the average, over the area as a whole, more than one half of the total teaching force was made up of practitioners who had not trained to teach, and who were below standard in their qualifications for entry into a course of training. However, a large proportion of these teachers were continuing to study privately in preparation for college entrance. All the countries were making strenuous efforts to reduce the backlog of unqualified and untrained teachers. Nevertheless, the existence of this backlog was likely to compound the problem of implementing any new curricula developed for the new schools and for the older pupils in the old schools.

A further obstacle to implementation was likely to be the nature of the education provided by the teacher training colleges of the area — 21 of them altogether. Although there were variants among them, it was the general pattern of these colleges to provide a two-year course, combining both academic and professional training, culminating in the award of a Teacher's Certificate of the Institute of Education of the University of the West Indies. Because of the backlog of unqualified and untrained teachers in the education systems, most of the students in the colleges were mature teachers with several years' experience. The courses offered, however, were essentially of the type offered to young students without previous teaching experience, and the training given was effectively a preparation for subsequent service in primary schools. Very few of the colleges were able to offer students opportunities to specialize in subjects they could subsequently teach to children of secondary age. And the teacher-trainers who staffed the colleges were themselves largely incapable of preparing students to teach the new subject matter required in the early secondary years. The relatively few teachers with graduate qualifications were also for the most part untrained, and the other countries in the region were finding it increasingly difficult to send their graduate teachers for training in Jamaica after graduation for a fourth year of professional training in the Department of Education of the University of the West Indies.
In brief, the constraints upon governments aspiring to provide appropriate secondary education for all in the middle sixties were a lack of suitable curricula, particularly in the key areas of mathematics, science and language arts, a teaching force which was academically and professionally sub-standard, and a cadre of teacher-trainers whose expertise was limited to preparing students for primary schools only.

In the late summer of 1967, a seminar was sponsored by Unesco and the University of the West Indies to consider how the Caribbean region might best make progress in the spheres of curriculum and teacher training. The recommendations of the seminar called for the establishment of regional machinery to ensure a co-operative approach to:

(i) the pre-service and in-service training of teachers of pupils in the age range 10 to 15, especially in the problem areas of mathematics, science and English language;
(ii) the further preparation of the teacher-trainers in service, and of those about to become teacher trainers;
(iii) the training of administrative and supervisory staff;
(iv) the provision of adequate facilities, and suitable equipment in the training institutions.

Based upon these recommendations a proposal was drafted for submission to the United Nations Development Programme and to UNICEF. This, in brief, envisaged a project designed to assist the Institute of Education of the University of the West Indies to promote the training and re-training of:

(a) top-level personnel for the Institute of Education itself, for teacher training institutions, and for school headships;
(b) the existing members of the staffs of the teacher training colleges;
(c) students of teacher training colleges;
(d) serving teachers; and
(e) educational administrators (district officers, education officers, school heads, and curriculum supervisors).

As part of this project, a key activity was seen to be the development of educational materials especially designed to foster the retraining of teachers in service. It was also envisaged that the project should be administratively attached to the Institute of Education of the University of the West Indies, and that, by agreement with the governments, it would be mediated through the 21 teacher training colleges, the teachers' centres and the other functional mechanisms for reaching teachers which the Institute had already established. It was foreseen that the assistance of an internationally recruited team of experts would be required, and that finance would be needed to equip the colleges and other training institutions to cater for the preparation of teachers for the junior secondary schools and for the comparable age groups in other schools.

In order to maintain the momentum of development after the termination of international assistance, the need to give special training to individuals chosen
by the participating governments was foreseen. Two types of trainees were proposed: counterpart personnel who would work closely with an international expert, and co-tutors. Co-tutors were seen to be individuals already occupying posts as teacher-trainers, inspectors, education officers, curriculum advisers, head teachers, or teachers, who would play an active role in the developmental activities of the project, becoming thereby knowledgeable about the nature of innovation, the directions it can take, the ways in which it can be organized, tested, refined, evaluated and promulgated.
III. Response and a plan

In January 1969, the University of the West Indies formally channelled, on behalf of the fifteen English-speaking countries of the Caribbean, the proposals based upon the findings and recommendations of the 1967 Seminar through Unesco to the UNDP and UNICEF. The proposals, designed as they were to link fifteen autonomous island countries, strewn over 2000 miles of ocean, in a regional endeavour, were necessarily as complicated as they were ambitious. A Unesco mission visiting the Caribbean in May 1969 to examine the proposals on the spot accordingly recommended the prior appointment of an international team to assist the Institute of Education of the University to prepare a detailed plan of operations for submission to the UNDP, together with proposals for UNICEF assistance with the acquisition of materials and equipment, and to undertake a number of preparatory tasks before the Regional Project was formally established. This recommendation was accepted by all parties, and in October 1970 a team of five, comprising a Chief Technical Adviser and specialists in language arts, mathematics, science and in the development of educational materials, arrived in Jamaica to begin work.

Working closely with the Director of the Institute, and in close consultation with the Ministries of Education and the personnel of the teachers’ colleges, the advance party envisaged a four-year project with the following practical outcomes:

(a) an augmentation of the resources of the libraries of the teachers’ colleges and of the documentation centres of the Institute;
(b) an increase in the flow of periodicals and of teaching materials into the colleges and selected schools;
(c) a build-up in the provision and use of audio-visual equipment and audio-visual aids throughout the region;
(d) the establishment of a regional centre where educational materials of good design and quality would be produced and from which the region would be supplied;
(e) a concomitant growth in the capability of teachers’ colleges to develop educational materials;
(f) the development of prototype learning units suitable for 10-15 year olds in the curriculum areas of language arts, mathematics and science, and the production of corresponding support materials suitable for use in teacher education;
(g) a growth in the number and in the quality of training workshops for teachers in service;
(h) innovatory developments in the curricula of the teachers’ colleges which could promote independent learning, the use of media generally and of micro teaching in particular;
(i) a substantial training programme for counterpart staff and for co-tutors which would augment indigenous expertise in language arts, mathematics, science, administration and supervision, curriculum development, librarianship and the production of educational materials.

To put this project into effect, it was envisaged that eighteen internationally recruited specialists would be needed, and that their expertise would be provided as follows: three in each of language arts, mathematics and science; one in each of the production of materials, administration and supervision, librarianship, curriculum development, audio-visual aids and graphics; one consultant in each of correspondence studies and in the production of radio-ETV programmes; and a Chief Technical Adviser. It was foreseen that these eighteen would have to be deployed among seven duty stations grouped in three sectors as follows:

Sector A, embracing the Bahamas, Belize, the Cayman Islands, Jamaica and the Turks and Caicos Islands, to be served by six specialists, one based in the Bahamas and five in Jamaica;

Sector B, embracing Grenada and Trinidad and Tobago, to be served by six specialists all based in Trinidad;

Sector C, embracing Antigua, Barbados, the British Virgin Islands, Dominica, Montserrat, St. Kitts-Nevis-Anguilla, St. Lucia and St. Vincent, to be served by five specialists, three of them based in Barbados and one each in Antigua and St. Lucia.

The international experts’ role would be in part a creative one and in part a training one. The governments would be expected to identify from among their own nationals those who had the potential to assume professional responsibility for sustaining the developmental objectives of the project when aid was no longer forthcoming, and to depute them to work with the international experts as counterpart staff. Governments were also expected to release for short periods from time to time larger numbers of their staff to participate as co-tutors in developmental workshop organized by the experts and their counterparts. Thus the local educators would be trained in the art of educational development by active participation in the process itself. They would in fact be learning by doing.

A survey of the resources of the region showed that the local staff and the internationals to be recruited by Unesco could be accommodated by the Institute of Education within its campuses at Mona in Jamaica, at St. Augustine in Trinidad and at Cave Hill in Barbados, except for those posted to Antigua, to the Bahamas and to St. Kitts. In these cases, accommodation would be found in the local teachers’ college. It became clear also that implementing the pro-
gramme of developmental work would require considerable UNICEF assistance for the purchase and transport of audio-visual apparatus and consumables. Eventually a detailed plan was worked out, costed and submitted to the UNDP. In June, the Governing Council of the UNDP approved the plan and allocated over US$1.8 million, most of this sum being for the support costs of the international experts. Meanwhile the Executive Board of UNICEF had approved the allocation of nearly US$ 0.5 million to be spent mostly on equipment. In September 1971 the project officially became operational with the expectation of four years' continuous external assistance from Unesco and UNICEF.
IV. The project in action

Project REG 142, which was later coded UNDP/RLA/71/142, officially became operative in September 1971. It enjoyed United Nations support for four years. During that time the agency responsible for international specialist assistance was Unesco, with UNICEF assuming the role of the participating agency. Control of the project was the responsibility of the Director of the Institute of Education of the University of the West Indies, acting as agent for the governments involved. The Director, however, was assisted in the day-to-day running of the project by the Chief Technical Adviser, appointed by Unesco. This post changed hands for the final year.

At the outset, six international specialists were in post, five of them having already been engaged for a year making preparations for the project to begin. By the end of the first year their numbers had risen to 16, and by the end of the project as many as 23 had made a contribution. As from 1 January 1973, 16 months after the project became operational, six of the governments had between them seconded a dozen of their nationals to work as counterpart specialists with the international specialists, while by the end of the project nine of the governments had participated in this part of the training programme, releasing between them some 54 Caribbean counterparts.

It was a particular feature of the counterpart training programme that all of the 54, except one, trained in the Caribbean itself by working in collaboration with an international specialist. Collectively they reflected the entire spectrum of human involvement in school systems. Among them were representatives of classroom teachers, teacher educators, education officers, principals, curriculum supervisors, university lecturers, and chief education officers. Their release from their normal responsibilities was part-time, but the arrangement was a flexible one, so that counterpart specialists were invariably involved in the running of regional workshops.1

In addition to the 54 counterpart nationals, over 150 co-tutors were also involved in the various developmental aspects of the project. The concept of a co-tutor — born of the 1967 Unesco seminar — was novel. Co-tutors, like counterparts, were local professionals selected by ministries of education in consultation with the Director of the project and his Chief Technical Adviser.

1. For a full description of the arrangements made for the training of counterparts, reference is recommended to: Thomas, L.F. *RLA/142: The Counterpart Training Programme*
However, they were not seconded from their regular duties, nor did they take part in the regional activities of the project; but they did participate in workshops held in the sector to which they belonged. They acted also as local organizers, and they monitored local project activities. Most of the co-tutors, in fact, were the tutors of the 21 teachers' colleges, who, it could be said, used the presence of the project to raise the level of their own professional skills by taking part in the workshops, and so learning to develop self-instructional materials for student teachers.

The main aims of the project were to build up resource materials for use in teacher training, and to foster development of the curriculum for 10 to 15 year old pupils, particularly in the areas of language, mathematics and science. This was achieved in a variety of ways. In the first place, existing stocks of materials in the libraries of the teachers' colleges, the teachers' centres and of the Institute of Education were built up by the direct purchase of books and of audio-visual materials already on the market. These materials were chosen for their relevance to teacher education and to the work of teachers in service, and they were chosen from what at the time represented the most up-to-date thinking about classroom practice and the techniques of material production.

But the resources thus acquired provided no more than a start for the much greater augmentation of resource materials through the creation of new materials. The creative work was done in workshops which were organized so that local teachers, local teacher educators and local educational administrators were themselves actively involved in the developmental process. The involvement of local educators in the creative workshops had the supreme advantage of ensuring three essential outcomes from every workshop that was held: the bringing into being of new educational materials; the bringing into being of educational materials recognizably related to the Caribbean environment, and, therefore, meaningful to student users; and the augmentation of indigenous experience of the skills and techniques of curriculum development.

Workshops were organized in seven fields: language arts, mathematics, integrated science, educational administration, foundation studies in education, librarianship, and educational technology. The outcomes naturally varied with the subject matter, and they will be elaborated in subsequent sections of this study. Typically, however, the outcomes were the development of units of work, designed for a student teacher to absorb as an independent learner, albeit under the guidance of, and, where necessary, with the help of a tutor. The content of each unit was contrived to achieve two main aims: to add to the students' own knowledge, and to enable him to pass it on to children. Each unit, in other words, aimed to integrate both the academic and the professional training of the student teacher. The broad aims of each unit were, of course, spelled out for the student into their specific objectives. The student was then prompted to undertake particular activities contrived to help him to achieve
his objectives. He was finally presented with a test with which he could evaluate his own success in working through the unit.¹

The designing, duplication and distribution of the raw material produced by the workshops was undertaken by the Multi-media Production Centre, the establishment of which on the St. Augustine Campus of the Institute of Education of the West Indies in Trinidad was itself an early achievement of the project. The facilities built up in the Multi-media Production Centre are such that the Centre can make, and reproduce in quantity, high quality educational materials of all kinds — in print, on film, on filmstrip, on slides, on video tape, on sound tape — including transparencies for overhead projectors and threedimensional aids to teaching.

In addition to the facilities for multimedia production in Trinidad which were designed to service the region as a whole, the project also provided the centres of the School of Education at Mona in Jamaica and at Cave Hill in Barbados with the equipment and with the necessary technical and professional skills to improve their capability to produce educational materials. Similarly, the project, as it developed, strengthened the production resources of the 21 teachers’ colleges throughout the region. Eventually, educational technologists, AVA technicians and graphics artists trained on-the-job and at the Multimedia Production Centre were appointed to new posts created for them in the School of Education. They in turn, as counterparts to Unesco personnel, organized, or took part in workshops and other activities throughout the region. In this way their skills (and the more effective use of multimedia equipment) were extended to teacher educators and to teachers.

¹. For a more detailed description of the strategies employed by the project in the development of educational material in unit form, reference is recommended to: Ibstedt, H. *Curriculum building strategies for unit package production*. University of the West Indies, 1973.
V. Developments in teacher education

The task of developing the resources for teacher education was fundamental to the aims of the Project REG/RLA/142. If Caribbean children in the 10 to 15 age range were to be given a secondary type of curriculum, it would be necessary to reform radically the work of the teachers colleges and the teachers centres in every part of the region. The flavour of the Project's approach to reform may be gained by a quotation from the basic document¹:

What would happen if:

we substituted 'themes' for traditional course categories?
the course 'content' was cut by at least half?
the programme as a whole was 'problem' oriented?
the lecture approach gave way to organized workshops and seminars and accommodation was arranged accordingly?
'curriculum studies' with reference to the classroom were made the core of the programme?
traditional course work in history and philosophy gave way to more functional and relevant units?
courses were developed by teams rather than individual tutors?
teaching by authority was replaced by creative learning situations?
the bulk of the programme was made self-instructional in response to stimulus questions and assignments?
construction of multimedia instructional units or testing programmes replaced traditional assignments?
the place of the multimedia was learned through activity (construction and classroom use) rather than by explanation and exhortation?
students were permitted to move to accreditation at their own pace?
students, rather than tutors, asked the questions?
students had a major role in deciding the content and strategy of the programme?
students set their own assignments?
all assessment was on a fail-pass-credit basis?
'visual' communication were accorded as much importance as 'verbal'?
it was accepted from the outset that students' effective learning and thinking skills could be improved?

Arising from this list of 'disturbing' questions, the document goes on to propose that new courses should place more emphasis upon 'quality of thinking than on

quantity of information'. One consequence was seen to be a need to be more disciplined in defining the objectives of a particular course. Another was the need to rest training courses firmly on the realities of what actually happens in classrooms, in playgrounds and in the communities from which the children come. A third consequence was the need to find more room for curriculum studies by edging out courses in general methods and by restructuring foundation courses so as to bring them into a supportive relationship to curriculum studies.

Considerations of economy were seen to point to the need to trim the content of some courses, and to effect an integration of courses by adopting a thematic approach. Turning to the issue of teaching practice, microteaching was seen as 'a promising innovation in teacher education, and now within the range of institutional budgets'. It was also seen as an activity which would catalyse cooperation between members of staff responsible for foundation studies and of staff responsible for curriculum studies.

As to possible ways forward, the basic document pointed to the value of creative workshops, to taking advantage of the wider range of media of communication that has become available, to shifting quite deliberately from formal teaching methods towards the introduction of independent learning, and to introducing interdisciplinary studies.

The drive towards implementing these proposals for the reform of teacher education began in the first week of 1973 when, under the auspices of the School of Education, the first of a series of workshops was held at Codrington College, Barbados. Its theme was 'New approaches and the media in the education of teachers'. Its declared purpose was 'to develop potential for innovation in education'. It brought together teacher educators serving in colleges in Sector B. The programme for the workshop included active considerations of interaction analysis, simulation and role playing. But its main focus was on the use of the VTR in microteaching, and on 'models' and 'protocols' for use in teacher education.

Following quickly upon the Barbados workshop, similar workshops were held in Jamaica for teacher educators in Sector A, and in Trinidad for teacher educators in Sector C. Each workshop was closely structured in the sense that participants were expected to work at their own pace through a sequence of job-cards, and each was required to appraise his own performance in accordance with the evaluation procedures laid down for each completed job.

4. For a full account of the nature, the place in teacher education, and the expected benefits of microteaching, reference is recommended to: REG/142. Hendry, J.A. Microteaching developments. University of the West Indies, 1971.
More co-operatively, participants worked together carrying out live exercises involving microteaching encounters, and the supervision of microteaching. They also worked as groups on some productive activity — building an operational model for microteaching, compiling check lists for the appraisal of the performance of students engaged in teaching practice, or practising particular teaching skills in a microteaching context, planning lessons designed to impart a particular concept, compiling a list of significant teaching skills, etc.

By the end of each workshop it was considered that each participant was competent to operate a VTR system, and that he had had sufficient practical experience of microteaching and of developing resource materials for microteaching to equip him to inaugurate and conduct training courses for colleagues and student teachers in his own college. As a mark of confidence — and, no doubt, for reasons of administrative convenience — each participant was entrusted to carry back with him the hardware of the VTR system provided for his college by the Project.

In the course of these and of similar workshops, or by way of preparation for them, a variety of resource materials were developed. Although the materials were intended for use in a Caribbean context, some of them are of practical value to teacher educators generally. For example, ‘Appraisal guides for instructional skills’¹ is a compendium of 14 cards, each of which is designed to help a student teacher to evaluate his own (or a contemporary’s) performance when practising a particular skill, such as the skill of presentation or the skill of individualizing learning. Again, ‘Individual differences’² is a unit of study made up of five activities and evaluation procedures. The unit is designed for independent learning by the student teacher; it begins with a diagnostic test and ends with an achievement test covering the work of the unit as a whole. This unit contains most of the background information the student will need to work through the unit, though reference to ‘Appraisal guides for instructional skills’ is made in one of the job cards. Very similar to the unit on ‘Individual differences’ is the unit entitled ‘Higher order questioning’³. This involves four job cards, resource material, a diagnostic test and an achievement test.

Other documents of general interest produced by the project are ‘Innovations in teacher education — evaluation guide’⁴ and ‘A training programme for supervisors of microteaching’⁵. ‘Innovations’ lists 26 criteria on which innovations in teacher education may be evaluated. The criteria are grouped under six headings,

2. RLA/142. Foundation units introductory to microteaching. Unit 4. Individual differences.
namely objectives, organization, curriculum content, training strategies, educational technology and evaluation. The 'Training programme' is a self-instructional programme. It comprises eleven job cards. All relate to foundation studies, and all the resource material the learner will need is built in except 'Appraisal guides' and another self-instructional manual developed by the Project, 'Operating the videotape recording system'.

1. Bourdais, C.; Johnson, L. 'Operating the videotape recording system'. University of the West Indies.
VI. Developments in language arts

Two major developmental workshops were held: one in Barbados in 1973 for institutions in Sector C; and one in Jamaica in 1974 for institutions in Sector A. Each workshop was planned to:

(a) initiate practising teachers into some understanding of how language functions;
(b) clarify for teachers the nature of the regional dialects used in the Caribbean, and to illustrate the extent to which they diverge from standard English usage;
(c) introduce teachers to the techniques of developing and writing learning material for their pupils; and
(d) focus on the teaching skills which need to be brought to bear when helping children to develop their own skills in the use of language.

The interest aroused was widespread, and intensive work began, involving teacher educators, teacher groups, individual teachers, and classes of junior secondary pupils. This, in turn, led to the production of 12 instructional units for children in the age range 10 to 15, together with teachers' guides to the use of each unit. The 12 units are sequentially designed to give practice in speaking, reading, writing, spelling, reading for comprehension, and appreciation of literature. The grading is based upon the complexity of verb forms, commencing with the present tense and moving through the future, then the past to conditionals involving the use of 'could' and 'should', and of 'must' and 'might'.

Associated with the 12 units are 15 charts, on each of which are eight illustrations. The purpose of the charts is to motivate and to assist pupils to practise a particular usage (for example the correct use of the word 'must' in conversation with a neighbouring pupil).

A typical unit is Unit 3. This comprises 16 job cards. In the course of this unit, pupils encounter the use of 'can', 'can't', 'must', 'mustn't', 'need', 'needn't' 'should', 'shouldn't', 'may', and 'may not'. Tedium is relieved by frequent change of activity from, for example, reading to conversation to word building, to class teaching, to poetry reading, to prose reading, to discovery work (e.g. how rum is made), to creative writing involving short sentences, to work based upon familiar road signs, to interpretation of an abbreviated daily schedule, to class discussion, etc. Each job card is amusingly illustrated and very attractively designed with frequent variation of type face and letter size.

Other material developed specifically for teachers includes a Language Package, a Comprehension Package, and videotapes dealing with the skills of ques-
tioning and the methodology of pattern practice. So welcome was all this that the material in card form was reproduced 900,000 times for trial purposes, for the training of teachers concerned, and for general use in classrooms.

The Language Arts programme within the project was distinguished not only by the production of so much original and indigenous material, but by several other features, two of special note:

(a) Great care was taken to gain insight into both the linguistic assets and the blocks which can be encountered differentially among Caribbean territories. To this end, close attention was paid to the findings of relevant research, often that undertaken by the University of the West Indies, and by members of the staff of the School of Education. Collaboration with those who had done the research was often secured by their secondment from time to time to serve as counterparts to the Unesco experts, their travel and subsistence expenses being met from the funds earmarked for ‘fellowships’. In this way local language experience and insight were built into the language units in a sensitive and practical way. This, and the participation of teachers as authors, ensured for the language units not only their relevance, but their credibility and acceptability.

(b) The process of producing and designing the illustrated language arts cards was used, in the first instance, as a way of giving training to graphics artists and adding a new dimension to the quality of the educational materials produced by the project. The quality of the materials provides abundant justification for the policy of training counterparts within the region. The counterparts in graphic arts brought with them realistic, valid and recognizable pictorial representations, while the production work associated with the project gave them, in turn, opportunities to develop their own skills while contributing creatively to the enterprise as a whole.
VII. Developments in mathematics

It could be said that curriculum development in mathematics began in a summer institute held in 1972 at the School of Education on the Mona campus of the University of the West Indies. The institute was sponsored by the Organization of American States. It brought together for a four-week period teacher educators from the Bahamas, British Honduras, and Trinidad, as well as from Jamaica itself. Its two-fold purpose was to reconsider the mathematics curriculum of the schools in the light of a steady growth in the availability of secondary education, and to examine the problem of preparing teachers to implement mathematics programmes at the junior secondary level. The report of the institute re-stated the aims for courses in mathematics at the secondary stage, and set out a syllabus for a three-year training course for junior secondary school teachers. The proposals for the course encompassed 17 major topics and nearly a hundred sub-topics. For each main topic, the specific objectives of the teaching were spelled out, relevant problems were proposed, and reference sources were identified. The recommended programme was ambitious, and pre-supposed a lecturing competence more to be hoped for in the future than was consistent with reality at the time. However, the proposals could be said to have given a flying start to the subsequent work in mathematics of RLA/142. In addition to its specific recommendations, the report of the institute is noteworthy also for a substantial classification of learning objectives in general and a taxonomy of learning objectives for mathematics in particular.

Subsequent workshops were held in February and June 1973 under the auspices of the Project RLA/142. These brought together teacher educators from teachers’ colleges and supervisors of mathematics in the school systems of the countries. The first of these developed outline units for independent learning covering three topics: statistics, measurement, introduction to algebra. The second dealt with graphs, sets, and transformation geometry. Typical of the output of these workshops was the specification for each topic of the aims and objectives of the teaching both for secondary schools and for teachers’ colleges. Diagnostic tests and post-tests with solutions were prepared, as also

were resource materials and bibliographies for reference. In preparing the units of work on each topic, an independent learning mode was assumed, and in each case the ground to be covered was divided into roughly ten assignments. With graphs the work was taken as far as the representation of the logarithmic and the trigonometrical functions; with sets to elementary Boolean algebra; and with transformation geometry to proofs of the properties of circles and of quadrilaterals.

Substantial though the output of these two workshops had been, the six outline units developed by the participants were not yet considered suitable for testing in teachers’ colleges. With some units the back-up material was incomplete. With others, too great a reliance had been placed upon commercially produced sources. In particular it was considered necessary to divide each of the individual assignments of work into two components: an academic component and a professional one. The academic component would be concerned to impart to the student teacher the concepts and skills he himself would have to master before he was in a position to each them. The professional component would prompt the student immediately to think about, to plan, and to devise appropriate teaching strategies which would enable junior secondary pupils to assimilate, at their own levels of maturity, the same concepts and skills which the student teacher had himself just acquired. Accordingly, a third round of developmental activity was called for. This was organized, as before, on cooperative lines at workshops convened in Jamaica and in Trinidad.

A typical end product of the third round of developments is the unit on sets. This unit includes material for college tutors as well as material for students. The student teachers’ unit begins with introductory material. This is followed by a pre-requisite test, and then by a pre-test. The main work of the unit, which follows, is divided into nine assignments or ‘cards’. Each assignment involves an academic component (set out on cards A1 to A9) and a professional assignment (cards P1 to P9). For each card A, resource material is provided to help the student to master his academic assignment, and for each card P, possible professional activities are suggested to help the student to think out how he would teach what he had just learnt.

Associated with the student’s unit is the evaluation and record booklet. This plays a triple role: it leads the student through the tests and assignments in his study unit; it provides him with worksheets for each card A and for each test, including the post-test; and it provides him with worked answers to the A cards so that he can evaluate his own performance as he goes along.

The tutors' unit is a conglomerate of the students' unit and the students' evaluation and record booklet to which are added marking keys to the pre-requisite test, the pre-test and the post test.

Similar self-instructional unit packages, each comprising a tutors' unit, a student teachers' unit, and a student teachers' evaluation and record booklet were evolved for statistics, graphs, an introduction to algebra, transformation geometry and for measurement. Each package is an excellent exemplar of the self-instructional mode of learning, and a testimony both to the success of the co-operative approach to curriculum development and to the wisdom of the policy for development adopted by RLA/142.

The development of unit packages for self-instruction was not the only contribution to mathematics in the Caribbean. A number of territorial workshops were held to assist teachers and teacher educators in a particular country to come together to tackle a specific problem. Three of these deserve special mention as illustrative of the diversity of interest emerging within the region as a whole. One held in the Bahamas in 1974 exemplifies the educational strategies inherent in continuous curriculum development in mathematics. The report of this workshop reproduces the educational background to local development work, and goes on to suggest course objectives, learning theories and specific topics. It then itemizes consequential achievement tests, and concludes with a discussion of the administration and management of mathematics departments.

In contrast, a local concern in St. Lucia was with training for curriculum development. The report of this workshop illustrates how completed work can be used as a springboard for further work. In this instance the unit package on sets was scrutinized in detail for its content and methodology and then subjected to critical analysis. From this there emerged a wide range of proposals for future activity of a creative character.

Different again were the needs of British Honduras. Here, as the report makes clear, the aim of the workshop was to spell out in detail a new mathematics curriculum for the lower secondary schools of the country. Some 47 topics were put forward with suggested teaching procedures and achievement tests. Fully documented also are the developmental tasks given to the participants and the resource material provided to assist them. Indeed the account provides a valuable guide to the way in which classroom teachers can become creatively involved in the developmental process.

VIII. Developments in science

The inputs of the project in the area of science reflect a variety of influences: differences in sectorial requirements; the findings of a regional survey undertaken early in the life of the project; the recommendations of a specially sponsored regional workshop on integrated science and teacher education; and the basic assumptions of the project as a whole, which informed activity in all subject areas, and which made for the project's distinctive contributions to the individualization of learning.

Even before REG 142 came to be established, curriculum developers had been actively working on science in the Caribbean, notably in Trinidad and Tobago (WISCIP A and WISCIP B), in the Windward and Leeward Islands of the Eastern Caribbean (WISCIP C), and in Jamaica, especially under the auspices of the Science Teaching Centre on the Mona campus of the University of the West Indies. These prior developments implied a need for somewhat different forms of local support from RLA/142 as between those of Sector A, in the North, where the need for student teacher material was judged to be the first priority, those of Sector B, in the East, where material for teacher educators appeared to be the chief requirement, and those of Sector C, in the South, where classroom teachers were considered to be most in need.

In all three sectors, however, the conceptual approach to science teaching was seen to be an integrated one, and there is no doubt that the inputs of RLA/142 into this area of the curriculum were both inspired and powerfully influenced by the findings of the Barbados Workshop sponsored during the early years of the project by Unesco in association with CEDO. The report1 of that workshop is a formidable document. It provides comprehensive analyses of Caribbean courses in science which were then current. It appraises the place of science in teacher education, both pre-service and in-service; it highlights innovations in the teachers' colleges; and it reproduces in detail the findings of four working groups. These included a model unit in primary science, a model unit for students in training, and detailed proposals for integrated courses at both secondary and teachers' college levels.

The development work in the northern sector also took its cue from the findings of a regional survey, on the basis of which recommendations were

put forward in a position paper\(^1\) on the science content of lower secondary schools and the implications of such content for teacher training. In particular the paper made a plea for independent study in teachers' colleges, and gave an example of a learning unit based upon the concept of power in physics. The prototype unit was adopted as the norm for subsequent development work, which went ahead in a sequence of six workshops, all held on the Mona campus of the University. The writing tasks were shared among workshop participants on a team basis. During each workshop there were usually three teams, each actively involved in hammering some broad science theme into a self-instructional, self-evaluative, integrated unit for independent study by student teachers. Typical of the end product of this sequence of workshops is the unit on energy\(^2\). This takes the form of a self-instructional programme of twelve assignments backed up by all the resource material needed to work through the programme. Similar in many ways to the unit on sets, described in the previous section of this study, there are prescribed for each of the twelve assignments of the unit on energy the objectives of the assignment, the learning activities that are called for, and the subsequent procedures necessary for self-evaluation and evaluation by the student's tutor. Finally, at the conclusion of each assignment the student teacher is required to think out the plan of a lesson to be given to lower secondary pupils which would convey them, at their level of maturity, the same ideas as those embodied in the assignment through which the student has himself just worked. By way of illustrating the scope of the unit on energy, it is perhaps appropriate here to list the sub-topics dealt with in the unit. They are: force, work, power, kinetic energy, potential energy, heat, chemical energy, electrical energy, radiant energy, photosynthesis, and the idea of the conservation of energy.

Five other units were also produced by participants in the Mona sequence of writing workshops, namely Electricity, Chemical Change, Light, Ecology, Support and Movement, and The Earth and Beyond. Of these, the last two deserve brief mention as they introduce material not commonly found in junior secondary courses. The unit entitled Support and Movement hinges on the consequences of the needs for various kinds of support. Discussion of these needs leads into the concepts of shape, position, strength and movement. Similarly, the consideration of ways of providing support leads into discussions of the states of matter, flotation and streamlining. The scope of the unit entitled The Earth and Beyond may appear at first sight to be somewhat ambitious in that it includes the solar system, jet-propulsion and rocketry, exploration in space, meteors and comets, constellations and galaxies, and cosmology. The treatment, however, is simple, but sound and well designed to eliminate the verbiage of space talk, whether real or fictional.

All units are firmly founded on contemporary approaches to the teaching of science — approaches which involve observation, practical experimentation, hypothesis formulation, and hypothesis testing. The demands for scientific apparatus are, however, modest and very economical in financial terms. As exemplars of the independent learning approach to topics in science, the six units evolved by the Mona workshops deserve to be widely known among all teachers who favour the self-instructional mode of learning. Although environmentally based, the units could easily be adapted to any environment, without major modification.

The Mona workshops are also noteworthy for their contributions to the range of videotaped material evolved by RLA/142, and the draft scripts of two videotapes, 'Asking questions in science', and 'How to organize field trips', are reproduced in the report¹ of one of the workshops. The draft script of the videotape 'Blackboard presentation' is similarly reproduced in the report² of one of the workshops conducted in the Eastern Caribbean.

The development work in the Eastern Caribbean was directed towards the needs of teacher educators, assuming that they would interact with students in the conventional mode of face to face teaching. In all, 13 teaching units were developed, each unit providing sufficient material for six to 20 sequential lessons. A typical unit is Unit 9, entitled 'Perception: sound and light'³. This consists of 14 lesson plans set out briefly on cards under the usual three headings: objectives, activities and evaluation. In the course of the 14 lessons, consideration is given to the production and propagation of sound, its speed of transmission in various media, and to the reflection and refraction of beams of light. Throughout this sequence of teaching units, resource material is assumed to be available to the teacher educator in the shape of WISCIP and Nuffield materials. The impression gained, however, is that the sequence assumes a high level of scientific sophistication on the part of those for whom the units were designed, together with an uncommon ability to plan and prepare for each classroom encounter.

Development work in the south of the region was directed towards producing guides for classroom teachers whose job was to implement the Trinidad and Tobago Primary Science Programme. As with the teaching and learning units produced in the other two sectors, the guides were the end product of co-operative team work in writing workshops working within the framework of an agreed approach⁴. For instance, the guide⁵ to the first year of the five-

5. RLA/142. Trinidad and Tobago Primary Science Programme. Teachers' guide, level 2, year 1. University of the West Indies, 1975.
year primary course is divided into four main sections: Living Things; Health Activities; Earth and Universe; and Matter and Energy. Each section is subdivided into lesson plans giving helpful guidance on the aims of the lesson and how it might be conducted. As appropriate, the guide makes suggestions on how dialogue between children and teacher might develop, on activities which could well take place out of doors, and on simple experiments which are within the compass of primary school children.
IX. Developments in administration and supervision

To fashion the necessary tools for doing a job is one thing. To ensure that the job is done involves much more. The associated skills must be imparted, and the practitioner must be given the support, the encouragement, and (sometimes) the exhortation he needs to tackle the job. In an educational context, curriculum development is toolmaking. But change in the classroom will happen only if the teacher is trained to implement the new curriculum, and is encouraged by the school principal to put it into effect.

Recognizing the crucial role of supervisors and principals of schools in mediating change, provision was made during the planning of RLA/142 for alerting these key personnel to their responsibilities in support of innovation, and a Unesco expert in educational administration was appointed to organize relevant workshop activity. Workshops were convened in all three sectors of the region, and they brought together, in all, about 300 supervisors and principals of schools and colleges. The products of these workshops were a series of seven 'guidelines' and three reference units for educational administrators.

The first of the guidelines deals generally with all aspects of administration — communication, relationships between assistant teachers and principals of schools and colleges, the supervision of instructional staff, the induction into teaching of untrained members of staff, and decision making. Other matters covered by this guideline include the keeping of records of student background and performance, curriculum innovation, the problems of administration which are peculiar to primary schools and to secondary schools, the handling of staff meetings, and communication with parents. The guideline ends with case studies of barriers to communication and the nature of leadership.

The remaining six guidelines all deal with specific aspects of administration, but in greater detail than in the first of the series. They respectively cover staff meetings, the induction of untrained teachers, communication, leadership, decision making and innovation.

Of the three 'units' evolved by participants of the workshops, the third was actually devoted to the organization of workshops in recognition of the

2. RLA/142. Unit 3, workshop organization; administration and supervision programme. University of the West Indies, 1975.
The fact that workshops of the type pioneered by RLA/142 were likely to continue in the foreseeable future to be part of the educational scene in the Caribbean. As a compendium of facilitating guidance, the unit covers aspects of planning a workshop for administrators, reporting upon it, the development of assignments of work for participants, and the various types of activities appropriate to training in the art of administration — the use of case studies, role playing, simulation and other exercises.

The other two units are equally valuable as reference material for the individual administrator or as training material for administrators. They deal respectively with 'Reality' and 'Opinion', and each is cross-referenced to the other.

'Reality' is in two parts, the first of which comprises 21 case studies contributed by Caribbean administrators from their own personal experiences. Each invites analysis and the formation of opinion on appropriate action. When the reader has made up his mind what he would do in the situation described, he can compare his decision with the consensus of thought recorded in 'Opinion'. The second part of the unit entitled 'Reality' draws attention to the nature of leadership and the delegation of authority. Five exercises are offered on different aspects of leadership: assuming leadership, leadership in action, attitudes to leadership, styles of leadership, and types of leader. Finally, the problems of delegation of authority are considered under eight typical situations, and barriers to delegation are similarly examined.

Unit 2, entitled 'Opinion', opens with quotations from a dozen authors writing about leadership, decision making, innovation, supervision and the nature of authority. Ten checklists follow. These cover communication, induction training, supervision, decision making, delegation, co-operation between parents and teachers, and innovation. These same matters are then discussed in detail with reference, as relevant, to the actual cases described in the companion unit 'Reality'.

As a collection of documents dealing with matters which essentially depend upon the personal make-up of individuals, they are admirable in their avoidance of definitive conclusion. They record opinion as expressed by the individual and by the group, but they are careful to point out that issues are interwoven with the actual circumstances and with the make-up of those involved. The material, moreover, is readable, comprehensive and detailed. If it is lacking in reference to the innovations with which RLA/142 was particularly concerned, the more general character of the questions dealt with have at least the advantage of being universally valid as useful reference material in an area where training is all too frequently eschewed because of the sensitive nature of the matters which inevitably crop up.

X. Developments in librarianship and the custody of resources for learning

The most tangible outcome of RLA/142 was the creation, in quantity, of learning materials both for children of junior secondary age and for students in colleges of education preparing to teach junior secondary pupils. At the same time efforts were deliberately made to re-stock the libraries of the colleges with contemporary collections on teacher training. It was inevitable, therefore, that the steady accretion in schools and colleges of learning materials and of materials for reference would bring in its wake a need to generate know-how in the care, custody and the deployment within institutions of books and of learning materials on tape, film, film strip, video-tape and so forth. This need was foreseen, and an international expert was recruited to assist in generating knowledge of librarianship and in the training of librarians for their wider role as organizers and custodians of learning resource centres.

Activity in the sphere of librarianship began with a preliminary assessment of the needs of the teachers’ colleges and the needs of teacher-librarians in schools. A number of workshops were then organized both for college librarians and for teacher-librarians in secondary schools. In each of two sectors of the region a collection of books bearing on foundation studies was built up, and the collections were circulated to colleges in each sector so that tutors might judge the need for acquisition. In the event, at least 40 per cent of the books inspected by the college tutors were subsequently purchased by the colleges. A third task was the assumption of responsibility for the co-ordination of the ordering by colleges and by associated centres of the various materials developed by the Project as a whole, and the distribution of these materials from the production centres.

Most noteworthy of all, however, was the development of guidance material for college librarians and teacher-librarians in schools. This included a series of seven library manuals dealing with the administration\(^1\) of school and college libraries, circulation and record keeping,\(^2\) the functions and nature of school

and college libraries,\textsuperscript{1} the evaluation of the use of libraries,\textsuperscript{2} the care and maintenance of a library collection,\textsuperscript{3} the development of that section of the college library which students use when engaged in teaching practice,\textsuperscript{4} and the evolution of libraries into learning resource centres.\textsuperscript{5}

A self-instructional programme\textsuperscript{6} for college librarians was also produced. This takes the form of a problem-solving approach to the building up of college libraries. The programme is in two parts, the first dealing with checking the existing collection while the second comprises five units of study covering weeding, evaluation, assessment, determining imbalance and compiling lists for acquisition.

Also produced was a substantial manual\textsuperscript{7} for trainers of teacher-librarians in secondary schools. This includes nine units of study, and five cards designed to stimulate group discussion. The resource material needed for the study units is built into the manual, and the course covers library education, financial policy, library services, displays and exhibits, learning skills, stock-taking and the training of library assistants.

Material on video-tape was also produced, and associated with this a teachers' manual\textsuperscript{8} was written. One of the video-tape scripts\textsuperscript{9} was also reproduced in book form for student teachers to use as reference material. Finally, mention must be made of a singularly useful little manual\textsuperscript{10} for librarians, dealing with the design of special exhibits.

It was unfortunate for the region as a whole that the post occupied by the international expert could not be extended until the end of the Project and that no counterpart could be identified to work with the Unesco expert while she was in post. As a consequence, the work initiated could not be consolidated, nor

\begin{enumerate}
  \item Merriman, Stella. Care and maintenance of the collection. Library manual No. 5. University of the West Indies, 1974.
  \item Merriman, Stella. The learning resources centre. Library manual no. 7. University of the West Indies, 1974.
  \item Merriman, Stella. Building the main collection in a teachers college library. University of the West Indies, 1974.
  \item Merriman, Stella. The school library and the curriculum. University of the West Indies, 1974.
\end{enumerate}
can it be followed up so long as the present dearth of librarians continues. On the other hand, the materials relating to librarianship which were developed during the tenure of the expert are likely to stand for many years as authentic guides to the art and practice of librarianship not only in the Caribbean, but elsewhere in the world.
XI. Developments in educational technology

It will now have become very much apparent from what has already been written about REG/RLA 142 that the approach to curriculum development in all areas was a 'technological' one. That is to say that in all instances where new materials were called for, three basic questions were invariably posed: what is the aim of the message? what mode of communication will most efficiently carry the message? how effectively has the message been conveyed? Like all curriculum projects, the most frequently used mode of communication was the printed word, though REG/RLA 142 was unusual in designing its printed material primarily to serve the interests of self-instruction. On the other hand, in all areas of developmental activity, non-print materials were also produced — often in the form of videotapes. It was therefore a prime objective of the project to help educators to become conversant with the 'hardware' of communication, to appreciate the need for consumable 'software' and to learn how to produce it for themselves. The means to these ends was, of course, the workshop.

The Multimedia Production Centre was established by the project as a regional facility for the production and reproduction of educational materials including simple illustrated cards, master videotape models, silk screen printing and photographic production.

Quite apart from the regional workshops which involved the staff of MPC in giving training in the skills of using equipment, in developing simple instructional materials, the Centre provided a base for the training of all personnel involved in educational technology. ‘Asking questions on science’, ‘Blackboard presentation’ and the video tapes that accompany them are examples of efforts in this direction.

It was also a centre to which counterparts in the several subject fields were attached for short periods to become familiar with the use of the facilities and to develop material which could have regional use.

As the material produced by the project began to be used in teachers’ colleges, the colleges themselves felt the need for student teachers to improve the quality of the visual aids material used for teaching practice. This gave rise to a series of simple self-instructional booklets developed by the graphic arts personnel in the project to assist student teachers.
Skill in the use of hardware was achieved through practice, using the relevant manual. A series of five manuals were produced, all similar in format. The first of the sequence is typical. This deals with the videotape recording system. Its format is that of a self-instructional programme. The programme is broken down into 16 separate assignments. They include assembling the video camera, loading the video recorder, recording on video tape, playing back recordings, sound dubbing and general maintenance. In addition to the assignments, the manual provides a section on the care of the equipment, a checklist of operations to be performed when using the system, a glossary of technical terms, and appendices which illustrate the location of controls and the various parts of the apparatus. Other manuals in the sequence deal in turn with operating an overhead projector, operating a Zufra bicopy machine, operating a sound/slide projector, and how to use a cassette tape recorder in a creative way. These manuals are characteristically well produced. The instructions are concise and clear. At all stages the user is made aware of the purposes being served, and is guided on how to check his own performance. Their validity and their value as training material would apply in all circumstances where the apparatus in use is similar in type to that provided by UNICEF to the Caribbean institutions involved in the project.

The last of the manuals in the sequence of five, ‘The creative use of the cassette tape recorder’, not only teaches the skills of operating the machine, it also provides an introduction to the art of deploying the tool in a teaching situation. In this context two other booklets are worthy of mention, one dealing generally with the use of multimedia, the other dealing specifically with projected visuals. The latter is of particular interest in that it was designed as a consumable item, for it combines the features both of a self-instructional programme and of a work book. Beginning with a discussion of the various reasons for using slides as visual aids, the text goes on to consider what other media can be brought to bear in support of a slide presentation, and how to classify material on slides according to the role cast for it in the teacher’s plans for a lesson. Presentation is then dealt with in detail, after which follow-up and enrichment activities are also considered.

Covering a wider canvas, the booklet on multimedia teaching generally\(^1\) begins with a broad classification of the various media into those which are printed, those which are not projected and those which are projected. These are then itemized, and each item is evaluated for its potential contribution to the learning process. The role of the teacher is then examined in relation to the scope of the resources for learning that have now become available to him. Of necessity, in a booklet of only eight pages the treatment of each item is sketchy, but it makes its point and, for the uninitiated, it serves its purpose as a thought-provoking introduction to a complicated subject.

Training workshops for counterparts and co-tutors were held in all three sectors of the region. The workshops were designed to serve two main purposes: to reinforce skills needed in the care and maintenance of equipment; and to provide opportunities to evolve appropriate instructional materials. Their duration was usually five days. Participants worked sometimes as a group in themselves, sometimes as members of two or more smaller groups. Among the specific objectives of the workshop was one of imparting familiarity with the format of self-instructional materials. This was achieved indirectly by producing, in preparation for each workshop, guidelines for group activity in self-instructional form. Also prepared beforehand were the resource materials needed to work through the assignments or the 'job cards' as they were called.

Apart from giving practice in the skills of using equipment, it was customary to introduce participants to the tools of the graphic artist and to provide opportunities for using them to make, for example, transparencies for an overhead projector. The techniques for preparing lessons for microteaching were also imparted. Microteaching sessions with children were then undertaken by volunteers. Recordings of these sessions were subsequently played back and discussed by groups. For a detailed account of a typical workshop, reference is recommended to one of the reports\(^2\); a compendium\(^3\) of resource material is similarly available.

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XII. And the effects?

This question is always asked. It is a fair question, and it is right to pose it. Rarely, however, can it be answered in full. Certainly no attempt has yet been made to assess in depth the impact of REG/RLA 142 upon the education of children in each of the fifteen countries involved. Yet it is this that really matters, for ‘something better for children’ is at the heart of all educational projects. Here, in the absence of full knowledge, one can only surmise, but there is an abundance of fact upon which to conjecture.

Much of the fact emerges from what has already been recorded in this study. The achievements of the project which most clearly stand out are listed here. The Project:

(a) strengthened the libraries of each of the 21 colleges for teachers and that of the School of Education of the University by supplying them with a range of contemporary materials relating to all aspects of pedagogy;

(b) strengthened the colleges’ ability to employ contemporary resources for learning by supplying them with audio-visual equipment and other aids to communication;

(c) established in Trinidad a Multi-media Production Centre capable of supplying the whole of the Caribbean region with instructional materials of all kinds;

(d) made it possible for the colleges to augment educational materials produced centrally by producing locally needed materials themselves;

(e) developed and produced curriculum materials for schools and colleges related to the teaching of 10 to 15 year olds in the areas of language arts, mathematics and science;

(f) developed and produced materials appropriate to the training of librarians, school principals, supervisors and educational administrators;

(g) developed and produced materials suitable for giving training in many aspects of educational technology;

(h) encouraged and gave practical support to innovations in the education of teachers through microteaching, independent learning, the use of multimedia, and involvement in the process of curriculum development;
(i) established and carried through a training programme for counterparts and cotutors in teacher education, language arts, mathematics, science, administration and educational technology;

(j) demonstrated the feasibility of securing innovations of the curriculum by involving teachers and teacher educators in the process of development; and

(k) demonstrated the feasibility of producing material for training librarians, principals of schools, supervisors and administrators of school systems by involving such personnel in the developmental process.

The project was prolific in its output of reports, resource material, manuals of guidance and curriculum units. Reference has already been made to many of them. In all, 122 documents were produced. The quality of the curriculum and training materials is particularly high, and most of these would be found to have relevance to educational development elsewhere in the world. They exhibit, moreover, a remarkable harmony of format and approach, which is all the more striking when account is taken both of the number of contributors — 23 Unesco experts, 54 counterparts, 150 cotutors and many more teachers, principals, supervisors, administrators — and of the extent of the region throughout which their activities were deployed — 15 countries spread over 2,000 miles of ocean. Indeed, it could be said that the greatest achievement of the project was to have secured a consensus on goals and on methods of working among so many participants.

The consensus reflects convincing leadership and willing acceptance. As to the former, records testify to firm direction from the centre, to wise delegation of responsibility for professional activities to the experts, and to the issue of memoranda. It would also appear that the appointment of the pre-project team by Unesco paid handsome dividends. The exploratory year gave an opportunity for a thorough review of the resources of the region and of its specific needs, territory by territory. The review in turn gave rise to a comprehensive account of what was afoot, what needed to be done, and how it was intended to tackle the tasks envisaged. A design for the project in outline thus emerged, and possible ways forward were sketched in. The resulting document clarified for members of the staffs of the fifteen ministries the intentions for the project. It also became a manual of guidance for members of staff subsequently appointed by Unesco. Checks on progress were regularly made, and progress was sometimes examined in depth. For instance, a three-day workshop held early in 1973 enabled the team leaders to examine together what each had done and to lay concerted plans for the future.

So much is clear. Less tangible is the influence upon acceptance of the relationships between experts, counterparts and cotutors. Counterparts were chosen for their expertise on a regional basis to partner a particular expert, and to work with him as a team member for a particular developmental activity. Cotutors were chosen on a territorial basis. They participated, according
to their specialism, in workshops conducted in the sector to which they belonged. Thus a network of communication was built up which linked local, regional and international educators in a co-operative endeavour to which each contributed on equal terms.

Presiding over the whole enterprise was the University of the West Indies with all its prestige and time-honoured authority as the arbiter of standards of teacher education and as the acknowledged source of innovations and guidance on pedagogy throughout the English-speaking Caribbean.

**Evaluation**

But the project achieved more than just this. While a summative evaluation has not been undertaken, continuous or formative evaluation of ongoing activities of the project was evident in every aspect of its activity. In this way it was possible to obtain some evidence which served to improve learning and teaching, to clarify and modify objectives and to determine what changes were needed to ensure effectiveness of the exercise. It has therefore been possible to assess not only the suitability and relevance of the materials provided but also the effect of the training strategies developed and the performance of the students of the 10-15 age range as well as the quality of the training of personnel and of relationships.

A few examples will help to show how the project activity contributed to improved pupil performance. The materials in language arts, designed to meet the needs of the junior secondary school pupil (i.e. the 10-15 age range), were field tested and results evaluated from the point of view of (a) interest for the age range, (b) difficulty level and (c) relevance of the problem dealt with. The field tests revealed that in general, (i) the attractiveness of language arts materials induced a greater interest in language arts than previously, (ii) the performance of students in the subject had improved considerably, and (iii) that the materials were in strong demand.

Another group of students to whose needs the activities of the project were geared were the student-teachers. The evidence suggests that (i) adequate time was being provided for microteaching, (ii) a significant number of teachers' colleges were engaged in microteaching and that (iii) microteaching was used not to replace practice teaching but as a means to developing teaching skills prior to teaching practice. Comments made by teachers' college staff emphasize the confidence with which first-year students approached their block teaching practice. Some of the preliminary findings of investigations from four teachers' colleges which were emerging suggested that not only had first-year student teachers improved their teaching skills significantly through microteaching, but that an analysis of their performance through interaction analysis revealed that they were also beginning to pay attention to aspects of teacher/pupil interaction hitherto ignored, namely the ways in which the teacher accepts and clarifies feeling, praises and encourages pupil behaviour, or uses and develops ideas suggested by pupils. In short there was an attempt to use indirect teacher statements rather than the almost exclusive use of direct teacher statements.
A significant number of teacher trainers participated in the development, modification and assessment of the materials. For example, foundation tutors of teachers' colleges participated in a workshop intended to demonstrate as its outcome the development and production of a self-instructional unit. At subsequent workshops, they used the approach in developing material to support microteaching activities in teachers' colleges. Self-instructional units like 'Individualizing instruction' and 'Higher order questioning' are examples of this approach. Thus curriculum and training materials development experience cannot have failed to affect the participants and their work, which was done, moreover, not only in the foundations area but also in other academic areas.

No assessment of project RLA/142 is complete without reference to the Counterpart Training Programme. The counterpart system was devised with emphasis on training within the region. Outcomes of this emphasis are stated below.

(a) A larger number of education personnel was able to receive training by being actively involved with the project and its activities than was possible under traditional counterpart training models. In any year of project operations, approximately 33-35 counterparts were associated with the project, working with specialists in language arts, mathematics, science, teacher education, administration and supervision, educational technology, graphic arts and with audio-visual aids technicians.

(b) A large spread of personnel throughout the region was able to identify with the project and work on developing materials and skills needed for tackling the problems of teacher training and curriculum development in the region.

(c) It became possible to strengthen and build up resources of educational institutions in a meaningful way. The training was directly related to the problems and to job situations. In this way it was possible for counterparts to develop materials and skills, to test these out in their institutions and provide feedback for modification.

(d) Flexible approaches were developed to training the counterpart without disruption of ongoing professional activities in the several school systems of the Caribbean territories. This arrangement, more than anything else, showed how it is possible to maximize the use of personnel in the region for the development of skills, materials, etc., for institutions of the region.

(e) The counterpart training programme involved West Indians in the design of new curriculum materials, in their research and development, in their implementation and evaluation. For example, in language arts, counterparts and cotutors took part in:

(i) drawing up project objectives;
(ii) prior testing children to identify areas of weakness in language;
(iii) developing a radically new (for the area, at any rate) approach to language teaching;
(iv) constructing a prototype unit of work;
(v) sequencing teaching inputs for all subsequent units;
(vi) writing up language arts materials of all sorts for inclusion in units of work;
(vii) programmes designed to provide relevant insights into language, language learning and teaching;
(viii) training their respective island’s pilot teachers;
(ix) on-going supervision of the pilot project.

Participants involved in the counterpart training programme completed a questionnaire on their training and the perceptions of the training programme are set out in a document entitled ‘The counterpart training programme’. The data show clearly that, in the view of the respondents,

(a) the counterpart training programme was relevant to their needs and problems,
(b) counterparts had developed certain new ideas, concepts and skills clearly attributable to the project;
(c) there was satisfaction with, and a continuing need for the activities in which counterparts were involved.

Professional growth undoubtedly took place, though it was uneven, in that some counterparts benefited more than others. Nonetheless, a valuable bridgehead was built from which further developments in the region can be launched.

One of the documents on workshop organization produced by the project makes the point that

‘the lecture seminar, talk shops, do have occasional place in our educational institutions, but in general we have long suffered from an overdose of rhetoric. Action, free communication and production call for a different approach. The project workshops have been an attempt to move towards this something different’.

The regional workshops organized by the project brought together educators previously isolated, enabling them to pool ideas and to contribute to the development of the objectives of the project. The emphasis on the job-card approach to problems was extremely useful in breaking down a pervasive use of global descriptions of problems, providing instead useful practice in analysis of problems, and encouraging the pursuit of objectives that were manageable and whose outcomes were measurable.

The ‘workshop way’ with its systems approach and related strategies on the one hand, and its emphasis on individual and group activity on the other made unmistakably clear the practicability of using educators in the Caribbean region to develop and produce educational materials for the region, and in the process provide professionally enriching experience and training of participants. This is borne out by comments on counterpart training and the value of resource material. It will suffice to point out that the major workshops in each of the three sectors of the region were evaluated in respect of workshop objectives, participants’ performance, workshop techniques, workshop activities and output. The results showed that
(a) Participants are most productive when they are brought together to produce ideas rather than to receive them from someone else;
(b) The approach maximizes individual and group effort;
(c) The approach was highly productive as a vehicle for training and production.

There are many aspects of RLA/142 activities which cannot yet be evaluated and where the ultimate outcomes will depend on the strength and efficiency of follow-up activities. The Multimedia Production Centre is one such aspect. For example, in any peak year of project activity there were a number of regional workshops in a wide range of subjects. Unless a level of funding could be maintained to keep alive some of these workshops, then the facilities would not be maximized. In the case of the closed circuit television studio, regional workshops in teacher education more particularly were necessary if the facilities were to be maximized.

An up-to-date assessment of the position reveals that the MPC has retained its complement of local staff. In the areas of printing, microteaching and making charts, the facilities are very well maximized. Present trends indicate that it would be difficult for staff to cope with much more in these areas. It has continued to organize courses for the training of educational personnel in educational technology. In fact, if the efforts of teachers’ colleges and the School of Education to develop a bank of videotapes and simulation packages for student teachers are successful, then the MPC television studio could again play a vital role in supporting teacher education programmes in the region.

The MPC was central in the production of instructional material of good design and especially in integrating learning/teaching packages with the media in the interests of independent learning. An outcome of the work of the project has been interest in, and in some cases the setting up, in certain territories, of a curriculum centre for in-service training and for the development of curriculum materials on a national scale.

Finally, two basic factors played a major part in the success of the project. The first was the decision to have an exploratory or pre-project year. This provided an opportunity to assess carefully and well ahead of field operations the resources of the region as well as the activities that were taking place in an effort to cope with the educational needs of the system. As project design and strategies became clarified and as Unesco experts assumed duties, it became possible to orient them, as well as personnel associated with the project, to the strategies. In this way a certain unity and thrust was achieved while allowing for flexibility to strengthen on-going innovative activities. This pre-project year was in many ways crucial to the entire enterprise.

Presiding over the whole enterprise, and taking full advantage of its institute-building potential, was the University of the West Indies. This institution has always had an impact on education in the region. Moreover, the three main campuses provided a bridgehead from which the University assisted with in-service teacher training programmes as well as curriculum development in the
several Caribbean territories. The project found a valuable setting in which to operate. What it has achieved is a step forward in developing, producing and testing a range of materials needed for a diversified curriculum. This, no doubt, will facilitate the work of the School of Education, UWI, in its efforts to assist territories with the development of their education systems.

At the same time, the creative experience of helping to develop the curriculum and training materials produced by the project will have had a profound effect upon all who participated in the workshops, and will undoubtedly affect the influence they will exert as teachers or teacher educators for the rest of their working lives. Directly or indirectly, therefore, Caribbean children are likely to continue to benefit from the project for many years to come.