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DISTANCE EDUCATION IN THE CARIBBEAN

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CONTENTS

CHAPTER FIVE

1.0 INTRODUCTION AND BACKGROUND

The English-speaking Caribbean extends from Belize on the Central American mainland, across to Jamaica and the Bahamas Islands, then through the chain of islands which delineates the Caribbean Sea from the Atlantic Ocean - from the British Virgin Islands at the northern tip of the chain, to Barbados in the south east, on to Trinidad and Tobago just off the Venezuelan coast - and further south to Guyana on the mainland of South America.

The island countries are small and many of them are densely populated although the absolute sizes of the populations are small. The mainland territories have relatively small populations and have to contend with large separation between rural and urban populations. Some indicators are given in Table 1. The total population of the region is only about 5.6 million.

Table 1. Some Country Indicators for the English Speaking Caribbean.

Country	Area (Sq.Mls.)	1982 Population (Thousands)	1982 Per Capita Income (US$)
Anguilla	35	7	800
Antigua/Barbuda	171	77	1,520
Bahamas	5,380	219	4,200
Barbados	166	250	3,780
Belize	8,867	152	1,740
B.Virgin Islands	59	12	3,700
Cayman Islands	100	18	9,400
Dominica	290	74	850
Grenada	133	106	890
Guyana	83,000	920	428
Jamaica	4,411	2,228	1,160
Montserrat	39	12	2,400
St.Kitts/Nevis	103	45	1,200
St.Lucia	238	124	1,020
St.Vincent	150	100	740
Trinidad/Tobago	1,980	1,200	5,200
Turks/Caicos Islands	166	8	2,000

There are substantial distances between some of the countries: Nassau, Bahamas, is 950 miles from Belize City, Belize, and some 1,800 miles from Port of Spain, Trinidad. Transportation between the countries is reasonably good but can be time consuming, even by

air. A trip from Kingston, Jamaica, to Port of Spain, Trinidad, from the time of check in for departure to completion of customs formalities on arrival, will often take as long as seven hours and there are no direct flights connecting any of the countries with Belize or the Bahamas.

2.0 CARIBBEAN EDUCATIONAL SYSTEMS

The Commonwealth Caribbean possesses an almost unique educational homogeneity compared with other regions. The territories make use of similar systems of teaching, similar curricula, a common examination system involving the same methods of assessment, and prepare students for entry to the same University.

The Educational Objectives of the Caribbean Governments

The Governments of the Region share many educational objectives and programme directions aimed at improving the quality of education and expanding the school populations. These include the development of curricula and educational materials and upgrading the skills of teachers, management and supervisory staff. Education of the handicapped is also receiving attention. Each territory will, of course, have its own particular needs but some territories suffer very much from a shortage and rapid turnover of staff. At the tertiary level there is also the problem that in several countries, although the needs may be urgent, the absolute size of each requirement is quite small so it is economically difficult to fill by local training. There is the further difficulty of the isolation of the professional which is being increasingly recognised as a real contributer to the brain drain. The large measure of common ground, standards and objectives suggest the likelihood of an aggregation of efforts in education and training with the aim of providing improved services at affordable costs.

The Present Status

The educational system in each territory is administered by a Minister who is responsible for an overall development and operations. The Governments all provide, at least to some extent, pre-school, primary, secondary, special and post-secondary level education, including vocational and teacher training programmes.

Children in the Commonwealth Caribbean enter the formal education system at about six years of age. After five years at the primary level there is an examination, known as the eleven plus or common entrance, which is the sieve for selection to the "academic" stream of the secondary level. Another five years brings the student to the Ordinary level examinations of the Universities of Cambridge, London or, more recently, the examinations of the Caribbean Examinations Council. These are school leaving examinations for most of the students who then seek employment, entry to the tertiary system, or specialised training.

There is no easy measure of performance of an educational system. Certainly a considerable number of Caribbean students perform excellently by any standards, and the intake into the university, although this already selects from those who have been successful in the school system, perform reasonably well. But it is commonly held that much is wrong with the Caribbean educational system. Students, parents, teachers and governments complain, often along the lines of the following quotations extracted from a recent manpower study on the Eastern Caribbean states:

- ".. the existing institutions for providing trained teachers and agriculturists are incapable of meeting the national needs. This condition is unlikely to be changed radically in any of the states examined in the near future."

- ".. There is a crippling lack of persons with degrees in Agriculture. Since 1968 for example, there have been no new B.Sc. graduates ... The extension arm is especially weak - most of the extension officers having experience in sugar technology only."

- ".. There is only one Geography teacher among six secondary schools; and someone from India was hired to teach English."

- ".. In many instances subjects are being taught (in secondary schools) by GCE "O" level graduates."

- ".. 81.6 percent of those who sat the "O" level examinations (in 1976) gained 0-3 passes only."

- ".. subjects such as Biology, Chemistry, Physics and French are often not taught for lack of tutors.."

Some of the solutions are obvious: increased numbers of teachers in training, better salaries, and higher capital and recurrent funding; but most of the region cannot find the funds to put these into effect. It appears, therefore, that advances will have to include new tacks. The University of the West Indies is pursuing one such.

The University of the West Indies

The University of the West Indies (UWI) is one of only two surviving regional Universities; the other is the University of the South Pacific. UWI has eight faculties: Agriculture, Arts and General Studies, Education, Engineering Law, Natural Sciences, Medical Sciences, and Social Sciences. There is some duplication of faculties across the campuses but Agriculture and Engineering are exclusively in Trinidad and the second and third years of the three year undergraduate law degree are in Barbados. The first year of law is

taught on all campuses and also at the University of Guyana. The Medical School is primarily in Jamaica but clinical training is also done in Barbados and in Trinidad, and a new medical school is being developed in Trinidad.

Undergraduate Programmes

The undergraduate programmes at UWI in general require three years of study after the normal 'A' level matriculation although some faculties offer a fourth, preliminary, year. Medicine is a five year programme followed by two years of internship.

Postgraduate Programmes

All the faculties prepare students for higher degrees including doctorates. Most post-graduate students are from the region but some faculties attract students from many other countries.

Extra Mural Centres

The Extra Mural Centres are the focal points for the University in the non-campus countries. The Centres are managed by Resident Tutors, whose responsibilities include the development and maintenance of educational programmes appropriate to the needs of each particular country, especially in adult education. They provide liaison and feedback between the University, Governments, and the respective communities. These centres are of course a major resource for distance teaching.

The growth of student numbers is shown in Table 2.

Table 2. Student Numbers at UWI

Year	Men	Women	Total
1948/49	23	10	33
1951/52	152	53	205
1954/55	275	109	384
1957/58	354	201	555
1960/61	657	320	977
1963/64	1,465	722	2,187
1966/67	2,047	1,212	3,259
1969/70	2,914	1,713	4,627
1972/73	3,739	2,587	6,326
1975/76	3,994	3,263	7,257
1978/79	4,477	4,042	8,519
1979/80	4,762	4,224	8,986
1980/81	4,684	4,374	9,058
1981/82	4,830	4,713	9,543
1982/83	4,704	4,869	9,573
1983/84	4,844	5,182	10,026
1984/85	5,007	5,565	10,572

The breakdown by campus for 1984/85 was Mona - 5188; St. Augustine - 3197; Cave Hill - 1641.

UWI is being asked to cope with a great many new demands now and in the years ahead. Because the level of funding under which the University is operating does not take all these into account, the demands being made on its staff and systems will be multiplied enormously. It may well be that telecommunications will help to extend the current resources and make the tasks easier.

3.0 DISTANCE EDUCATION IN THE CARIBBEAN

Until after the end of World War 2 education in the Caribbean was very much for the privileged and those who were brilliant and fortunate enough to win one of the relatively small number of scholarships to secondary school, the rare scholarship for study abroad, or those who took the then bold step to work and study in the United States.

This system may have met the needs of the times because most of the relatively few well trained in whatever field were imported and dependence on Britain was pretty much complete. But nevertheless there was a number of persons who pursued higher education by means of various correspondence courses, originating from Britain, and received qualifications in the Arts, Accounting, and Law for example. Indeed some of the famous names in the region received training in this manner but the rarity of success must attest to the difficulties which they faced.

The changed political scene consequent on the independence of most of the Caribbean countries and the general acceptance of the value of an educated population ensures that education is now regarded as a "right". Increasingly it is understood that the region requires relatively large numbers of well-trained people in its work force which comprises less than 1% of graduates. Not only the young but many persons who missed opportunity earlier and those who require continuing education form a pool which represents a very significant demand. But in the face of great need funds are scarce and since traditional education grows ever more expensive distance teaching has become a possible alternative worth the closest examination.

Educational broadcasting has been one approach. Radio and television have both been employed with some success particularly for the teaching of literacy but it seems fair to say that neither has so far been incorporated properly into the mainstream of the educational systems. On the other hand the University of the West Indies has initiated an interactive distance teaching network which serves mainly the tertiary and professional levels.

UWI's Involvement in Teleconferencing

UWI began experimenting with telecommunications in 1978 as one possible way of meeting the region's pressing demands for education. During the period up to December 1985 the main support funding and technical assistance was provided by the Science and Technology Bureau of AID Washington.

Project Satellite

The introduction was Project Satellite, an experiment in 1978 which lasted for two months. It linked the Mona and Cave Hill campuses via two NASA satellites in the Applications Technology Series: ATS-6 for outgoing full motion video from Jamaica and ATS-3 for return audio. The Extra Mural Centre in St. Lucia joined in for the final two weeks, during which two major seminars centered in St. Lucia were shared with the other sites.

The programmes included discussions on rural medical care, agricultural research, the nurse practitioner programme, family-life education in schools, the education of the deaf, early childhood education, and University administration. An audio conference was held to demonstrate teleconferencing over extremely large distances: the Mona and Cave Hill campuses held exchanges with PEACESAT sites in Suva, Fiji; Niue, Rarotonga, Cook Islands; Honolulu, Hawaii; Tarawa, Kiribati, Wellington, New Zealand and Santa Cruz, California. The link between the ATS-1 satellite used across the Pacific and ATS-3 used by UWI was via Denver, Colorado.

This experiment and the project report were well received and led to support from USAID to carry out the Caribbean Regional Communications Study.

Caribbean Regional Communications Study (CARCOST)

This was a feasibility study to determine whether, and how, interactive distance teaching and teleconferencing could contribute to education and public service in the Caribbean.

CARCOST allowed UWI staff to visit several distance teaching projects and to carry out studies on selected Caribbean problems and possible applications to them of some of the communications technologies. Demonstrations and some distance teaching experiments were performed. The report concluded that in the Caribbean states it hardly seemed possible, if limited to "conventional methods", to expect real advances in many of the problem areas in the near future. This conclusion was based on:

(1) the small scale of even urgent needs in countries of small populations;

(2) the isolation of the countries;

(3) shortages of trained personnel and the severe lack of funds for present needs, let alone future development.

The report suggested that the appropriate use of telecommunications, coupled with the willingness of the countries to share so that needs could be aggregated and met in a more economical manner, might be a way forward. The draft report was discussed with Ministers of Education and their nominees and received their full support.

The major recommendation of the CARCOST report was for a five year pilot with particular emphasis on the teaching of the first year of the B.Sc.(Social Sciences); In-Service Teacher Training; Health and Agricultural Applications; and University Administration.

That report emphasised that the successful use of teleconferencing techniques for educational purposes in the Caribbean must depend heavily on the simultaneous development of other aspects of educational technology, i.e. the use of print, audio-visual and other media, which would, hopefully, also help to enhance the usual teaching in the University and in other institutions in the region. The report very much favoured an interactive rather than a broadcast system because of the clearly expressed wish of potential participants, particularly in the more isolated populations, to communicate in real time; this would be necessary for medical consultations.

The recommendations of the CARCOST report were fully accepted in principle and led to the University of the West Indies Distance Teaching Experiment.

4.0 UNIVERSITY OF THE WEST INDIES DISTANCE TEACHING EXPERIMENT (UWIDITE)

UWI was anxious to have a satellite based system with small ground terminals covering the fourteen contributing territories but this was not possible so the number of countries had to be limited and the regional telephone service to be used.

An agreement for the support of a three year long project was signed with AID in May 1982. AID provided a grant of US$600,000 over a three year period for salaries and other support. Furthermore, AID provided the audio equipment for five teleconferencing rooms; about US$220,000 for the communication costs; and funds for technical assistance and training. The CARCOST report provided the planning blueprint which, indeed, has been adhered to remarkably closely.

Other organizations have contributed to the purchase of equipment or the funding of particular programmes. These include the European Development Fund which provided funds for telewriters, Johns Hopkins Programme for International Education in Gynaecology and Obstetrics (JHPIEGO) for continuing medical education programmes

in reproductive health for doctors and senior nurses; the Commonwealth Foundation to support a programme for training secondary school technicians; and of course, the University of the West Indies. The Governments of St. Lucia and Dominica have also contributed.

The network was activated on March 7, 1983 too late for meaningful academic work during the 1982/1983 year. Nevertheless, some useful work was done and a great deal of staff had the opportunity for training.

The project was implemented by the UWI and AID through its prime contractor, the Washington based Academy for Educational Development (AED). The Academy undertook responsibility for planning, procurement of equipment, installation, some training of personnel, and the provision of technical assistance.

The Organisation of UWIDITE

A Project Office was established within the office of Pro-Vice-Chancellor G.C. Lalor, who is Project Director. The activities at both the Cave Hill and St. Augustine campuses are coordinated by Pro-Vice-Chancellor Rudolph Goodridge (who took over from Pro-Vice-Chancellor Keith Hunte), and Pro-Vice Chancellor Max Richards, respectively. This includes liaison between the Project Office and the campus, local government, telecommunications authorities, and, of course, the campus community. The Resident Tutors are responsible for the sites in the non-campus countries.

Advisory Committee

The Vice-Chancellor appointed an Advisory Committee to:

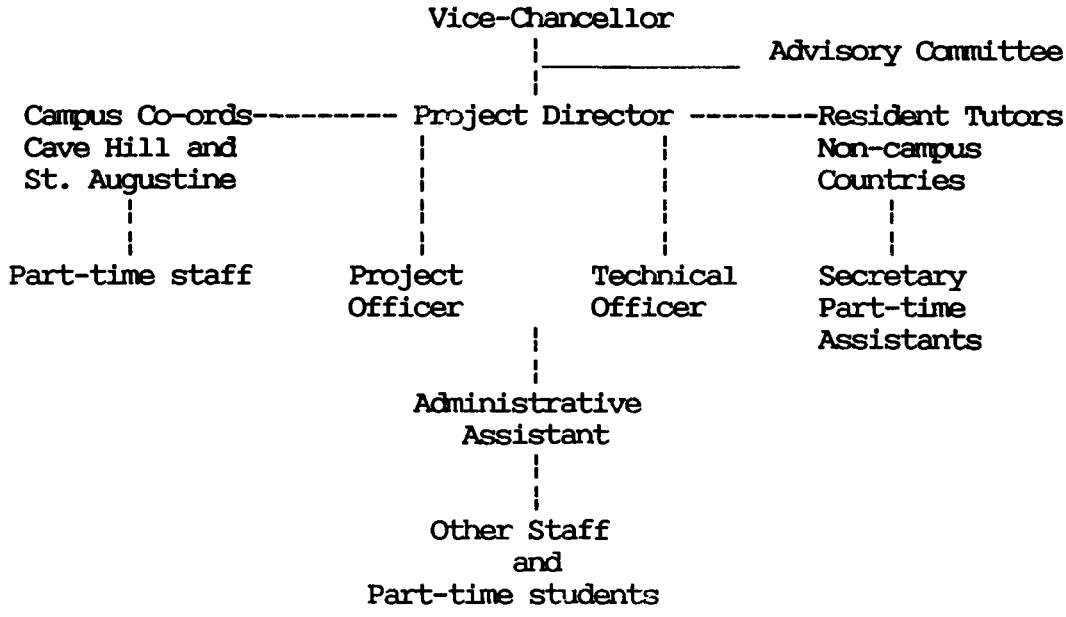
* advise on distance teaching policy;

* contribute to the evaluation and planning for subsequent operational services;

* serve as a conduit for information and feedback between the University and the project.

Organisational Structure

The organisational structure is shown below:



Description of the System

Because it was not possible to obtain a fully satellite based system the network makes use of the normal commercial telecommunications facilities. One result is that there are as many as eight independent companies involved. This large number of carriers makes for an element of confusion. In hindsight it would have been much simpler to have worked more closely in the design and operational development of the system with at least one of the carriers, say Cable & Wireless. This would probably also have encouraged more interest and participation on their part.

The network is a dedicated four-wire telephone link of bandwidth 300 Hz to 3000 Hz. This differs from usual two-wire telephone circuits in that a separate pair of wires is used for incoming and transmitted signals. It also costs more but the potential quality is very much higher since crosstalk is reduced and it is possible to disconnect the transmit signal from a site which has become noisy thus converting it to receive only.

The operation is as follows: from, for example, the Mona campus the signal travels by a four-wire telephone line and by microwave circuit to the international gateway. It is relayed via an INTELSAT satellite, to the corresponding ground station in Trinidad and, by a microwave link, to St. Lucia which is the hub of the system. From there it goes out to Dominica, Antigua, and Trinidad by microwave circuits and to Barbados by tropospheric scatter. The final link to all the University sites is by four-wire telephone lines.

Teleconference Rooms and Equipment

Each teleconferencing room is equipped with at least six microphones, two loud-speakers, slow-scan television (SSTV) equipment, and a telewriter for on-line use. For off-line use, each centre is provided with video cassette playback facilities.

Audio Equipment

The audio equipment consists of:

1. Telephone termination equipment
2. Teleconferencing equipment
3. Telephone handset.

Video Equipment

Initially there were no plans for visuals but an insistent demand for some sort of visuals built up very quickly. This led to the installation of slow scan television, video cassette recording and playback facilities, and telewriters.

Computers

IBM PCs are attached via modems to the system. These are used for data and document transfer.

X-Ray Film Viewer

This was found useful to allow the exchange of information on x-ray images by medical practitioner

Programmes

A wide variety of programmes was offered not only to meet a spectrum of needs, but also to obtain data for an assessment of those at which a permanent system might aim. There were two general classes of educational programmes: one was based on existing university courses and allowed formal university certification; the other was specially designed for some particular group of participants.

The programmes included:

1. Administration
2. Inter-campus Cooperation in Undergraduate Programmes
3. Outreach Programmes
4. Training of Science Technicians

5. Agriculture

6. Health

7. Social Sciences and Law

8. Education

Examples of Programmes

Science Technician Training

This programme was designed to improve support activities in school laboratories. Four courses each of six months duration were provided and a total of 123 technicians were trained. The programme was mounted at the request of the Commonwealth Association of Science, Technology, and Mathematics Educators (CASTME) as a result of a regional seminar and the Commonwealth Foundation Conference, both held in Barbados in April 1982. The project was supported by the Commonwealth Foundation.

The course consisted of the seven modules in Table 3.

Table 3. Modules Developed for the Laboratory Technicians Course

Module I :	General Laboratory Safety
Module II :	Laboratory Management
Module III:	Laboratory Apparatus and Techniques
Module IV :	Solutions
Module V :	Electricity
Module VI :	Basic Biological Techniques
Module VII:	Basic Mathematics For Laboratory Technicians

Supplemental learning activities were designed to take the place of formal laboratory sessions.

The students were primarily laboratory technicians employed in secondary schools. There was a general requirement of at least one science subject at the GCE 'O' level and passes in other subjects, but a few had no 'O' levels and some had six or seven and even 'A' level subjects. Laboratory technicians from research, hospital, and industrial laboratories, and some teachers from schools without technician support also participated.

The ages ranged from 18 to 30+ years, and the range of work experience was quite varied. This mix of age groups and work experience probably contributed to the good levels of interaction, as too did the small size of the student group at each site.

The students received both end of module and end of course tests which even had an external examiner.

One hundred and one participants received training in this programme. Thirty (30%) did not sit the examinations, but of the remainder the 69 successes represent a pass rate of 97% which seems good evidence that distance teaching is valuable at the science technician level. Interestingly there seemed to be no correlation between numbers of `O' levels and performance in course tests.

The one consistent criticism was the lack of formal practical sessions. The students themselves were expected to apply what they learned on the network in their day to day work, and some additional activities were arranged in some of the countries but the desire for structured practicals remained strong.

Agriculture

Agriculture is one of the most important sectors of the Caribbean economy and is receiving increased emphasis throughout the region. Agricultural programmes were therefore a key element for consideration for distance teaching but relatively little has so far been done in this area on UWIDITE. Nevertheless, there was some interesting work which is summarised in Table 4.

Table 4. Summary Of Use of UWIDITE for Agriculture-Related Topics

Year	Topic	Sites	Total Hrs.
83/84	General Discussions	All	7
	CARDI	J,B,T	10.5
84	Agric. Extension	J,B,T	3
	Student research Support	J,B,T	3
	Parasitology	J,St.L	8
85	Integrated Pest Management	All	6
	Farmtech '85	All	6

Integrated Pest Management

The only teaching programme related to agriculture has been an in-service Integrated Pest Management (IPM) course for Agricultural Extension Officers, Public Health Inspectors, and Commercial Pest Controllers.

This course ran for 8 hours, 1 1/2 hours per week, from January 15, 1985. The topics were:

Principles of integrated pest management

Recognition and identification of pests

Study of pests

Economic study of the pest

Methods of pest control

Pest Management

Students were provided with print materials as usual. A local supervisor assisted with practicals and demonstrations. Panel discussions were included.

The participants were required to carry out project work - investigating, observing, and classifying host/parasite relationships in crop plants, livestock, and domestic animals; investigating commercial pesticides sold and used locally; biological and cultural control practices, and the developing of an IPM plan for a particular local pest species.

A total of 37 students participated as follows: Barbados 5, Trinidad 8, Dominica 5, Antigua 11. Certificates of participation were awarded at the end of the course.

Farm Tech '85

Farm Tech '85 was a Seminar/Exhibition on Modern Technology for Jamaican Agriculture. It was held January 25 - February 1, 1985 in Kingston, Jamaica. Some 22 papers and 8 case studies were contributed by agricultural scientists from Jamaica, Trinidad, Barbados, Dominica, Canada, Mexico, Nigeria, the United Kingdom, and Japan.

Four teleconferences were used to extend the seminar to participants in the other countries on the network. These covered the following topics:

1. Technology and Agricultural Development in Tropical Countries

2. Advances in Ornamental Horticulture

3. New Technologies for Small Farmers

4. Artificial Insemination Technology in Cattle and Goats.

Health and Nutrition

The Faculty of Medical Sciences has facilities at the Mona campus; the Mount Hope Medical Complex in Trinidad; and the Queen Elizabeth Hospital in Barbados. The Faculty was much interested in the applications of teleconferencing for teaching consultations, administration, and to a lesser extent in developing patient care.

Cardiology

Consultants from the Departments of Surgery, Anaesthetics and Intensive Care, Medicine, and Child Health, and Technologists from ECG and Radiology departments, who have special interests in Cardiology, have been holding monthly consultations of one hour each as of November 2, 1984. These have been mainly with members of the Cardiac Unit and Junior Medical Staff of the Queen Elizabeth Hospital, Barbados.

Teleconferencing allowed cost-effective multi-party discussions of cases in the various countries. It was particularly valuable when deciding about the transfer of patients from one country to another for surgery and reduced the number of cases in which transfer to another country for surgery was not necessary.

The first Caribbean Cardiology Conference was held on October 12, 1985, entirely by teleconference. Some 100 persons in the six countries on the network participated. The conference was by no means free of problems but the participants were enthusiastic and there are plans to make it an annual affair.

Obstetrics and Gynaecology

The Department of Obstetrics and Gynaecology has much use of the UWIDITE system for the following:

a) Consultations/Case Presentations

These have been particularly welcomed in the non-campus countries for the opportunity they allow for wider discussion of difficult and rare cases.

b) Undergraduate Review Sessions

This consisted of a series of review sessions, one hour per week for 10 weeks, for students who had completed the Obstetrics/Gynaecology clerkship. The sessions also allowed the undergraduates to "meet" a number of Consultants in the various countries.

The department mounted a postgraduate review series of 10 one and a half hour sessions once weekly.

The Faculty of Social Sciences

The B.Sc. degree is a three year programme with a common first year consisting of:

(i) Elements of Economics
(ii) Introduction to Politics
(iii) Introduction to Sociology
(iv) (a) Mathematics and Statistics or Basic Mathematics for Social Sciences
or
(b) Statistics and Scientific Method

(v) (a) Introduction to Accounting
or
(b) Foundations of New World History or History of the Caribbean
or
(c) Constitutional and Administrative Law

Five of these courses are required for entry into the second year but one can be trailed.

Several of these programmes are so highly sought after that the numbers of applicants greatly exceeds the available places. Moreover, specific components of many of the programmes would form an excellent basis for valuable technical in-service programmes tailored to specific needs.

The Challenge Examination Scheme

The Challenge Examination Scheme was implemented in 1978 to allow suitably qualified students in non-campus countries to pursue the first part of the B.Sc. degree in the Social Sciences without having to attend classes on a campus.

The scheme offers the advantage that there is no loss of income for the student and no cost of replacement for the employer, and the Government (or the student) is saved the economic and maintenance costs for one year. There is also the element of selection before the student is committed to the campus programme. This scheme provided UWIDITE, an easily identifiable programme, with a ready-made demand and the results have been quite good. The results for the second offering of the UWIDITE course are in Table 5.

Table 5 Examination Results for Social Sciences, 1984/85

Course	Students Registered (R)	Students Sat Exam (S)	Students Passed (P)	(P)%(R)	(P)%(S)
		Jamaica			
Accounting	9	5	5	56	100
Intro.to Sociology	7	6	3	43	50
Elements of Econ.	8	5	3	38	60
History of the Caribbean	-	-	-	-	-
Maths & Stats	10	8	3	30	38
Personnel Management & Ind. Relations(CPA)	-	-	-	-	-
		Trinidad			
Accounting	-	-	-	-	-
Intro.to Sociology	2	2	1	50	50
Elements of Econ.	1	1	1	100	100
History of the Caribbean	1	1	1	100	100
Maths & Stats	-	-	-	-	-
Personnel Management & Ind. Relations(CPA)	-	-	-	-	-
		Barbados			
Accounting	7	7	2	28	28
Intro.to Sociology	6	5	2	33	40
Elements of Econ.	8	7	3	38	43
History of the Caribbean	2	1	0	0	0
Maths & Stats	3	2	1	33	50
Personnel Management & Ind. Relations(CPA)	-	-	-	-	-
		Dominica			
Accounting	3	3	3	100	100
Intro.to Sociology	8	5	5	63	100
Elements of Econ.	9	8	6	67	75
History of the Caribbean	1	1	1	100	100
Maths & Stats	7	3	3	43	100
Personnel Management & Ind. Relations(CPA)	7	6	4	57	67

Course	Students				
	Registered (R)	Sat Exam (S)	Passed (P)	(P)%(R)	(P)%(S)
		St. Lucia			
Accounting	10	9	6	60	67
Intro.to Sociology	15	8	3	20	38
Elements of Econ.	18	14	6	33	43
History of the Caribbean	10	5	3	30	60
Maths & Stats	18	12	5	28	42
Personnel Management & Ind. Relations(CPA)	5	5	5	100	100
		Antigua			
Accounting	12	12	8	67	67
Intro.to Sociology	10	10	3	30	30
Elements of Econ.	11	11	6	55	55
History of the Caribbean	-	-	-	-	-
Maths & Stats	9	9	7	78	78
Personnel Management & Ind. Relations(CPA)	5	5	5	100	100

These examination results are acceptable. No doubt assignments and exercises which would help prepare the students for answering questions in examination conditions would improve the results, but lack of resources is a limiting factor.

Law

The first year of the law degree is also offered under the Challenge Examination Scheme and the Law Faculty has been offering tutorials to students in Dominica, St. Lucia, and Antigua. Students on the Mona campus have also participated. These tutorials originate from all three campuses and have been most welcome.

Education

There are two entry streams to the teaching profession in the Caribbean. One is through the usual undergraduate programmes the other through the Teacher Training Colleges. The products of both streams have felt the need for further training and upgrading and the Faculty of Education has, therefore, long offered full-time one year courses for this purpose. The University graduate teacher reads for a Diploma in Education and the practicing non-graduate for a Certificate in Education, both of which provide opportunities for professional upgrading and, importantly, for higher salaries.

The certificate programme consists of a common core plus one of some dozen specialisations. This programme is ideal for distance teaching for the following reasons:

(1) the students would be able to obtain the full qualification without reading courses on campus;

(2) an in-service programme seemed likely to attract many more candidates and allow an increased number of teachers in the non-campus countries to participate.

The numbers of registrations and of courses are in Table 6.

Table 6. Summary of Registrations by Specialty in the Certificate in Education

	Numbers	
	Students	Courses
Teachers of the Hearing Impaired	31	2
Teachers of Reading	78	3
Teachers of Maths	49	2
Teachers of Integrated Science	20	1
	178	8

Table 7 gives the numbers of students who completed at first sittings in the first two courses.

Table 7. Numbers of UWIDITE Certificates In Education Awarded at First Sittings to UWIDITE Students

	1983/84	1984/85
Teaching of Reading	24 (2)	18 (6)
Teaching of the Hearing Impaired	14 (2)	11 (5)
Teaching of Mathematics	-	10 (17)

( ) gives the numbers of referred candidates; some have already completed and most of the remainder will complete in 1986.

The performance of these students has been similar to that of their counterparts in the full-time programme and the Faculty is satisfied that standards have been maintained.

Some idea of the potential impact of UWIDITE can be gleaned from the following: the Certificate in Education was first awarded in 1954. Between then and 1984 one thousand and nine awards were made with every country except Anguilla and the Turks and Caicos Islands participating. In 1985 after only two years with six participating countries 77 awards were made with several more candidates to complete. In this short period Dominica has produced as many certificates as in all the previous years and St. Lucia nearly 50% as many. Even Antigua, which joined late, has turned out 33% of the previous number and now has more certificate students enrolled than the previous total of thirty years.

The age distribution of the students is instructive. Almost all the students were in the 26-45 age group. These are at an age and career stage which would normally make paid study leave and replacements in the classroom necessary to allow them to proceed to a campus. The UWIDITE programme offers opportunities which would probably never otherwise be available.

These seem very significant achievements which have cost the countries and individuals very little. Table 8 gives the costs which would have been incurred by each country had they sent students to Mona, and includes an estimate of the costs of study leave and staff replacement. These could be obtained accurately but for the present purposes a (very low) figure of J$15,000 per student is used.

Table 8. Student Numbers in Certificate in Education Programmes and Total Economic Costs Plus Maintenance

	J	B	T	A	D	SL
			October 1983			
Number	18	5	5	-	6	8
Economic Cost + Maintenance	439,920	122,200	122,200	-	146,640	195,520
Replacement + Leave	270,000	75,000	75,000	-	90,000	120,000
	709,920	197,200	197,000	-	236,640	315,520
			October 1984			
Number	15	10	18	7	10	11
Economic Cost + Maintenance	366,840	244,560	440,208	171,192	244,560	269,016
Replacement + Leave	225,000	150,000	270,000	105,000	150,000	165,000
	591,840	394,560	710,208	276,192	394,560	434,016
			October 1985			
Number	32	5	10	5	4	9
Economic Cost + Maintenance	958,000	149,750	299,500	149,750	119,800	269,950
Replacement + Leave	480,000	75,000	150,000	75,000	60,000	135,000
	1,438,000	224,750	449,500	224,750	179,800	404,950
Totals	2,739,760	816,510	1,356,708	500,942	811,000	1,154,486

A=Antigua B=Barbados D=Dominica J=Jamaica SL=St. Lucia T=Trinidad

The total annual costs for all the six countries had these students been registered in the usual courses would have been J$1,656,480; J$2,801,376; and J$2,921,650; say J$7.4 million or US$1.3 million. The estimate of costs for the UWIDITE operations for the eighteen month period beginning August 1986 is about J$3 million (US$545,500) so that in principle the annual savings from this one programme could meet all the recurrent costs of UWIDITE. This says a great deal about the cost effectiveness of UWIDITE.

These education courses have been real successes in terms of the numbers graduated, the quality of the students' performances, the interest of the faculty, and the much lower costs of the distance teaching programme. While it should not be claimed that distance teaching is better than attendance at a campus with all the facilities, etc., these courses seem particularly well suited to distance teaching and it does appear that the non-campus countries with UWIDITE sites can take advantage of distance teaching to obtain all the training they require at this level.

Analysis of Trends

The objectives of UWIDITE were to:

(1) demonstrate that a sufficient level of demand exists to support an operational system;

(2) create within UWI an interest towards meeting identified demands by teleconferencing so that the institution will incorporate these as part of its armory;

(3) establish a core of experience and of experienced workers to allow the efficient design, staffing and implementation of a fully operational system for distance teaching and outreach;

(4) help to develop mechanisms and expertise for the production of educational materials e.g. print, audio, and audio-visual materials;

(5) develop a proposal for a permanent service.

These have all been achieved so the next challenge is to determine exactly what programmes are most in need and exactly how they will be delivered. No doubt the argument over broadcast or interactive programmes will resurface in many guises and perhaps in the end both will be accommodated.

5.0 GAPS IN THE RESPONSE TO EDUCATIONAL NEEDS

The biggest gap perhaps is that distance teaching is not even beginning to meet the needs below the tertiary level. UWIDITE cannot be responsible for these needs but its success may encourage others to attempt programmes at other levels.

Otherwise the biggest gaps are:

(1) the present inability to reach more countries. The Western Caribbean and the Bahamas still have no sites;

(2) the large number of programmes which cannot now be offered since the afternoon to night hours are already so much in demand;

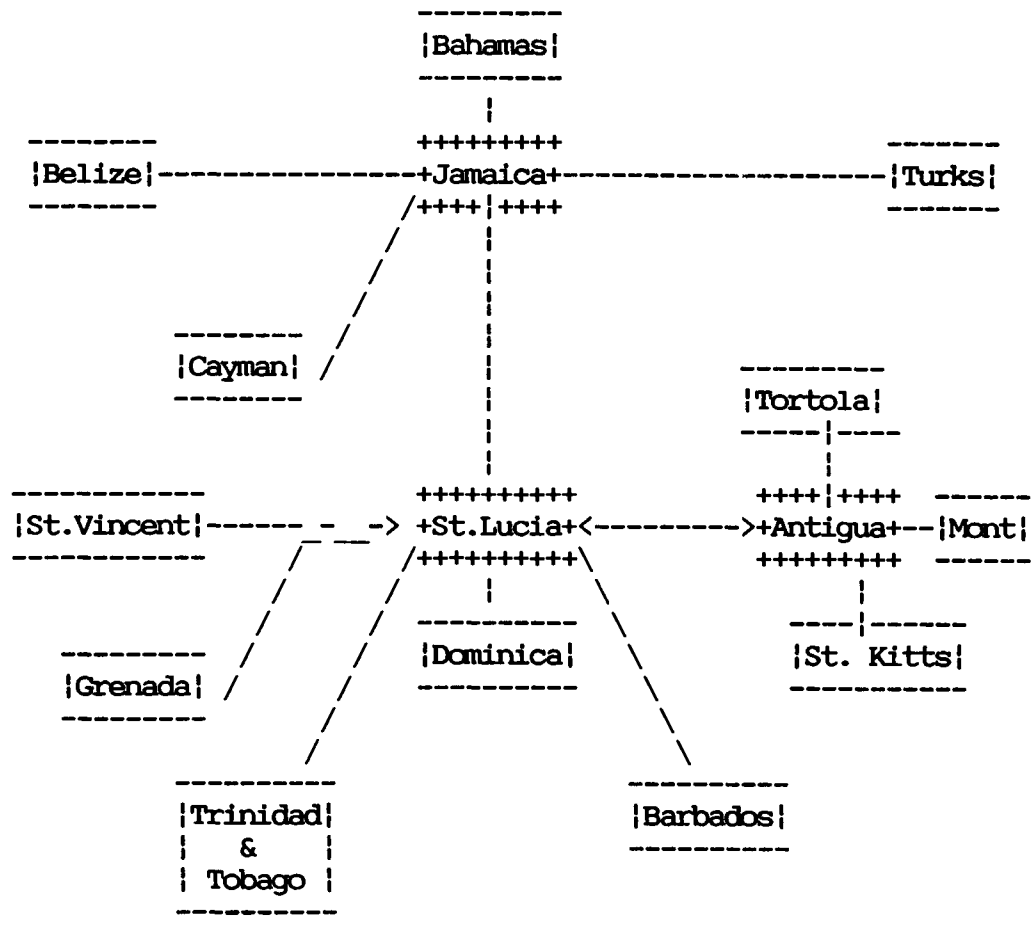
(3) the fact that it is still largely the urban communities which benefit.

6.0 FUTURE DEVELOPMENTS

Expansion of the System

Planned developments take the above into account. UWIDITE presently serves only 6 of the 14 countries which support UWI so that a priority must be an early extension to other countries and, perhaps, to develop more than one site in particular countries where appropriate.

Technically the best way to expand would be to utilise the point-to-multi-point power of a full satellite network, and there are powerful satellites aloft with footprints which cover the Caribbean. The technology is available but there are still so many problems involved in getting started that a network similar in design to the present one may be more feasible. With all its attendant problems, which cannot be unsolvable, at least only funding is the major obstacle to beginning. A likely schematic for an expanded system follows:



The expansion of distance teaching will require more communications hardware, additional space at the Extra-Mural Centres, laboratories if practical sciences are to be taught, and library facilities. It would be logical to tie some of this into the tertiary systems in the non-campus countries. Moreover,additional staff both for teaching and to operate and administer the programme would be needed. More telephone channels would also allow simultaneous classes, and much expand the number of persons who could be reached.

New developments are to be investigated. These should include applications of some aspects of Telemedicine for which the additional cost could be marginal.

Intra-Island Distance Teaching

Small as the Caribbean islands may be a considerable number of would-be students cannot take advantage of UWIDITE because their homes are too far from the sites. It would be appropriate to examine the use of radio for intra-island communication since the inland telephone "lines" are expensive, frequently noisy and unreliable and are routinely disrupted by heavy rains.

A dedicated FM system seems best. This could be used in a stand alone mode when not linked to the UWIDITE network. A combination of "line of sight radio" and a system as sketched above would represent a powerful basis for education, training,and public service, and doubtless be of interest to some African and Pacific countries.

7.0 COOPERATION WITH OTHER INSTITUTIONS

Because of the particular situation of the university UWIDITE is itself an example of international cooperation. The programmes originate in one or more of the six countries and all six are recipients. A selection of examples of particular interest is presented below.

Existing Programmes

Training of Pre-School Trainers

One of the first programmes on the network was " Principles of Training", mounted by the Regional Pre-School Child Development Centre (RPCDC), for day care and pre-school staff in the various countries. Twenty persons participated in the first course.

Training of Caribbean Labour Administrators

This programme was designed because of the difficulty and expense the Regional Labour Administration Advisor of the Caribbean Labour Administration Centre (CLAC) found in carrying out programmes in the scattered region. CLAC was established by the International Labour Organisation in 1978 to provide technical assistance to Ministries and Departments of Labour. UWIDITE serves only 6 countries but it was found cheaper and cost effective to fly in participants from each of Grenada, Guyana, Montserrat, St. Kitts, and St. Vincent each week to the nearest UWIDITE site. The sessions were held for three hours on each Saturday morning for 12 weeks during the period July 7 - Sept. 26, 1985. The lecturers operated from from Antigua, Barbados, Jamaica and Trinidad.

Participants

The numbers of participants and awards from each participating country are in Table 9.

Table 9. Numbers of Participants and Certificates Awarded in CLAC Training Course.

	Participants	Awards
Antigua/Barbuda	5	2
Barbados	7	5
Dominica	6	4
Grenada	1	1
Guyana	1	1
Jamaica	7	3
Montserrat	1	0
St. Kitts/Nevis	1	1
St. Lucia	5	4
St. Vincent	1	1
Trinidad/Tobago	6	6
	41	28

It is impressive that as many as 41 persons who hold full-time jobs were willing to give up Saturday mornings for as long as 12 weeks on a stretch. The success rate was 68%. Thirteen awards were not made because of poor attendance. Among the reasons given for absence were transfer, vacation leave, and in only two cases insufficient interest by the nominees.

Between December 1978 and September 1985, CLAC had provided training for some 200 officials through seminars, workshops, attachments, etc.; this UWIDITE programme therefore represents a significant contribution. The course was well received and in the view of the participants - students, tutors, and collaborators - it produced entirely satisfactory results. CLAC remains in touch with UWIDITE and it is expected that further programmes will be developed.

Emergency Health Management

The Pan Caribbean Disaster Prevention and Preparedness Project (PCDPPP), and the University's Department of Social and Preventive Medicine (DSPM) mounted a short course, funded by the Pan American Health Organisation (PAHO), in Emergency Health Management after Natural Disasters.

The course began on March 20, 1985 and ran until June 5, 1985, with weekly sessions of 1 1/2 hours duration. Antigua, Barbados, St. Lucia, Trinidad, and Jamaica (Mona and Montego Bay) took part. Dominica joined for a few sessions. There were 37 regular participants with 5 occasional visitors. The participants were: doctors, nurses, public health inspectors, and administrators.

The course topics were:

Effects of Disaster on Health

Co-ordination of National Relief Activities

Management of Mass Casualties

Epidemiologic Surveillance and Disease Control

Environmental Health Management

Food and Nutrition

Temporary Settlements and Refugee Camps

Communication and Transport

Management of Health Relief Supplies

Management of International Relief Assistance

Re-establishing Normal Programmes

Disaster Preparedness

The course was very well received and the participants agreed that repeat courses and follow-up sessions would be useful.

Fertility Management

This was the major programme in health. It was funded by the Johns Hopkins Programme for International Education in Gynaecology and Obstetrics (JHPIEGO) and provided postgraduate courses for nurses and doctors throughout the six participating countries. The course was designed and mounted by UWI's Advanced Training and Fertility Unit.

The topics covered in the physicians' programme were:

(1) Human Sexuality
(2) An Approach to Subfertility
(3) Update on Fertility Control
    a) Oral Contraceptives
    b) The Injectables
(4) Natural Methods of Family Planning;
    The IUCD and Barrier Methods
    New Directions
(5) Clinic Management
(6) Voluntary Sterilization
(7) Open Session:Common Clinical Problems
(8) Pregnancy Testing; Pre- and Post Natal
    Care

(9) Care and Management of High Risk Pregnancy
(10) Gynaecological Cancer Screening and Follow-up
(11) Sexually Transmitted Diseases
(12) Population Dynamics
(13) Caribbean Family Laws

The components of the Nurses' programme were the same, except that items 2 and 9 were replaced by Counselling and Diagnosis, Management, and Referral of 1st Trimester Wastage. These programmes have reached 107 doctors and 265 nurses across the various sites.

Nutrition for Community Workers

The Caribbean Food and Nutrition Institute (CFNI) of the Pan American Health Organisation presented courses for community workers who are employed in the fields of agriculture, education, health, and community development. The aim was to: update concepts; promote an awareness of nutrition problems and measures to overcome them; and to strengthen skills to promote good nutrition practices in the community.

The courses covered aspects of:

* working with the community
* food and good health
* how to buy, store and prepare foods properly
* nutrition during pregnancy and breast feeding
* young child nutrition
* health problems related to food and nutrition
* improving health and nutrition in the community

Inter-Campus Cooperation in Lecture Courses

The Caribbean Institute of Mass Communication (CARIMAC) and the Department of Geology both presented portions of their courses to students in Mona using lecturers on other campuses. CARIMAC also used the network for teleconferencing with Ohio State University for the planning of their own communications developments.

The Department of Geology used the network to have a section of its programme, Engineering Geology, taught from St. Augustine.

A number of short programmes/teleconferences were arranged outside the region. These include:

Ohio University, Ohio U.S.A.
Fibresat Conference, Vancouver,Canada
Academy for Educational Development, Washington D.C.,U.S.A.
College of the Virgin Islands, St. Thomas, Virgin Islands
Cape Cod Community College, Massachusetts, U.S.A.
Miami Children's Hospital, Florida, U.S.A.
Memorial University, Newfoundland, Canada.

There is likely to be significant cooperation with the College of the Virgin Islands in the future. At this time the work with Memorial University is the most important of the collaborations. There is a satellite link provided by Intelsat's Project Share between Newfoundland and Mona. The link is patched into the UWIDITE network so that the other sites can share in the teleconferences. This link is used mainly for medical discussions and for planning future cooperation. It is, for example possible that the Caribbean net can join in Memorial's link with Africa.

Assessment of Co-operation to Date

UWIDITE is relatively new and the efforts to get the system underway, to write the print material and to produce videotapes left little time for large scale co-operative programmes. The examples of co-operation described above have been highly effective. They have provided the other institute with an opportunity which would have otherwise been impossible, assisted UWIDITE financially and provided useful experience and public relations.

There has to date been little fruitful contact except for attendance at the occasional conference with the various associations of distance education; these are expected to grow.

New Initiatives

Now that UWIDITE is established much more is possible and the links with Canada, Memorial University in particular, are expected to grow. There are hopes that useful links can be established with Africa and the Pacific.

8.0 CONCLUSIONS

Over the years advances in technology have often raised great hopes of improving educational methods but have not yet made great impact on formal education. However, advances based on the computer and telecommunications have opened such opportunities that the present environment for higher education is changing very rapidly.

It is doubtful that any human endeavor has equaled the growth rate of communications. The telegraph was invented in 1832 and on the average the doubling time of communications capability has been 4 years. The computer is really only one third of a century old so the growth trends and symbiosis must almost certainly continue for many more years.

The world's telecommunications capacity is increasing at a formidable pace. For example were Intelsat's present rate of growth to continue, by 2025 that network alone could handle 130 billion telephone calls simultaneously; this is more than ten times the estimated population of the Earth at that time. Though not particularly significant this extrapolation does give some indication of the extent to which new services, data

transmission, teleconferencing, and other applications could be possible. An enormous capacity could be available and the opportunity for education as channel costs are reduced and technologies mature still seem like figments of imagination.

Even discounting the enthusiasm there often is for novelty it is hard to see how the new technologies can fail to have a very large impact for good on many aspects of education. The residential courses will obviously benefit but it is the ability to provide quality education far from centres where the greatest difference may well be felt.

We believe that telecommunications will allow the aggregation of units across the Caribbean into more economic sizes; encourage the sharing of human resources; and help to overcome many of the problems of isolation. This last may help reduce the "brain drain" from the smaller to the larger Caribbean territories. Certainly the experience to date has been that the programmes offered to professionals have had as a large component of their success, the aspect of being able to meet colleagues and share experiences by teleconferencing. The concept of interactive distance teaching in the Caribbean seems well founded; the technology is available; the need seems proven. There seems every reason why the same should apply in many other regions.

By the mid 1990s education and training could be delivered world wide from any point. Continuing education may be as important then as formal education is today, and more than ever there will be competition for students and the minds of people. Unless the developing regions can deliver the education required by its peoples, the 21st century could present a situation in which our students are trained from distant lands and give rise to much more than the cultural invasions due to satellite television which some people are so worried about today.

If, on the other hand, educators and the telecommunications companies can rise to the challenges of application of the technologies; harness the new technologies to make education cheaper, more available, and of better quality; if we can remove the loneliness of professional isolation and therefore one reason for the brain drain, an educational tool of superb value would have been developed.