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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

APPRAISAL OF
EDUCATION PROJECT
JAMAICA

September 8, 1966

Projects Department

CURRENCY EQUIVALENTS

U.S. \$1	=	£0.357 (7 shillings and 1-1/2 pence Jamaican)
£1	=	U.S. \$2.80
£1,000,000	=	U.S. \$2,800,000

JAMAICA

APPRAISAL OF EDUCATION PROJECT

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This report is based on the findings of a mission to Jamaica in February 1966 composed of Messrs. Aristides Macris, Sergei Kadleigh, Henry Gassner, and J. C. Jones (Consultant to the Bank).

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JAMAICA

APPRAISAL OF EDUCATION PROJECT

SUMMARY

- i. The Jamaican Government has requested a Bank loan to help finance an educational development project. As revised by the appraisal mission, this project would cost about \$19.4 million and would provide:
- (a) 390 additional places at the College of Arts, Science and Technology to increase enrollment by 110 percent, at an estimated cost of \$1.3 million.
 - (b) 330 additional places or an increase by 200 percent of the present capacity of the Jamaica School of Agriculture. Estimated cost is \$2.0 million.
 - (c) 675 additional places at four teacher training colleges, increasing enrollment by 50 percent at an estimated cost of \$1.1 million.
 - (d) 33,000 places in 50 junior secondary schools as part of a plan to provide effective education to children aged 12 through 14 years, who have completed primary education and are presently retained in the primary schools for lack of secondary level institutions. The estimated cost is \$15.0 million.
- ii. The project includes provisions for the services of foreign specialists to assist in the implementation of the proposed educational development. Overseas training is also provided for supplementing on-the-job training of Jamaican teachers and school administrators. Of an estimated cost of \$1.6 million for these services \$0.3 million would be assisted by the loan and the remainder has been committed by US AID.
- iii. The proposed expansion of training at the College of Arts, Science and Technology and at the Jamaica School of Agriculture would produce technicians urgently needed to improve the efficiency of Jamaican industry and agriculture, reduce dependence on expatriates, and staff the Ministry of Agriculture programs aimed at raising agricultural productivity.
- iv. The junior secondary school program would (a) improve the quality of the education received by students terminating their education at age 15 so that they may fully benefit from pre-employment and on-the-job training at the levels required by the rapidly advancing economy; (b) increase the number of qualified students for further formal education; and (c) make available workshops and instructors for general up-grading of the skills of the adult population - a badly felt need at this time.
- v. The proposed expansion of teacher training will ensure qualified teachers for the junior secondary schools and will allow for gradual improve-

ment in the quality of primary education.

vi. There are sufficient qualified applicants to fill the additional places at the teacher training colleges, the Jamaica School of Agriculture and the College of Arts, Science and Technology.

vii. On the basis of the proposed financial arrangements for the project, the recurrent and capital costs generated by the expansion of the Government education program, including the present project, are within Jamaica's financial capabilities.

viii. Four local architectural firms have been selected to design and supervise construction of the post-secondary portions of the project and a foreign firm has been selected to perform similar services for the junior secondary schools.

ix. Major contracts for construction and equipment will be awarded on the basis of international competitive bidding.

x. The completion of the project is estimated to require approximately three and one-half years and the closing date is expected to be September 30, 1970.

xi. In view of the assurances by the government set forth in paragraph 114 the project is suitable for Bank financing.

xii. The direct foreign exchange requirements are estimated at \$6.2 million of which \$1.3 million is expected to be financed through bilateral aid. If the Government were to assume all local costs, however, its capital expenditure for education during the next four years would need to increase by over 90 percent from the present rate. Therefore, a Bank loan of \$9.5 million is proposed, representing about 50 percent of the total cost. Even under this arrangement the Government will need to increase its present capital outlay for education by over 50 percent. It is proposed that the loan be for 20 years, including a grace period of 5 years.

JAMAICA

APPRAISAL OF EDUCATION PROJECT

I. INTRODUCTION

1. At the request of the government, Unesco sent an Educational Planning Mission to Jamaica in September 1964, to assist in the development of the country's educational program. A report of the Mission's findings was completed in November 1964.
2. After studying the above-mentioned report and in consultation with the Bank Resident Adviser the government decided to formulate a project for possible Bank assistance in the financing of educational development.
3. A member of the Bank staff visited Jamaica in July 1965 for a preliminary review of the proposed educational development and to advise on the preparation of the project for consideration by the Bank. Two Unesco experts - an architect and a technical education expert - discussed details of project preparation during a visit in 1965. The chief of the Unesco Planning Mission (Mr. C. L. Germanacos) had returned to assist the government in preparing the necessary project data.
4. In January 1966, the Government of Jamaica submitted a loan request, and a Bank appraisal mission, comprising Messrs. Aristides Macris, Sergei Kadleigh, Henry Gassner, and J. C. Jones (Consultant), arrived in Jamaica in February. Mr. Germanacos acted as an adviser to the mission.
5. In addition to consulting government authorities, the mission cooperated closely with representatives of other sources of external assistance. Discussions were held with US AID concerning technical assistance in teacher training and in agricultural education, and with representatives of the United Kingdom, Canada, Germany and the U.N. Technical Assistance Board concerning other financial and technical assistance in the field of education.

II. SOCIAL AND ECONOMIC BACKGROUND

6. Jamaica is an independent country (since 1962) and a member of the British Commonwealth of Nations. It is the third largest island in the Caribbean and supports a population of 1.8 million on an area of 4,400 square miles. While the annual rate of natural population growth during the past decade was 3 percent, the net rate of population growth was only 2 percent, due to the high rate of emigration. With emigration to the United Kingdom now largely cut off, continuation of the high rate of population growth poses a serious problem.

7. During the period 1954-1961, Gross Domestic Product at constant factor cost increased at a rate of 8 percent per year. Due to the uncertainties produced by Jamaica's transition to independence, the growth rate fell to 2 percent during 1962 and 1963 but since 1964 the GDP has again been growing at an annual rate of 8 percent. During the past decade real per capita GNP increased from \$250 to \$445.

8. The main factors in the rapid growth rate were the discovery of bauxite, the rapid rise in the level of industrial activity, the development of Jamaica into a major tourist resort, and the upsurge of the building industry. Since 1958 Jamaica has become the world's largest producer of bauxite. It has also become an exporter of manufactured goods, mainly clothing, but also cement and industrial machinery. During the past five years tourist earnings increased by over 50 percent.

9. Although the contribution of agriculture to the gross domestic product is only 13 percent, two-thirds of the population live in rural areas and about 40 percent of the labor force is engaged in agriculture. During the past decade agricultural production increased by only 1 percent per year. The cultivable area is only 1.7 million acres and densely populated. About 45 percent of this area is occupied by subsistence farmers cultivating small plots, often on steeply sloping lands, and handicapped by lack of modern knowledge, deficient market arrangements, and inadequate credit.

10. The growing divergence between rural and urban incomes has led to a large exodus of the rural population to the cities. Lacking adequate education and skills, these migrants are the core of the unemployed. An unemployment rate of 15.-20 percent of the labor force is one of Jamaica's most serious economic and social problems.

11. With the rising standard of living and the maintenance of relative monetary and price stability, domestic saving has increased rapidly and has financed the greater part of the country's gross capital formation. Since Independence the government has financed more than two-thirds of its investment expenditure from public savings and non-inflationary internal borrowing.

III. EDUCATION AND TRAINING

The Educational System

12. The structure of the educational system and the educational pyramid are shown in Annexes 1 and 2. The Ministry of Education is responsible for educational policy and for the administration of government schools; its supervisory powers also extend to private and government-aided private institutions. The management of each school is in the hands of a school board. In the case of the public schools the board is appointed by the Ministry while the boards of government-aided schools are appointed by the organizations sponsoring them but include a minority representation of the Ministry. Private schools not receiving government aid had not been subject to any government control but the Education Act of 1965 gives to the Ministry of Education jurisdiction over them, including supervision, recognition and legal action leading to disqualification.

13. All Ministry services are located at headquarters in Kingston with the exception of the inspectorate which is partly decentralized. The inspectors are, in theory, entrusted with supervision and counselling but their time is largely taken by administrative duties. The numerical strength and professional preparation of the inspectorate are inadequate for effective service to the schools. The Ministry appreciates this weakness and is implementing measures to reorganize and strengthen its supervisory services.

14. A small planning unit was established in the Ministry recently. A planning committee comprising representatives of the Ministries of Education, Finance, Development and Welfare, Labor and Agriculture supervises the activities of the planning unit and considers its proposals. It is expected that the Committee will facilitate coordination of the educational program with the needs of both the public services and the private sector in agriculture, industry and trade. A special unit in the Ministry collects educational statistics but its efficiency is handicapped by inadequate and insufficiently trained personnel.

15. The Ministry is availing itself of experts at the University of the West Indies. The University's Department of Education offers courses leading to a diploma in education and the Institute of Education participates in the study of educational problems, especially those related to curriculum development.

Primary Education

16. Primary education consists of five years of schooling - normally 7 through 11 years of age. After completion, a small number of the students (about 10 percent) enter secondary schools of different types, while the majority of the students attend three "senior" classes appended to practically all primary schools. In 1965, out of a total of 723 primary schools, 26 were "junior" schools, restricted to the

five primary classes, 683 were "all-age" schools having the five primary years and a three-year "senior" division. Fourteen were "senior" schools, catering for the 12 through 14 age group only.

17. Some 223,000 students were enrolled in 1964 in the five primary grades or 87 percent of the age group 7 through 11 (estimated at 256,000); it is assumed that a large portion of the remaining 13 percent of the children attended private schools. The same year, enrollment in the "senior" or post-primary classes was 94,000 or about 75 percent of the age group 12 through 14 (estimated at 125,000). It is noteworthy that enrollment in the "senior" classes and in the three first years of secondary schools totalled some 107,000 and represented about 85 percent of the age group 12 through 14 years. Enrollments by age and grades are available for the year 1963 and are given in Annex 3.

18. The extended primary or "all-age" school has been helping the pupils who are unable to enter secondary schools to consolidate the knowledge acquired in the primary school. The most capable among these pupils are prepared in the "senior" classes for late entry to the secondary level, especially technical, or in further "unofficial" classes for entry into teacher training institutions. However, the system is far from ensuring effective post-primary education; the "senior" school program, lacking specialized teachers and equipment, fails to appeal to the pupils and leads to marked absenteeism in the upper senior classes. Further, the task assigned to the primary schools to serve both the regular primary and the "senior" division students has aggravated the problems of these schools, namely, a high teacher: student ratio (1:58), over 40 percent of the teachers being unqualified, and practically all primary schools being overcrowded.

Secondary Education

19. Secondary schools are of different categories depending on whether they aim at general (academic) education or at specialized education and training. The number of schools and enrollments are given in Annex 4.

20. Secondary High Schools offering a general program constitute the core of secondary education. There are 41 such schools with some 18,500 students enrolled in Forms 1 to 5. Examinations at the end of the fifth year lead to the General Certificate of Education at Ordinary ("O") Level. This certificate qualifies for entrance to such post-secondary institutions as the Teacher Training Colleges, the College of Arts, Science and Technology and the Jamaica School of Agriculture. Some of the high schools offer two more years (lower and upper Form 6) leading to the Higher Level Certificate required for university entrance. About 1,800 students are enrolled in these forms.

21. The teacher:student ratio is about 1:18; some two-thirds of the qualified teachers hold university degrees and a further 23 percent are trained primary school teachers. With appropriate planning it should be possible to increase the number of students by 30 percent or to about 25 students per qualified teacher. It is also estimated that teaching spaces and staff in these schools could handle 20 percent more students than at present.

22. Comprehensive Schools - Two schools established in 1964 apply the principle of a diversified curriculum to meet the different interests and aptitudes of the students. The diversified program is introduced mainly in the fourth year after a common, exploratory curriculum in the first three years. Enrollment reached some 2,000 in the current year and the Ministry considers these schools as an important experiment in the reform of secondary education. A satisfactory teacher:student ratio of 1:30 has been maintained in these schools.

23. Technical High Schools - Six schools of this type have been established with the purpose of providing a practically-oriented, pre-vocational education to pupils selected from the senior forms of the primary schools at the age of 13 or 14 years. They offer four-year courses, which include both general and technical or commercial subjects. Enrollment (1966) totals about 2,800. In addition, the schools offer evening classes in general subjects to about 3,000 adults and day-release classes to some 400 apprentices.

24. The Technical High Schools have often been used as a substitute for general secondary education. Further, the schools have experienced difficulties in recruiting and retaining qualified teachers of technical subjects. Under the proposed educational reform, these schools would be expected to become technical sections of comprehensive schools and the teacher supply would be also improved.

25. Junior Secondary Schools - The government is in the process of establishing junior secondary schools provided with laboratories and workshops to replace the "senior" divisions of the primary schools. As a first step in this direction, the Ministry is taking action to provide the existing 14 "senior" schools with additional facilities and a revised curriculum to transform them into junior secondary schools. The operation of these schools will provide valuable experience for the expanded program and will help with the training of teachers. The present enrollment in these schools is about 13,000; two more such schools are to begin operations in September 1966.

Post Secondary Education

26. Teacher Training Colleges - There are six government-aided teacher training colleges, one non-aided college and one junior teacher training college. While some students entering the training colleges have passed the GCE "O" level examination, the majority have lower qualifications. The course of study is designed for training "all

purpose" teachers, but some 50 students are trained each year for teaching industrial arts and commercial subjects in the secondary level grades. In recent years some trainees have studied one or two subjects in greater depth, and are able to teach in the lower forms of secondary schools.

27. In the past the duration of the course has been three years, but students who enter the government-aided training colleges as from September 1965 receive a two-year course plus a year of supervised teaching service. The annual output of these colleges is 350 (including some 50 teachers who complete a special two-year course for upgrading untrained teachers). An additional 15 trained teachers per year are provided by the non-aided college. The junior training college offers a 20-week course to some 300 trainees every year; the graduates are not classified as trained teachers, but completion of the short course is recognized in salary classification. Salary increments are also given for the completion of various correspondence courses.

28. The College of Arts, Science, and Technology was founded in 1958 on a site of 35 acres, formerly belonging to the Jamaica School of Agriculture. New construction, including commerce, engineering, science, and social buildings, together with appropriate equipment, have been provided, largely with the help of United Kingdom funds.

29. The College offers day and evening instruction in five main fields: mechanical and electrical engineering; building and structural engineering; science, including pharmacy; commerce, institutional management. The duration of the engineering and pharmacy courses is three years, while the business administration and institutional management courses last for two years and the secretarial course for one year. In 1965, there were some 350 students taking full-time day courses, 500 students in part-time day-release courses, and 800 evening students. Current output from day sessions totals some 115 per year. Wastage has been excessive, and increased efforts are needed to improve the passing rate. This improvement should be assisted by the Government program to raise the standards of secondary education. Present and projected numbers and distribution among the several courses are given in Annex 5.

30. Full-time courses normally require entrants to have passed the Ordinary Level of the General Certificate of Education of the United Kingdom in not less than three subjects, one of which must be English and the others in accordance with the requirements of the separate departments. A good deal of latitude is permitted in meeting these requirements, particularly in science subjects since facilities for science teaching are not uniform at the secondary level.

31. The curricula are considered to be too theoretical and ill-adapted to the objective of producing competent middle-level technicians. The College is seeking advice in developing modern curricula emphasizing practical instruction in industrial processes and organization.

32. Evening studies have been successfully developed in commercial and general education subjects but, except where combined with part-time day release, have been less successful in engineering and building subjects. For these latter it is interesting to note the absence of an entry examination and the substitution of a class test at the end of eight weeks; failure in the test requires withdrawal from the class.

33. Equipment of the laboratories and workshops is generally of good standard and additional equipment is to be provided from U.K. funds during the next few years. The present staffing consists of the principal (non-teaching, appointed full-time but continuing in private practice), 5 heads of departments, and 35 lecturers of whom 2 are on study leave abroad. The average number of teaching hours, excluding overtime work for which additional payment is made, are 10 hours per week for heads of departments and 20 hours per week for lecturers. These hours are normal as are also the average class size (20) and the overall staff:student ratio (1 to 12.2, excluding evening classes).

34. The Jamaica School of Agriculture was founded in 1910 and is administered by a Board of Trustees under the general supervision of the Ministry of Agriculture and Lands. This school is the main source of technical personnel for the Ministry of Agriculture, and for private agricultural enterprises. In addition, some of the graduates continue further studies with the Faculty of Agriculture of the University of the West Indies or at agricultural faculties in the United States and Canada. The duration of the course is three years. Male applicants who have passed the General Certificate of Education (Ordinary Level) in four subjects, the Jamaica Second Certificate of Education, or any equivalent examination are admitted to the school on the basis of a competitive examination followed by an interview. The present student body numbers 165 and 40-50 students graduate each year.

35. The school facilities include a 77-acre tutorial farm and a 350-acre commercial farm. Laboratories are also operated for instruction in general sciences, soil chemistry and food technology but additional laboratory space and equipment is needed for the expansion being planned and also for a diversified program to meet the needs for various categories of technicians and for university entrance.

36. The teaching staff include (a) the principal, 4 senior lecturers, 7 lecturers and assistant lecturers - all with university degrees including 4 M.Sc. degrees, and (b) 2 demonstrators with intermediate-level qualifications. The present teacher:student ratio of 1:12 is satisfactory for this type of institution.

37. The Jamaica School of Agriculture has established the reputation of giving effective practical training. However, the present capacity, program and output of the school are inadequate to meet the demand of the public services and the private sector for qualified agricultural staff. An expanded program will necessitate additional physical facilities and expatriate specialists to supplement initially the present staff and to train additional teachers.

Higher Education

38. In 1960 only one out of 205 Jamaicans over age 25 was a university graduate. This compares with ratios of 1:118 in Trinidad, 1:146 in Barbados, 1:40 in Greece, and 1:13 in the United States. There are probably somewhat more than 3,000 Jamaicans currently enrolled in universities. This estimate includes 1,300 in the University of the West Indies (1965/66), 1,050 in the United States (1963/64), 300 in Great Britain (1963/64), and 300 in Canada (1961/62). While current enrollment levels represent close to a 50 percent increase during the past five years, enrollment per thousand of population is still only one-third of the level prevailing in Greece, a country with a similar level of per capita income. The main obstacle to increased enrollment in some faculties is the shortage of qualified secondary school graduates.

39. The University of the West Indies, established in 1948, has its main campus in Kingston, Jamaica, with branches in Trinidad and Barbados. First degrees in arts, natural science and social science, are offered at all three centers; agriculture and engineering in Trinidad; medicine in Jamaica. The University also offers one-year diploma post-graduate courses and one-year certificate courses in education, social work, public administration and trade union studies. Advanced degrees are offered up to the Ph.D. level. (Current enrollment of Jamaicans by field of study is shown in Annex 6.)

40. There are currently 56 Jamaicans enrolled in second degree and diploma programs in education, plus a comparable number in similar programs overseas. With proper incentives it should be possible to meet the requirements of secondary schools for graduate teachers, although particular subjects, such as mathematics and physics, may continue to require expatriate personnel. The Institute of Education of the University of the West Indies has been given responsibility for standards of training in teacher colleges throughout the region. The University has also made important contributions in the development of textbooks and other instructional materials designed to meet the local needs.

41. Some 30 Jamaicans are enrolled in the Agricultural Faculty of the University, including six following post-graduate study. A Regional Agricultural Research Center is also part of the University. Measures are being taken by the University to integrate the Research Center with the Agricultural Faculty. The agricultural authorities of Jamaica are anxious to coordinate their programs with the university so as to ensure optimum technical support to the island's agricultural industry.

42. About 50 Jamaicans study engineering at the University of the West Indies. It is also estimated that another 100 or more students follow similar studies in the USA, Canada and the UK.

43. The University of the West Indies is financed in large part by government contributions from the English-speaking countries of the

Caribbean. The Jamaican share of these contributions is somewhat over 40 percent, but exceeds 80 percent of the recurrent costs of the University Hospital.

Vocational Training

44. The Knockalva Agricultural School and the Caron Hall Vocational School for Girls, operated by the Ministry of Education, offer two-year vocational courses in agriculture and home economics respectively. Enrollment in each school totals about 100 students. The results of the courses have not been satisfactory and the Ministry has planned extensive improvements.

45. Three trade training centers are also operated by the Ministry of Education in St. Andrew (Kingston), Port Antonio and Montego Bay. They offer practical pre-employment training in six trades. The duration of the training for most trades is one year. Enrollment totals about 360 and annual output is about 250 per year. A small and relatively ineffective apprenticeship scheme is operated under the Ministry of Labor; some 450 apprentices were in the program in 1965 but enforcement of regulations and standards is minimal.

46. Preliminary discussions have been held by the government and the US AID concerning assistance in the development of trade training centers. Consideration is being given to integrating this training with a revitalized apprenticeship program.

Financing of Education

47. Between 1959/60 and 1965/66 the government's total expenditures on education increased from \$16.5 million to \$27.9 million, the preponderant increase being in recurrent expenditures. As will be seen in Annex 7, there has been little movement in the period 1959/60-1964/65 in total annual educational recurrent expenditures as a percentage of total national annual recurrent expenditures; there has been a downward trend in annual capital expenditures on education as a percentage of total capital budget. Total recurrent educational expenditures in 1964/65 amounted to 19.1 percent of the total recurrent budget; capital expenditures to 6.0 percent of the total capital expenditure budget; and recurrent and capital expenditures to 15.5 percent of the total recurrent and investment budget. The distribution of expenditure among the various categories is shown in Annexes 8 and 9.

48. The percentage of the GNP represented by government expenditure on education and training has increased from 2.8 percent in 1959/60 to 3.3 percent in 1964/65. Private sector expenditure on education, including fees and overseas grants, adds another 1½ percent of GNP spent on education (Annex 10).

IV. THE PROJECT

49. The proposed project (Annex 11) consists of construction, equipment and technical services for the following institutions:

	<u>Increase in Capacity</u>		<u>Estimated Cost</u> <u>US\$ million</u>
	<u>Places Added</u>	<u>Percentage Increase</u>	
College of Arts, Science and Technology ^{1/}	390	110	1.3
Jamaica School of Agriculture ^{1/}	330	200	2.0
4 Teacher Training Colleges ^{1/}	675	50	1.1
50 Junior Secondary Schools ^{2/}	33,000	3/	<u>15.0</u>
Total			<u>19.4</u>

50. The project facilities would meet the immediate requirements for certain categories of qualified manpower as well as the longer-term need for an adequate flow of qualified entrants to higher education and sufficient trainable people for middle-level posts. These needs and the contribution of the project in meeting them are further discussed in the sections treating the relevant project items.

51. The foreign exchange cost of the project is estimated at \$6.2 million, representing about 32 percent of the total estimated cost. As mentioned in paragraph 104 below, it is proposed that the Bank finance \$9.5 million or 50 percent of the total project cost. Since this would involve financing a part of the local cost, it is proposed, in order to facilitate administration of the loan, that disbursements be made on the basis of a percentage of the cost of agreed items in the project.

College of Arts, Science and Technology

52. The proposed project provides for the addition of seven classrooms, library, lecture hall, assembly hall, two drawing offices and 17 rooms to be used as laboratories, workshops, and commercial classes;

1/ Additions to existing institutions.

2/ Five Junior Secondary schools are sited on the grounds of existing schools.

3/ All places in Junior Secondary schools are new.

administration offices; a hostel for 50 female students; and six staff houses. The project provides also for furniture, instructional equipment, for technical services and site development. Costs of these facilities and services are estimated to total \$1.3 million. The proposed expansion would enable the College to increase enrollment from 343 full-time students to 735 and annual output from 110 to 245, as follows:

<u>Courses</u>	<u>Current Enrollment</u>	<u>Expanded Enrollment</u>	<u>Current Output</u>	<u>Expanded Output</u>
Mechanical and Electrical Engineering	130	240	19	60
Building Engineering and Structures	61	115	10	30
Institutional Management	27	65	12	25 ^{1/}
Business Administration	50	155	19	45 ^{1/}
Secretarial	48	95	42	60 ^{2/}
Laboratory Technician	-	25	-	13
Pharmacy	<u>27</u>	<u>40</u>	<u>8</u>	<u>12</u>
Total	<u>343</u>	<u>735</u>	<u>110</u>	<u>245</u>

53. It is expected that the present external assistance in teaching staff will be continued and the recruitment of some 27 additional teachers required for the expanded program should not present serious difficulties. However, the proposed expansion makes urgent the need for the principal officers to devote their full time to the administration of the College. The College will also need to revise its curricula and syllabi in the light of its expanded aims. Foreign specialists are provided by the project (for a total of 15 man-months) to assist the College in this reorganization.

54. Manpower Requirements - In 1964, the Department of Labor undertook a survey covering all establishments employing 15 or more persons. While not complete, the survey as summarized below indicates minimum requirements for employees in various categories. The proposed expansion of CAST is clearly within the immediate employment needs and opportunities.

1/ 30 after 2-year course, 15 after 3rd year of advanced training.

2/ 40 after 1-year course, 20 after 2nd year of advanced training.

Establishments Employing 15 or more Persons

	<u>Number Employed</u>	<u>Annual^{2/} Requirements</u>	<u>Current Output of CAST</u>	<u>Proposed Output of CAST</u>
Engineering Technicians and Draughtsmen	1,059 ^{1/}	100	29	90
Laboratory Technicians	513 ^{1/}	40	-	14
Accountants and Auditors	617	50)	19	45
Business - Administrative and Management Personnel	4,292	340)		
Stenographers and Typists	2,652	210	48	60
Institutional Management	Not Available		12	25

55. In the field of engineering, CAST is the only institution preparing higher-level technicians. In the secretarial field, private schools may continue to supply the larger share of the economy's needs, but representatives of the business community report that the secretaries trained by CAST generally perform more satisfactorily than those trained in the private schools. Although the great majority of business administrators would continue to be trained on the job, the training offered by CAST should make a substantial contribution in this area; business representatives complain of a dearth of middle-level management personnel.

56. No information exists as to the need for people trained in institutional management but in two sample months (June 1965 and January 1966) the government issued 26 work permits to foreign personnel following applications received from hotels. The proposed output of 25 per year in institutional management should be easily absorbed.

57. The Ministry of Education program provides that CAST will cooperate closely with two teacher training colleges (Mico and Shortwood) in training technical and commercial subject teachers for the secondary schools. Present plans provide for CAST to offer technical subject-matter courses during two-three days per week over a period of two years.

^{1/} Based upon 1964 study for private sector, plus government establishment figures.

^{2/} Assuming 7 percent annual increase for Engineering Technicians, 5 percent for other categories and 2½ percent annual replacement.

58. Under the planned expansion program, CAST's total annual intake of full-time students will be 360. For the 1965-66 academic year 450 applicants for admission as full-time students met the minimum entrance requirements.

Jamaica School of Agriculture

59. The proposed project provides for a library, assembly hall, lecture hall; 13 units of classrooms and laboratories; ten farm buildings; administration offices; student hostels with 332 places; staff residences—nine houses for families and six apartments for single teachers; and site development. Further, the project provides for furniture, educational equipment, farm machinery and transport. Costs of these facilities are estimated to total \$1.7 million. Technical services and overseas training of teachers are also provided at an estimated cost of \$0.3 million.

60. The proposed increase of facilities would treble the capacity of the school—from the present 170 places to 500 places—and would permit an expanded and diversified program to meet the needs of both the public services and the private agricultural sector. The following use is proposed for the expanded facilities:

<u>Courses</u>	<u>Enrollments</u>				<u>Annual Output</u>
	<u>I Year</u>	<u>II Year</u>	<u>III Year</u>	<u>Total</u>	
2-year, men	35	30	-	65	30
3-year, men	95	88	82	265	80
3-year, women	45	40	35	120	30
Short Courses	<u>-</u>	<u>-</u>	<u>-</u>	<u>50</u>	<u>1/</u>
All Streams	<u>175</u>	<u>158</u>	<u>117</u>	<u>500</u>	

61. Confirmed manpower requirements fully justify the proposed expansion of the Jamaica School of Agriculture. In an effort to accelerate agricultural development, the government has allocated to the Ministry of Agriculture one-third of the public investment planned for the period 1963-68. Various projects are to be implemented including advisory programs to help modernize the small- and medium-size farms. For this purpose the Ministry estimates that it will need to employ, by 1970, some 400 technicians including women extension agents. Only men are being trained presently and the output is insufficient to meet the demand; in the period 1961-64 the Ministry has been able to recruit an average of only 20 JSA graduates per year.

1/ Facilities are provided for enrollment at any one time of 50 students on short courses of duration varying from a few days to several weeks. Some 20 courses would be held annually giving an output of 1,000 or so.

62. There is also a large unfilled demand for JSA graduates in the private sector. During 1961-64 the JSA was able to supply an average of 16 graduates per year to the private sector; in 1965 requests were made for about 50 graduates, a number which would have been greater had it not been known that the supply was limited.

63. The recently revised curriculum for the senior division (age 12 through 14) of the all-age schools and for the new junior secondary schools calls for practical projects in the school garden and related theoretical studies aimed at giving youth some basic knowledge of agriculture and of improved agricultural practices relating to the type of crops grown in the community. This program will call for some 200 teachers of agriculture and home economics to be trained during the next five years. During the period 1961-1965, only five JSA graduates per year could be supplied to the educational system.

64. The number of men who will complete the diploma course is estimated to reach 80 from the present 40 per year. This increased output would help meet the needs of the Ministry of Agriculture and of the private sector. It is also expected that a number of JSA graduates will be trained as teachers of agriculture for the secondary schools.

65. Under the new plan some 45 women students would be admitted every year for training in both agriculture and home economics. The course would last three years and graduates would be mainly employed in the extension service, so that advice to farm families would cover both the farm and the home. A number of the women trainees may also be prepared as teachers of agriculture and home economics.

66. Graduates of the school have been in the past the main source of university students in agriculture and this condition is expected to persist for some time in the future. It is now planned to organize a special stream for preparing selected students for higher education. The course would take two years and arrangements have been made with the University to reduce its course from three to two years for graduates of the school who satisfy university entrance requirements. Some 30 agriculture students would thus enter the University of the West Indies every year so that the output of degree-holding agriculturists would be trebled.

67. The project provides for short courses on various subjects and of different duration to give supplemental training to technicians employed by the public services or private enterprises and also to train farmers in modern equipment and techniques used in particular farm industries.

68. In 1965 there were 265 male applicants for admission to JSA. Of these, 153 were qualified to take the entrance examination for the 56 available places. The expanded program provides for an intake of 145 male and 45 female students. An adequate supply of candidates for the expanded enrollment seems assured for the present, while higher levels of admission and instruction may be expected with improvement in general education.

69. Given the supply of qualified agriculturists and the technical services and overseas training provided by the project (paragraph 83), it should be easy for JSA to recruit and train in the next five years some 25 new teachers needed for the expanded program.

Junior Secondary Schools

70. Fifty new junior secondary schools are proposed as part of a program designed to provide within the next two decades three years of secondary education to the children who complete primary education but who are now kept in the all-age schools for lack of secondary level institutions. The "senior" classes of the primary schools are unable to offer a program which is adapted to the needs and potentialities of the children in this age group. The generally small enrollments in the senior division of the all-age school make it prohibitively expensive to establish the laboratories and workshops required for effective modern education at this level and to employ teachers with specialized training. "All-purpose" teachers are now required to give instruction in subjects for which they have not been prepared.

71. Junior secondary schools centrally located so as to receive the graduates of a number of primary schools would ensure efficient use of physical facilities and specialist teachers for the operation of a program which should (a) challenge the abilities and attract the interest of the students; (b) acquaint them with various occupations so that they may discover their vocational interests; and (c) increase the flow of capable students to upper secondary and higher education institutions. Thus, the junior secondary schools should lead to a more balanced educational system and to a better preparation of youths leaving school at the age of 15. The junior secondary schools would also reduce the need for expensive boarding facilities by bringing genuine secondary education to the local communities.

72. Another important feature of the junior secondary school is its role in the community development programs of the Jamaican government as propounded in the overall national development plans. There is a conspicuous need in Jamaica for the general upgrading of skills, and an equally conspicuous lack of facilities for this purpose, particularly in the rural areas. The junior secondary school, with its workshops and trained teachers of practical subjects, is equipped and located to respond to requests initiated by employers (agricultural estates, industrial complexes and mines). The schools will function in the evenings as community centers with particular emphasis on extension classes to increase skills in, e.g., plumbing, electricity, carpentry, metal working, building. The schools are also to be tied in with apprenticeship training and further education schemes for out-of-school adolescents.

73. It is intended that 51,000 students will be in junior secondary schools in the 1970/71 academic year. Of this number, 33,000 will be in places provided through the project, 5,500 will be in new schools constructed by the government, and 12,500 will be in former "senior" schools

which will have been provided with the necessary facilities and staff for conversion to junior secondary schools. An additional 76,000 students will continue to be enrolled in the "senior" classes of the primary schools system, pending the construction of additional junior secondary schools after 1970/71 (Annex 14).

74. In view of the preparatory work that must be done, construction is not expected to commence before June 1967. The limited capacity of the construction industry has necessitated a reduction in the project as originally requested so that construction may be completed by September 1970. The proposed junior secondary schools—excluding teacher houses and technical services—are estimated to cost \$12.8 million.

75. It is essential to house some senior staff on the sites of schools outside the Kingston Corporate area to organize and supervise evening extension activities for which the facilities are to be used. Housing for a reasonable minimum number of staff for this purpose (an average of about two per school) is estimated to cost \$0.9 million; this has been included in the project. This is 7 percent of the total cost of these schools. More than half of the remainder can be housed in neighboring towns and villages and it is considered that it is within the government's capability to meet the additional need.

Upper-Cycle Secondary Education

76. The proposed project does not provide directly for expansion of secondary education beyond the junior level. However, the Ministry plans to add by 1972 some 18,000 new places in existing secondary schools. A further 4,000 places can be added as a result of more efficient use of existing accommodation and teacher resources (paragraph 21). Assuming the present distribution of students, enrollment in the upper secondary classes would be doubled (from the present 11,000 to 22,000). This expansion would adequately meet the needs for the immediate future; costs have been included in the financial projections for education (paragraphs 102 to 105).

Teacher Training Colleges

77. The project provides for additions in buildings and equipment to four colleges training teachers for the primary and junior secondary schools. The project item is estimated to cost \$1.1 million and will increase the capacity of the colleges as follows:

<u>Colleges</u>	<u>Present Enrollment</u>	<u>Present Capacity</u>	<u>Proposed Capacity</u>	<u>New Places</u>
<u>In Project</u>				
Mico	500	500	650	150
St. Joseph's	130	130	250	120
Moneague ^{1/}	100	100	380	280
Mandeville	<u>78^{2/}</u>	<u>125</u>	<u>250</u>	<u>125</u>
	<u>808^{3/}</u>	<u>855</u>	<u>1,530</u>	<u>675</u>

78. The proposed increase in capacity of the teacher training colleges together with the change in the course from three years to two years of regular instruction and one year of internship would result in increasing the output of trained teachers from 365 at present to 1,000 per year. The government has assigned high priority to the teacher training program and plans to expedite construction and procurement. It is thus expected that this project item will be completed by April 1968.

79. The increased output of trained teachers would make possible by 1972 student-teacher ratios of 50:1 in the primary grades; 45:1 in the senior forms of the all-age schools still in operation and 35:1 in the junior secondary schools. The current student-teacher ratio for the all-age schools (junior and senior forms) is 58:1. The expanded training program would also increase the percentage of trained teachers from the current average of 58 percent to 75 percent by 1972 (65 percent for the primary grades, and 100 percent for the senior forms and the junior secondary schools). In spite of these increases, some 250 new untrained primary teachers will still have to be recruited each year (Annex 13).

80. Sufficient qualified candidates seem to be assured for the expanded program. Preliminary figures in February 1966 showed over 1,400 applications for admission to the teacher training colleges in September 1966. An additional source of applicants will be the estimated 500 students unlikely to meet university entrance requirements at their "A"-level examinations.

Technical Services and Overseas Training

81. In the past, educational development was marked by extensive employment of foreign personnel for supplementing local resources at the secondary, post-secondary and administrative levels. Since self-government there has been less need for this dependence. However, the government recognizes that the targets for its current educational program are obtainable only with a continued measure of technical expatriate support in key sectors.

^{1/} College for upgrading untrained teachers.

^{2/} First year of college's operation.

^{3/} Two other teachers' colleges with a total enrollment of 475 are not to be expanded.

82. In its initial stages CAST has depended largely upon expatriate staff from the United Kingdom. Significant progress has been made in the appointment of Jamaicans to the teaching staff, including the post of principal, but expatriates still head four of the five departments. Foreign specialists are provided by the project (for a total of 15 man-months) to assist the College administration in revising the curricula and implementing the new expanded program.

83. The teaching staff of JSA including the Principal, are all Jamaicans. Occasional assistance is received under the U.S. and U.K. aid programs. The expanded program will require additional expatriate specialists to assist the school to (a) revise and develop syllabuses, (b) train JSA teachers on the job, (c) establish collaboration with the research program, (d) operate a pilot extension program to serve as a laboratory for research and training purposes, and (e) help in training agriculture teachers for the secondary schools. The project provides for eleven man-years of specialists in various subjects of agriculture and home economics such as crop production, animal husbandry, nutrition, agricultural education, farm management and marketing. The project provides also for five one-year fellowships for training teachers abroad. Costs of the above technical services for JSA are estimated to total \$0.3 million.

84. For the new junior secondary school program the government has concluded a technical assistance agreement with the United States Agency for International Development providing for a team of education specialists (a total of approximately 40 man-years) to assist the Ministry of Education and the institutions concerned to: (i) develop suitable curricula; (ii) develop an effective program to train teachers for the new schools; (iii) prepare and test textbooks and teaching materials adapted to local needs; (iv) establish suitable organization and procedures for the supervision and in-service training of teachers; and (v) strengthen the organization and develop the staff of the Ministry of Education for effective administration and supervision of the expanded program. The agreement also provides for the training abroad of Jamaican specialists (six grants for a total of eight man-years). The agreement provides \$0.8 million for a period of two years. Another \$0.5 million is expected to be required for a third year, which might also be provided for by AID.

85. Some teacher trainers from abroad are employed in the teacher training colleges. The government intends to continue encouraging this practice in the aided colleges.

Administration

86. The accomplishment of the educational objectives of the project will depend on the development of an appropriate organization to administer

the expanded programs. The following are some of the major requirements of such an organization:

- (a) Strengthening of the Ministry of Education statistics and planning services to ensure that all necessary information is assembled and constant educational planning is carried on in order that efficient use of resources and a balanced development of the educational system may be achieved.
- (b) Development of a supervisory service capable of, and giving its full time to, assisting the schools to improve their instruction and to use all available means for developing their personnel. Separate competent services of the Ministry should deal with purely administrative work.
- (c) Government educational policy emphasizing coordination of the program of the University of the West Indies in the field of education with the teacher training colleges and the Ministry services especially those concerned with planning and with supervision and in-service training of teachers.
- (d) A program and facilities to produce textbooks and teaching materials adapted to local requirements.
- (e) Agricultural policy and administrative arrangements assuring the effective use of the services of the Agriculture Faculty of the University of the West Indies in the development of integrated research, extension and education programs.

Government assurances on the above have been obtained during negotiations.

School Sites

87. The Jamaica School of Agriculture, the College of Arts, Science and Technology, and the Teacher Training Colleges at Moneague, Mandeville, St. Joseph's and Mico are expansions of existing schools on land owned by the schools. The sites are satisfactory. Five of the junior secondary schools are to be built on suitable sites belonging to existing secondary schools with which they are to be associated. The remaining 45 junior secondary schools are to be built on new sites. As at July 1966, 16 sites had been selected of which ten had been acquired. Satisfactory arrangements are in operation for the selection and acquisition of the remaining sites and the rate of progress gives assurance that this will be completed by the end of 1967, in ample time to meet the requirements of the construction schedule (Annex 12).

School Buildings

88. The general standard of design of existing government schools is modest and reflects stringent economy in capital costs; it is weakest in its provision of scientific and technical facilities and takes little account of maintenance. The schools to be built under this project will be designed to avoid these deficiencies. In the estimate of recurrent expenditure for the project schools, the government assumed a generous annual allocation for maintenance equal to 2.5 percent of construction costs. However, in view of poor standards of maintenance in school buildings visited by the Bank mission, assurances have been given that buildings financed by the Bank will be regularly maintained in accordance with an approved routine schedule.

89. The size of the new junior secondary school program warrants a comprehensive review of existing data before finalizing standard designs. With Unesco assistance, a satisfactory start has been made with the preparation of economic space standards for this program. Environmental standards and criteria for maintenance will be established in the design stages. The accommodation proposed for expanding the existing colleges and schools meets the needs economically.

90. Professional and technical resources within government are insufficient to design and supervise the construction of the project. Accordingly, satisfactory local firms of architects have been selected for the expansions of the post-secondary institutions, and a foreign firm has been selected for the junior secondary schools.

91. Contracts of over £10,000 have to be approved by Cabinet. Standard forms of building contracts conform to good professional practices.

92. The building industry includes a dozen firms which have associations with larger firms abroad and are competent to construct the project facilities in accordance with acceptable standards. However, skilled labor is scarce, particularly of site foremen, and productivity is sometimes as low as one-fifth of U.S. standards. The materials/labor ratio was about 3:2 before recent increases in labor costs, but is now approaching 1:1. The uncertainty and low productivity of labor and the scattered nature of construction sites may tend to discourage international bids. These considerations were a deciding factor in the decision to reduce the number of junior secondary schools in the proposed project to 50 from the 66 originally requested.

Instructional Equipment and Furniture

93. Provisional lists have been prepared and, as revised during the project appraisal, are satisfactory for realistic cost forecasting. With the help of expatriate specialist teachers, these lists will be reviewed and master lists prepared for procurement.

Cost Estimates

94. Building cost estimates for the proposed project (Annex 11) have been based on an analysis of recently completed contracts for school buildings of simple design using modest specifications. Land acquisition costs have not been included in the project. A contingency of 12 percent has been added to the cost of the project as a whole to take into account future rises in building costs and a possible margin of error in the estimates. Unit costs per student place are difficult to establish for the expansion of the existing post-secondary boarding institutions, but a reasonable estimate is in the order of \$3,880 for the Jamaica School of Agriculture, \$2,480 for the College of Arts, Science and Technology, and \$1,610 for the teacher training colleges. In the case of the junior secondary day schools, the average cost per student place is \$280. These costs are moderate in the context of Jamaica and are acceptable.

95. The general distribution of the reimbursable project costs is 54 percent for academic buildings and common facilities, 12 percent for site development, 10 percent for instructional equipment, 9 percent for furniture, 6 percent for students' hostels, 7 percent for staff housing and 2 percent for technical services. Although a relatively high proportion of the costs is for site development, this distribution is reasonable. Site development costs for the post-secondary institutions have been based on the requirements of the individual sites and, in the case of the teacher training colleges, include substantial improvements to the overall sanitary arrangements. The cost of site development for the junior secondary schools has been determined by taking the 16 sites already selected, which were the best available in each particular location, to be a representative sample of the problems likely to be encountered. These costs can be considered to be reasonable in the particular circumstances.

96. Essential staff housing for the junior secondary schools has been provided at each school for the administrative personnel required to live on the premises (see paragraph 75). The cost of this housing is 7 percent of the total cost of these schools. At the post-secondary institutions, houses for key staff have been provided in the past in varying numbers according to the essential needs for resident personnel, the remoteness of the school's location and the extent of existing accommodation. A limited amount of housing, therefore, has been provided in the project to ensure successful recruiting of additional key personnel for the expanded institutions. The cost of the housing provided is 4 percent of the total cost of these institutions.

97. The foreign exchange component is expected to be 95 percent of the cost of instructional equipment, 20 percent of construction costs, 70 percent of the fees payable to foreign-based consultants, and 75 percent of the cost of technical services. On this basis the total estimated foreign exchange required for the project is \$6.2 million equivalent.

98. Within the limits of available data the following table forecasts the accumulative percentage of the Loan for which applications would be made to withdraw Loan funds:

<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
0.5%	15%	45.0%	80.0%	100%

Implementation

99. A Project Coordinator satisfactory to the Bank has been appointed to administer the project as a whole, coordinate bilateral sources of assistance to conform with project schedules, and submit to the Bank regular progress reports and withdrawal applications as they fall due. The Bank's consent will be sought on any changes in this appointment.

100. A qualified Project Architect, acceptable to the Bank, has been appointed to assist the Project Coordinator in arranging that architects are properly briefed, that their submissions are considered and approved by competent authorities, that the progress of construction is reported regularly, and that construction schedules are fully taken into account in the programming of equipment and furniture procurement. The Bank's consent will be sought on any changes in the appointment of the Project Architect.

Procurement

101. All major construction and equipment procurement contracts will be awarded on the basis of international competitive bidding. It is possible, however, that the small size of construction contracts and the uncertainty and low productivity of local labor may tend to inhibit active international participation in the bidding for construction contracts.

Finance

102. The Ministry of Finance has projected recurrent and capital expenditure of the Ministry of Education for the next five years, based upon planned improvements and expansion in the education system including the proposed project. This projection showed that if the total Jamaican recurrent budget increased at the rate of 7 percent per annum, the proportion of the recurrent budget allocated to the Ministry of Education would increase from its present estimated level of 15.7 percent to 21.1 percent in 1970/71. This is in line with the expenditures on education made by many other countries, but such an increase would require strenuous efforts to limit other sectors of the budget. There appear, however, to be opportunities for considerable economies in operational expenditures. The maintenance of teacher-student ratios at 1:18 in secondary grammar schools is an unnecessary luxury which would make any substantial expansion in the

secondary system unduly burdensome. The £40 per capita cost projected for the junior secondary schools in 1970/71 also appears excessive. With a teacher-pupil ratio of 1:35, teachers' costs in the junior secondary schools will average £22 per pupil to which must be added maintenance and operation costs of about £13, giving a total cost of £35 per capita. These cost reductions combined with the reduction in the size of the project would enable the government to achieve its quantitative and qualitative goals in educational development without increasing the Ministry of Education's share beyond 19 percent of total recurrent expenditure. This proportion would ease the pressures on other sectors of the budget and should be within the financial capabilities of the Jamaican government. The projections, which are exclusive of all salary increases, are summarized below and details of the assumptions used are given in Annexes 8, 9 and 15. The government has agreed to take the steps which have been indicated to keep educational recurrent expenditure within the limit of 19 percent as indicated in column (3) below.

<u>Ministry of Education Recurrent Budget</u>					
<u>Year</u>	Jamaican Recurrent Budget (1) <u>£'000</u>	Finance Ministry Projection (2) <u>£'000</u>	<u>(2) ÷ (1)</u>	Modified Projection (3) <u>£'000</u>	<u>(3) ÷ (1)</u>
1964/65	43,555	6,724	15.4%	6,724	15.4%
1965/66 (est.)	45,518	7,160	15.7	7,160	15.7
1966/67	48,700	7,840	16.1	7,700	15.8
1967/68	52,100	8,466	16.2	8,500	16.3
1968/69	55,700	9,882	17.7	9,400	16.8
1969/70	59,600	11,661	19.6	10,500	17.6
1970/71	63,800	13,470	21.1	11,700	18.3
1971/72	68,300	-	-	12,800	18.8
1972/73	73,100	-	-	13,900	19.0

103. Of the £6.7 million increase in recurrent costs between 1965/66 and 1972/73, £1.1 million is directly attributable to the project. Of the remaining £5.6 million, £2.0 million is due to increase in junior and upper secondary places outside the project; £1.5 million to higher enrollments in primary schools as a result of population increase; £1.9 million to smaller class sizes, better-qualified teachers, and higher operating costs in respect of "senior" schools converted to junior secondary schools; and £0.2 million to miscellaneous increases.

104. It is proposed that the Bank finance \$9.5 million or about 50 percent of the project cost. This is considered justifiable in order that the financial burden for this significant educational development would not be

excessive for the government which has already been maintaining a fairly high level of expenditure in education (paragraphs 47 and 48). As indicated in Annex 9, projected capital expenditures by the Ministry of Education during the implementation of the proposed project (1966/67 to 1969/70) total about \$27.6 million. Hence, even allowing for \$4.0 million which is expected to be forthcoming under bilateral aid programs and Bank financing of 50 percent of the cost of the proposed project, the Ministry would still be undertaking an annual average capital expenditure of \$3.8 million as compared with an average of \$2.5 million over the previous five years, i.e., an increase of over 50 percent. If the government were to assume all local costs, its capital expenditure for education during the next four years would need to increase by over 90 percent from the present rate.

105. In order to assess the long-term financial implications of the government program for educational development, recurrent education costs have been projected to 1980 (Annex 16). While forecasts for so long a period must be viewed with considerable reservation, the exercise shows that the proposed educational targets should not unduly strain the government budget if revenue continues to grow at the rate of the past decade. Estimates are based on the assumption that by 1980 some 90 percent of the children will complete junior secondary education and that enrollment in upper secondary classes (estimated at 36 percent of the age group) would have reached 55,000 from the present 11,000 pupils. The projection shows that under these conditions, the Ministry of Education's share of the total recurrent budget would not exceed 20 percent.

V. CONCLUSIONS AND RECOMMENDATIONS

106. The facilities to be constructed under the proposed project are required in order to meet the immediate needs for certain categories of manpower, and to strengthen the educational system so as to assure an adequate flow of qualified students for higher education and training for middle-level positions.

107. The primary school system cannot provide the type of education adapted to the needs and capabilities of the 12 through 14 age group. The junior secondary schools to be constructed under the project represent a reasonable first step in the transfer of this age group from the primary to the secondary school system over a 15-year period (paragraphs 70-72).

108. The additional teacher training college places to be constructed under the project are required in order to meet the staffing needs of the new junior secondary schools, and to provide for a gradual upgrading of the teaching force in the primary schools (paragraph 79).

109. The additional places to be constructed at the College of Arts, Science and Technology, and at the Jamaica School of Agriculture, will help to improve the efficiency of industrial and agricultural enterprises, reduce dependence on expatriates for technical personnel, and provide the personnel required by the Ministry of Agriculture for its programs aimed at raising agricultural productivity (paragraphs 54-56, 61-65).

110. The recurrent costs generated by the education program are within Jamaica's financial capabilities (paragraph 102).

111. There is an adequate number of competent contractors in Jamaica to carry out the project. While the available Jamaican architectural firms are able to undertake the design and supervision of the post-secondary portions of the project, the services of a foreign firm with more resources than available locally have been obtained for the junior secondary school program (paragraphs 90 and 92).

112. A project coordinator and a project architect acceptable to the Bank have been appointed on a full-time basis (paragraphs 99 and 100).

113. The list of equipment to be procured is adequate and cost estimates are reasonable. The proposed procurement procedures are satisfactory (paragraphs 93 and 101).

114. The following confirmations and assurances have been




obtained from the Government during negotiations:

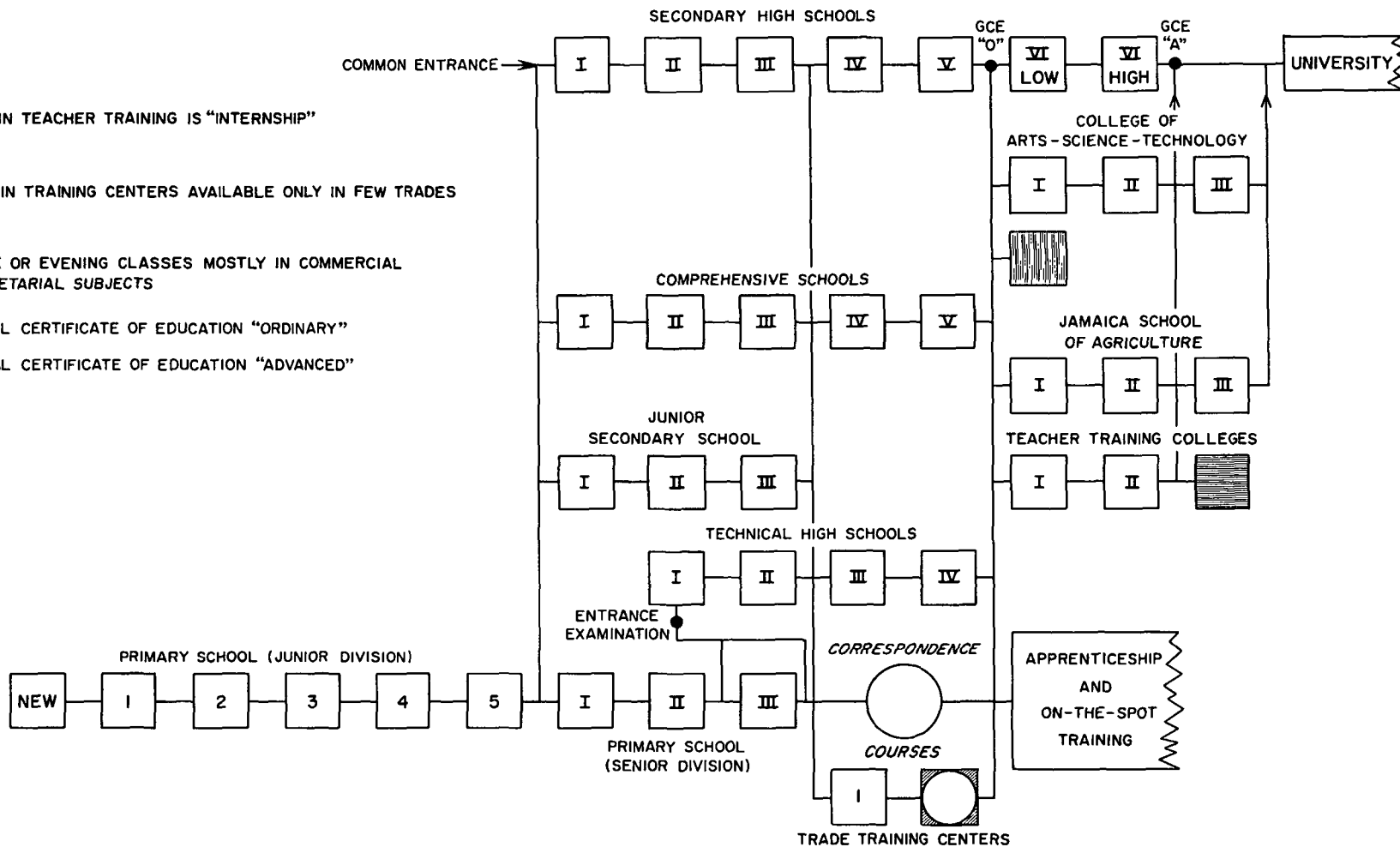
- (i) Assurances on the development of an appropriate organization to administer the expanded programs (paragraph 86);
- (ii) Confirmation on the reduction in the proposed level of recurrent expenditures for secondary (grammar) schools and junior secondary schools (paragraph 102);
- (iii) Confirmation on the use of local and foreign firms of architects for the design and supervision of the construction of the project, on terms and conditions satisfactory to the Bank (paragraph 90);
- (iv) Assurances on the use of international competitive bidding for major construction and all equipment supply contracts (paragraph 101);
- (v) In addition to the usual assurance that the government will provide all funds necessary to complete the project, assurances that the government will include in its yearly budgets sufficient funds for the operation of the proposed project and the adequate maintenance of school buildings and facilities (paragraphs 88 and 102).
- (vi) Assurances that the Principal of CAST shall be wholly employed in its administration and conduct and shall not normally engage in other professional practices (paragraphs 33 and 53).

115. In view of the assurances referred to above, the project forms a suitable basis for a Bank loan. The proposed amount of the loan is \$9.5 million with a term of 20 years, including a grace period of five years.

September 8, 1966

JAMAICA: THE EDUCATIONAL AND TRAINING SYSTEM, 1966

-  3rd YEAR IN TEACHER TRAINING IS "INTERNSHIP"
 -  2nd YEAR IN TRAINING CENTERS AVAILABLE ONLY IN FEW TRADES
 -  PART-TIME OR EVENING CLASSES MOSTLY IN COMMERCIAL AND SECRETARIAL SUBJECTS
- GCE "O" - GENERAL CERTIFICATE OF EDUCATION "ORDINARY"
 GCE "A" - GENERAL CERTIFICATE OF EDUCATION "ADVANCED"

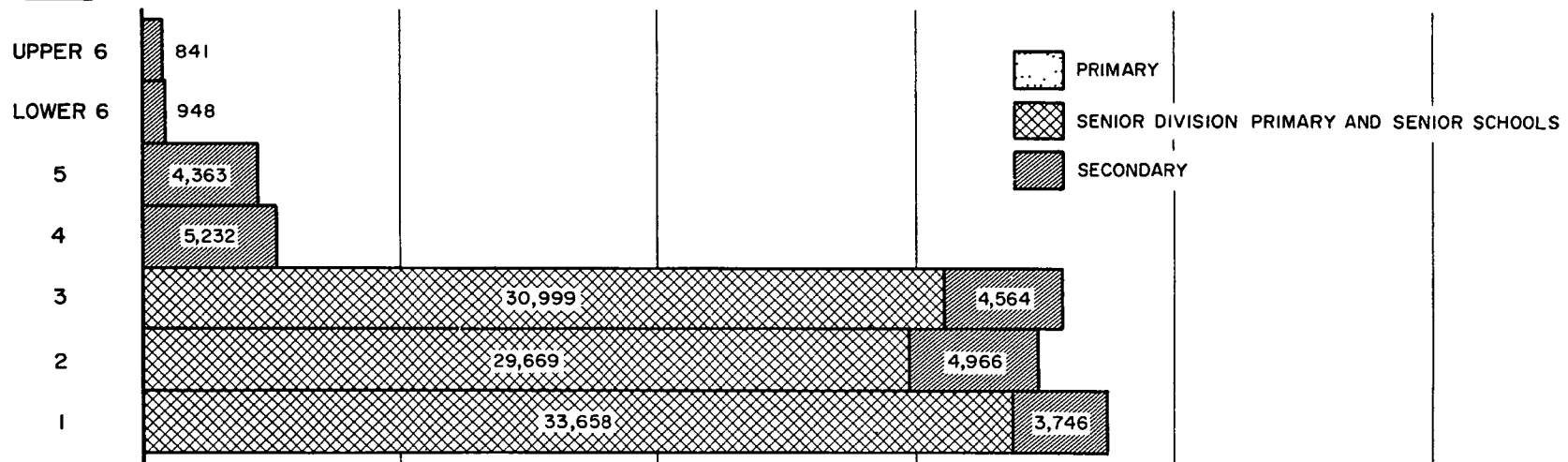


SCHOOL YEAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
AGE	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

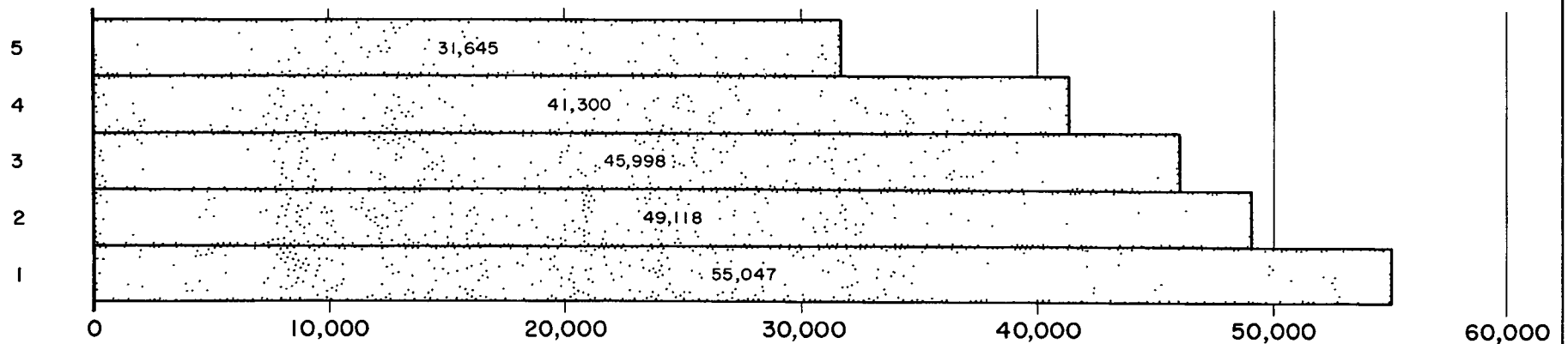
JAMAICA: EDUCATIONAL PYRAMID

ENROLLMENT IN PUBLIC AND GOVERNMENT-AIDED SCHOOLS 1964

FORM



GRADE



NOTE: Differences in enrollment by sex are negligible and, therefore, no distinction by sex is shown

JAMAICA
PRE-SCHOOL & PRIMARY EDUCATION-GOVERNMENT AND GOVERNMENT AIDED SCHOOLS
Detailed Enrollments for 1963, and 1964 Totals

A. 1963^{1/}

Age	Infant Division	Junior Division					Senior Division				Totals	
	Total	1	2	3	4	5	Total	Form 1	Form 2	Form 3		Total
4	1,082	-	-	-	-	-	-	-	-	-	-	1,082
5	3,781	-	-	-	-	-	-	-	-	-	-	3,781
6	3,350	823	21	-	-	-	844	-	-	-	-	4,194
7	540	35,594	8,128	887	62	6	44,677	-	-	-	-	45,217
8	-	11,502	22,226	7,850	926	107	42,611	-	-	-	-	42,611
9	-	2,455	10,794	19,686	6,624	1,163	40,722	9	2	-	11	40,733
10	-	611	2,790	10,444	18,366	6,660	38,871	68	19	-	87	38,958
11	-	100	627	3,027	9,520	15,455	28,729	889	179	24	1,092	29,821
12	-	24	146	742	2,894	6,800	10,606	17,829	7,090	1,586	26,505	37,111
13	-	1	-	1	14	41	57	7,178	12,712	6,670	26,560	26,617
14	-	-	-	-	-	5	5	2,116	5,591	13,074	20,781	20,786
15 and over	-	-	-	-	-	-	-	255	981	4,923	6,159	6,159
Total	9,383	51,110	44,732	42,637	38,406	30,237	207,122	28,344	26,574	26,277	81,195	297,070

B. 1964^{2/}

Total	9,988	55,047	49,118	45,998	41,300	31,645	223,108	33,658	29,669	30,999	94,326	330,380 ^{3/}
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^{1/} Excludes 8,999 students enrolled in Senior Schools (Forms 1-3).

^{2/} Includes 9,297 students enrolled in Senior Schools.

^{3/} Total includes 2,958 students in schools which did not report subdivision by grade.

JAMAICA
SECONDARY LEVEL ENROLLMENT - 1964

	<u>Form I</u>	<u>Form II</u>	<u>Form III</u>	<u>Form IV</u>	<u>Form V</u>	<u>Form VI</u> <u>(Lower)</u>	<u>Form VI</u> <u>(Upper)</u>	<u>Total</u>
A. <u>Secondary High Schools</u>								
<u>Age</u>								
10	342	23	--	--	--	--	--	365
11	1,369	638	28	--	--	--	--	2,035
12	1,499	1,482	547	4	1	--	--	3,533
13	376	1,477	1,347	485	23	--	--	3,708
14	22	331	1,172	1,263	363	17	--	3,168
15	2	17	423	1,269	1,105	178	33	3,027
16	--	4	49	569	1,209	393	146	2,370
17	--	1	4	154	685	263	317	1,424
18	--	--	--	18	259	97	345	719
TOTAL (41 Schools)	3,610	3,973	3,570	3,762	3,645	948	841	20,349
B. <u>Comprehensive Schools</u>								
TOTAL (2 Schools)	136	520	278	325	33	--	--	1,292
C. <u>Secondary Technical Schools</u>								
TOTAL (6 Schools)	--	473	716	711	559	--	--	2,459
D. <u>Vocational Schools</u>								
TOTAL (5 Schools)	--	--	--	434	126	--	--	560
							GRAND TOTAL	24,660

COLLEGE OF ARTS, SCIENCE AND TECHNOLOGYPresent and Projected Entry and Output of Full-time Students

<u>Course</u>	<u>Years</u>	<u>Projected Entry</u>	<u>Total Enrollment</u>		<u>Annual Output</u>	
			<u>Present</u>	<u>Projected</u>	<u>Present</u>	<u>Projected</u>
Mechanical eng.	3		69	122	11	30
Electrical eng.	3	96	61	122	8	30
Building	3		61	61	10	15
Structural eng.	3	48	nil	61	nil	15
Pharmacy	3	16	24	42	11	12
Lab. Technicians	2	20	nil	36	nil	14
Business Admin.	2		50	132	19	30
Business Admin.(adv.)	1	72	nil	18	nil	15
Secretarial work	1		48	72	42	40
Secretarial work(adv)	1	72	nil	24	nil	20
Institutional Management	2	36	24	64	12	25
	-	—	—	—	—	—
Totals		360	343	754	113	246

Part-time Students (1965 - 1966)

<u>Course</u>	<u>Years</u>	<u>Total Enrollment</u>		<u>Period of Day Attendance</u>
		<u>Evening</u>	<u>Day</u>	
Mechanical eng.	1 - 5	nil	204	1 day per week
Electrical eng.	1 - 5	89	72	1 day per week
Building	1 - 5	15	92	1 day per week
Commerce	1 - 3	422	65	1 day per week
Teacher training	1 - 2	nil	56	3 days per week (av.)
Languages	1 - 2	84	nil	
"A" level science	1 - 2	180	nil	
	—	—	—	
Totals		793	489	

UNIVERSITY OF THE WEST INDIES1965 Enrollment and Admissions
of Jamaican Students^{1/}

	<u>New Admissions</u>	<u>Total Enrollment</u>
<u>(a) Degree Courses</u>		
Arts (day)	95	236
Arts (evening)	83	156
Natural Sciences (day)	51	198
Natural Sciences (evening)	48	83
Social Sciences	53	145
Medicine	43	153
Agriculture	13	22
Engineering	<u>26</u>	<u>49</u>
Total Degree Students	412	1,042
<u>(b) Non-Degree Courses</u>		
Certificate of Education	18	18
Certificate of Social Work	6	11
Public Administration	5	5
Preliminary Science	124	127
International Relations	<u>4</u>	<u>4</u>
Total Non-Degree Students	157	165
<u>(c) Post Graduate Courses</u>		
Diploma in Education		17
M. A. in Education		21
Arts		12
Natural Sciences		23
Social Sciences		16
Medicine		6
Agriculture		<u>6</u>
Total Post Graduate Students		101

^{1/} Enrollment as of 10/65 and admissions for 65/66.

JAMAICA

EXPENDITURE ON EDUCATION AND TRAINING 1959/60 THROUGH 1965/66

(with percentages of total government expenditure)

RECURRENT EXPENDITURE (in £ 000)							
Year	Total Recurrent Expenditure (1)	Ministry of Education (2)	(2) ÷ (1)	Other Educational Expenditure (3)	(3) ÷ (1)	Total Educational Expenditure (4)	(4) ÷ (1)
1959/60	26,379	4,314	16.4%	600*	2.3%	4,900	18.6%
1960/61	28,201	4,670	16.6	800*	2.8	5,500	19.5
1961/62	31,567	5,179	16.4	850*	2.7	6,000	19.0
1962/63	35,704	5,722	16.0	778	2.2	6,500	18.2
1963/64	38,042	5,818	15.3	1,401	3.7	7,219	19.0
1964/65	43,555	6,724	15.4	1,592	3.7	8,316	19.1
1965/66 (Est.)	45,518	7,160	15.7	1,746	3.8	8,906	19.6

* Jamaica's share of University of West Indies expenditure is estimated for these years.

CAPITAL EXPENDITURE (in £ 000)							
Year	Total Capital Expenditure (1)	Ministry of Education (2)	(2) ÷ (1)	Other Educational Expenditure (3)	(3) ÷ (1)	Total Educational Expenditure (4)	(4) ÷ (1)
1959/60	11,011	1,015	9.2%	23	.2%	1,038	9.4%
1960/61	10,680	993	9.3	5	---	998	9.3
1961/62	11,126	909	8.2	14	0.1	923	8.3
1962/63	12,155	892	7.3	4	---	896	7.4
1963/64	12,770	726	5.7	318	2.5	1,044	8.2
1964/65	16,732	862	5.2	140	0.8	1,002	6.0
1965/66 (Est.)	19,099	968	5.1	103	0.5	1,071	5.6

TOTAL EXPENDITURE (CAPITAL AND RECURRENT) (in £ 000)							
Year	Total Expenditure (1)	Ministry of Education (2)	(2) ÷ (1)	Other Educational Expenditure (3)	(3) ÷ (1)	Total Educational Expenditure (4)	(4) ÷ (1)
1959/60	37,390	5,328	14.2%	600*	1.6%	5,900	15.8%
1960/61	38,880	5,663	14.6	800*	2.1	6,500	16.7
1961/62	42,693	6,088	14.3	850*	2.0	6,900	16.2
1962/63	47,859	6,616	13.8	762	1.6	7,207	15.4
1963/64	50,813	6,544	12.9	1,719	3.4	8,263	16.3
1964/65	60,287	7,586	12.6	1,722	2.9	9,317	15.5
1965/66 (Est.)	64,618	8,128	12.6	1,879	2.9	10,077	15.5

* Jamaica's share of University of the West Indies expenditure is estimated for these years.

JAMAICA

RECURRENT EXPENDITURE FOR EDUCATION AND TRAINING (in £ 000)

MINISTRY OF EDUCATION	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65	1965/66 (est)	PROJECTED EXPENDITURE ^{1/}					1971/72	1972/73
								1966/67	1967/68	1968/69	1969/70	1970/71		
ADMINISTRATION	232	257	257	281	300	323	302	308	314	320	326	332	340	345
PRIMARY (including Senior Schools through 1966/67)	2,575	2,645	2,806	2,949	3,156	3,735	3,867	3,990	4,290	4,655	4,995	5,320	5,730	6,040
JUNIOR SECONDARY SCHOOLS (including converted Senior Schools)	---	---	---	---	---	---	---	285	570	835	1,185	1,535	1,885	2,235
SECONDARY (Grammar & Comprehensive)	805	944	1,118	1,213	1,286	1,469	1,487	1,560	1,655	1,735	1,805	1,880	2,060	2,300
SECONDARY TECHNICAL AND VOCATIONAL	173	193	295	349	384	456	514	510	500	530	725	1,045	1,270	1,330
COLLEGE OF ARTS, SCIENCE AND TECHNOLOGY	---	---	52	62	76	95	105	115	125	140	175	195	205	215
TEACHER TRAINING	248	274	307	331	345	347	507	560	625	700	775	810	825	840
HIGHER EDUCATION	31	71	99	406	143	111	131	142	154	174	194	200	215	230
YOUTH CORPS	98	98	101	---	---	---	---	---	---	---	---	---	---	---
LIBRARIES	75	81	94	95	97	103	131	129	138	146	154	162	170	180
OTHER	77	107	50	36	31	85	116	107	118	140	162	184	195	210
TOTAL MINISTRY OF EDUCATION	4,314	4,670	5,179	5,722	5,818	6,724	7,160	7,706	8,489	9,375	10,496	11,663	12,840	13,925
% of TOTAL RECURRENT EXPENDITURE	16.4%	16.6%	16.4%	16.0%	15.3%	15.4%	15.7%	15.8%	16.3%	16.8%	17.6%	18.3%	18.8%	19.0%
JAMAICA SCHOOL OF AGRICULTURE	50	53	61	62	71	75	80	85	111	136	146	n.a.	n.a.	n.a.
UNIVERSITY OF WEST INDIES ^{2/}	200	300	300	---	522	631	631	N	O	T				
UNIVERSITY HOSPITAL ^{3/}	126	135	161	203	272	320	336							
SCHOLARSHIPS AND TRAINING (Ministry of Finance)	95	129	155	198	199	173	244							
ALLOWANCE TO NURSES IN TRAINING	71	109	93	142	152	183	185							
YOUTH CORPS	---	---	---	102	102	110	145							
OTHER	60	75	69	71	83	100	125							
TOTAL OTHER MINISTRIES	602	801	839	778	1,401	1,592	1,746							
% of TOTAL RECURRENT EXPENDITURE	2.3%	2.8%	2.7%	2.2%	3.7%	3.7%	3.8%							
TOTAL EXPENDITURE ON EDUCATION AND TRAINING	4,916	5,471	6,018	6,500	7,219	8,316	8,906							
% OF TOTAL RECURRENT EXPENDITURE	18.6%	19.4%	19.1%	18.2%	19.0%	19.1%	19.6%							
TOTAL JAMAICAN GOVERNMENT RECURRENT EXPENDITURE ^{4/}	26,379	28,201	31,567	35,704	38,042	43,555	45,518	48,700	52,100	55,700	59,600	63,800	68,300	73,100

NOTES:

^{1/} The major modifications to the Ministry of Finance assumptions are shown below, together with the effect on the 1970/71 budget projections:

Reduction from Ministry of Finance 1970/71 Projection

a) Junior Secondary Schools are costed at £ 35 per place rather than £ 40.	250,000
b) Secondary School cost per place is reduced gradually to £ 60 on the assumption that student-teacher ratios will increase from 18:1 to 23:1.	250,000
c) Only 7/12 of the increased costs of each academic year are shown in that fiscal year, with the remaining 5/12 reflected in the following fiscal year.	400,000
d) Cost reductions for C.A.S.T. and teachers training colleges.	100,000
e) 32,000 fewer students are transferred from the Primary Schools to the Junior Secondary Schools.	550,000
f) Only 50% of 6 year olds are in school by 1970.	250,000
Total	£1,800,000

The Figures for administration, higher education, libraries, and other are from the Ministry of Finance projection. Details of the projection of other items are shown in Annex 16.

^{2/} Prior to 62/63 this cost was met by the Federal Government, and after the dissolution of the federation by the Interim Commissioner. Figures for 1959/60 through 1961/62 are crude estimates of the proportion of these costs paid by Jamaica. For 1962/63, this item was included in the Ministry of Education budget.

^{3/} 32% of the hospital costs is counted as training expenses.

^{4/} Projection assumes 7% annual increase.

JAMAICA

CAPITAL EXPENDITURE FOR EDUCATION (in £ 000)

	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65	1965/66 (Est.)	Projected Expenditure ^{1/}				
								1966/67	1967/68	1968/69	1969/70	1970/71
MINISTRY OF EDUCATION												
Primary	307	324	283	245	271	380	350	350	210	210	210	210
Post Primary Departments and Senior Schools	50	195	181	195	94	91	96	71	-	-	-	-
Junior Secondary Schools	-	-	-	-	-	-	-	490	1,750 ^{1/}	1,750 ^{1/}	1,500 ^{1/}	1,220
Teachers Cottages	56	66	65	39	12	35	108	128	250	250	215	215
Teachers Training Colleges	149	26	47	74	40	38	86	-	190 ^{2/}	190 ^{2/}	-	-
Secondary (Grammar)	288	162	113	103	108	92	105	75)	-	240	240	625
Comprehensive Schools	-	-	-	-	-	55	50	52)	-	-	-	-
Technical High Schools			76	116	75	47	126	22)	-	100	700	400
Vocational Schools			-	5	6	3	10	21)	-	-	-	-
Trade Training Centers, and Technical Institutes	144	189	46	11	-	-	1	14	20	20	20	20
College of Arts, Science and Technology			50	73	51	108	8	15	105 ^{2/}	220 ^{2/}	145	-
Libraries	1	17	5	2	17	5	8	75	-	-	-	-
Other	<u>20</u>	<u>14</u>	<u>43</u>	<u>29</u>	<u>52</u>	<u>8</u>	<u>20</u>	-	-	-	-	-
Total Ministry of Education	1,015	993	909	892	726	862	968	1,313	2,525	2,980	3,030	2,690
Jamaica School of Agriculture	20	2	10	-	1	5	-	20 ^{2/}	420 ^{2/}	370 ^{2/}	170 ^{2/}	-
University of West Indies	-	-	-	-	165	120	94	Not Available				
University Hospital	-	-	-	-	147	10	4	Not Available				
Other	<u>3</u>	<u>3</u>	<u>4</u>	<u>4</u>	<u>5</u>	<u>5</u>	<u>5</u>	Not Available				
Total Capital Expenditure	1,038	998	923	896	1,044	1,002	1,071	Not Available				

^{1/} Projection is by the Ministry of Finance except that:

- a) Project items are revised in accord with the recommendations of the Bank mission;
- b) Secondary construction in 1970/71 is 40% of the 10,000 new places and of the 3,000 replacement places proposed by Ministry.

As revised, the projection provides:

Primary - 3,000 replacement and 4,000 new places each year from 1967/68

Secondary - 2,000 new places in 1968/69 and in 1969/70; 4,000 new and 1,200 replacement places in 1970/71.

Secondary Technical and Vocational - A total of 6,000 new places from 1967/68 through 1970/71.

Junior Secondary - 4,000 places in 1966/67, and 10,000 places per year thereafter.

^{2/} Included in project.

EDUCATIONAL EXPENDITURE AS PERCENTAGE OF G.N.P.

	<u>in £ 000,000</u>	<u>Percent of G.N.P.</u>
<u>Expenditure on Education</u>		
Government (1964/65)	9.3	3.3%
Overseas Grants (1963/64)	1.8	0.7
Expenditure by Individuals for Education Fees (1963/64)	1.6	0.6
Private Sector Capital Expenditure (1960)	0.3	0.1
		<hr/>
		4.7%

G.N.P. (in £ 000,000)

1964	280.7
1963	267.4
1960	224.8

JAMAICA EDUCATION PROJECT
1/
CONSTRUCTION SCHEDULE

	1966	1967	1968	1969	1970
<u>Preparation</u>					
Acquisition of Land ^{2/}	XXXXXX	XXXXXX			
<u>Construction</u>					
Jamaica School of Agriculture		XXXXXX	XXXXXX	XXXXXX	
College of Arts, Science & Technology		XXXXXX	XXXXXX	XXXXXX	
Teacher Training College - Moneague		XXXXXX	XX		
Teacher Training College - Mandeville		XXXXXX	XX		
Teacher Training College - St. Josephs		XXXXXX	X		
Teacher Training College - Mico		XXXXXX			
11 Junior Secondary Schools - Phase I		XXX	XXXX		
20 Junior Secondary Schools - Phase II			XXX	XXXX	
19 Junior Secondary Schools - Phase III				XXX	XXXX

Proposed schedule XXXXXX

Original schedule _____

1/ Based on information available July, 1966.

2/ Refers to Junior Secondary Schools - Phases II and III.

JAMAICA

PROJECTION OF TEACHER SUPPLY AND REQUIREMENTS

(Infant, Junior, All-Age, Senior and Junior Secondary Schools and Departments)

	Number of Students ^{1/}	Teacher Student Ratio	Number of Teachers Required	Percent Trained		Number of Teachers Prior Year	Resignations (at 3%)	Sent for Training	Newly Hired	Number of Teachers Current Year
1964/65 (Actual)										
All-Age Senior Schools	321,083	1:59	5,467	57%	Trained					3,321
Total	9,297	1:42	221	95%	Untrained					2,367
	330,380	1:58	5,688	58%	Total					5,688
1965/66 (Estimated)										
Total	344,000	1:57	6,035	59%	Trained	3,321	100	---	350	3,571
					Untrained	2,367	71	50	218	2,464
					Total	5,688	171	50	568	6,035
1966/67										
Primary	255,000	1:58	4,397	} 57%	Trained	3,571	107	---	350	3,814
Senior Forms All-Age	89,000	1:55	1,618		Untrained	2,464	74	50	261	2,601
Junior Secondary ^{1/}	14,000	1:35	400	95%	Total	6,035	181	50	611	6,415
Total	358,000	1:56	6,415	59%						
1967/68										
Primary	268,000	1:57	4,702	} 60%	Trained	3,814	114	---	700	4,400
Senior Forms All-Age	92,000	1:52	1,769		Untrained	2,601	78	200	262	2,585
Junior Secondary	18,000	1:35	514	100%	Total	6,415	192	200	962	6,985
Total	378,000	1:54	6,985	63%						
1968/69										
Primary	282,000	1:56	5,036	} 62%	Trained	4,400	132	---	700	4,968
Senior Forms All-Age	88,000	1:52	1,692		Untrained	2,585	78	200	253	2,560
Junior Secondary	28,000	1:35	800	100%	Total	6,985	210	200	953	7,528
Total	398,000	1:53	7,528	66%						
1969/70										
Primary	297,000	1:55	5,400	} 63%	Trained	4,968	149	---	700	5,519
Senior Forms All-Age	84,000	1:52	1,515		Untrained	2,560	77	200	298	2,581
Junior Secondary	38,000	1:35	1,085	100%	Total	7,528	226	200	998	8,100
Total	419,000	1:52	8,100	68%						
1970/71										
Primary	310,000	1:52	5,962	} 66%	Trained	5,519	166	---	1,000	6,353
Senior Forms All-Age	79,000	1:50	1,580		Untrained	2,581	77	200	256	2,560
Junior Secondary	48,000	1:35	1,371	100%	Total	8,100	243	200	1,256	8,913
Total	437,000	1:49	8,913	71%						
1971/72										
Primary	331,000	1:51	6,490	} 69%	Trained	6,353	191	---	1,000	7,162
Senior Forms All-Age	72,000	1:47	1,532		Untrained	2,560	77	200	234	2,517
Junior Secondary	58,000	1:35	1,657	100%	Total	8,913	268	200	1,234	9,679
Total	461,000	1:48	9,679	74%						
1972/73										
Primary	352,000	1:50	7,040	} 71%	Trained	7,162	215	---	1,000	7,947
Senior Forms All-Age	66,000	1:45	1,466		Untrained	2,517	76	200	260	2,501
Junior Secondary	68,000	1:35	1,942	100%	Total	9,679	291	200	1,260	10,448
Total	486,000	1:47	10,448	76%						

Notes:

- 1/ Number of students from Annex 14. Distribution between Senior Forms and Junior Secondary Schools based upon probable construction schedule.
- 2/ Including former Senior Schoc
- 3/ From Project Request Documents Appendix A - Table 5.

PROJECTION OF ENROLLMENTSA - Age 6 through 11

<u>Year</u>	<u>Population 7-11</u>	<u>Percent Enrolled</u>	<u>Population Age 6</u>	<u>Percent Enrolled</u>	<u>Total Enrollment Infant and Junior Divisions^{1/}</u>
1964/65	256,000	88	57,000	10	236,000
1965/66	264,000	89	58,000	10	245,000
1966/67	272,000	90	59,000	10	255,000
1967/68	280,000	90	60,000	20	268,000
1968/69	288,000	90	62,000	30	282,000
1969/70	296,000	90	63,000	40	297,000
1970/71	304,000	90	64,000	50	310,000
1971/72	312,000	90	65,000	70	331,000
1972/73	320,000	90	66,000	90	352,000

B - Age 12 through 14

<u>Year</u>	<u>Population</u>	<u>All Age and Senior Schools</u>	<u>Junior Secondary Schools</u>	<u>Secondary (including Secondary Technical and Vocational)</u>	<u>% (2)+(3)+(4)</u>
	<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>	<u>(1)</u>
1964/65	125,000	94,000	-	13,000	86
1965/66	131,500	99,000	-	14,000	86
1966/67	138,000	89,000	14,000	15,000	86
1967/68	145,000	92,000	18,000	16,000	87
1968/69	151,500	88,000	28,000	17,000	88
1969/70	158,500	84,000	38,000	19,000	89
1970/71	165,000	76,000	51,000	22,000	90
1971/72	171,500	72,000	58,000	25,000	90
1972/73	178,500	66,000	68,000	27,000	90

^{1/} Including about 5,000 under six years of age.

JAMAICA

ASSUMPTIONS USED IN MODIFIED PROJECTION OF RECURRENT COSTS

(number of students in 000, cost per head in £, cost in £000)

	Academic Year 9/64-8/65	Fiscal Year 4/65-3/66 (budget estimate)	Academic Year 9/65-8/66	Fiscal Year 4/66-3/67	Academic Year 9/66-8/67	Fiscal Year 4/67-3/68	Academic Year 9/67-8/68	Fiscal Year 4/68-3/69	Academic Year 9/68-8/69	Fiscal Year 4/69-3/70	Academic Year 9/69-8/70	Fiscal Year 4/70-3/71	Academic Year 9/70-8/71	Fiscal Year 4/71-3/72	Academic Year 9/71-8/72	Fiscal Year 4/72-3/73	Academic Year 9/72-8/73
PRIMARY																	
Number of Students																	
Lower Forms	236		245		255		268		282		297		310		331		352
Senior Forms	94		99		89		92		88		84		76		72		66
Cost per Head																	
Lower Forms	10.5		10.5		11.0		11.5		12.0		12.5		13.0		13.0		14.0
Senior Forms	13.5		13.6		14.0		15.0		16.0		17.0		18.0		19.0		20.0
Cost																	
Lower Forms	2,480		2,575		2,805		3,080		3,385		3,710		4,030		4,470		4,930
Senior Forms	1,270		1,335		1,245		1,380		1,410		1,430		1,388		1,370		1,320
Total	3,750	3,867	3,910	3,990	4,050	4,290	4,460	4,655	4,795	4,995	5,140	5,320	5,418	5,675	5,840	6,040	6,180
JUNIOR SECONDARY																	
Number of Students	-		-		14		18		28		38		51		58		68
Cost per Head	-		-		35		35		35		35		35		35		35
Cost	-		-	285	490	570	630	835	980	1,185	1,330	2,535	1,785	1,885	2,030	2,235	2,380
SECONDARY																	
Number of Students	21.6		22.0		24		26		28		30		32		36		40
Cost per Head	68		68		67		65		63		61		60		60		60
Cost	1,470	1,487	1,495	1,560	1,610	1,655	1,690	1,735	1,765	1,805	1,830	1,880	1,920	2,060	2,160	2,300	2,400
SECONDARY TECHNICAL AND VOCATIONAL																	
Number of Students	3.5		3.5		3.5		3.5		4.0		6.0		8.5		9.5		9.5
Cost per Head	147		147		145		140		140		140		140		140		140
Cost	515	515	515	510	510	500	490	530	560	725	840	1,045	1,190	1,270	1,330	1,330	1,330

Assumptions:

Primary: For upper and lower forms combined, current student-teacher ratio is 58:1, with 50% trained teachers. Distribution of trained and untrained teachers between lower and upper forms is not known. Cost per head for upper and lower forms combined is £9.5 for teachers' salaries, £2.0 for other expenses.

Assume for the lower forms current student-teacher ratio of 60:1, 50% trained, improving by 1972 to 50:1, 65% trained; costs per head for teachers' salaries to increase from £8.7 to £11.5. Non-teacher cost increasing from £1.8 per head to £2.5.

Assume for the senior forms current student-teacher ratio of 55:1, 75% trained, improving by 1972 to 45:1, 100% trained; costs per head for teachers' salaries to increase from £11.2 to £15.7. Non-teacher cost increasing from £2.3 to £4.3.

Junior Secondary: Costs per head are as follows:

Teachers and Principal's Salaries	£22.0	(assuming 35:1 student-teacher ratio, 100% trained).
Other Staff	5.0	(£1.5 for administrative staff, £2.0 for maintenance staff, £1.5 for cafeteria staff).
Materials	3.0	
Utilities and Office Supplies	.5	
Maintenance	3.5	(2% of capital cost of building, 10% for furniture and equipment, 6% for fixtures).
Loan of Textbooks or Other Contingencies	1.0	
	<u>£35.0</u>	

Secondary: Cost per head for teachers decreased from current £45 to £36 by 1970, due to increase in student-teacher ratio from 16.4:1 to 23:1. Cost per head for other charges remains at £23.

Enrollment: From education capital budget projection, and existing underutilized capacity in Secondary Schools. For Primary Schools see Annex 14.

JAMAICA

PROJECTION OF MINISTRY OF EDUCATION RECURRENT EXPENDITURE - 1980/81

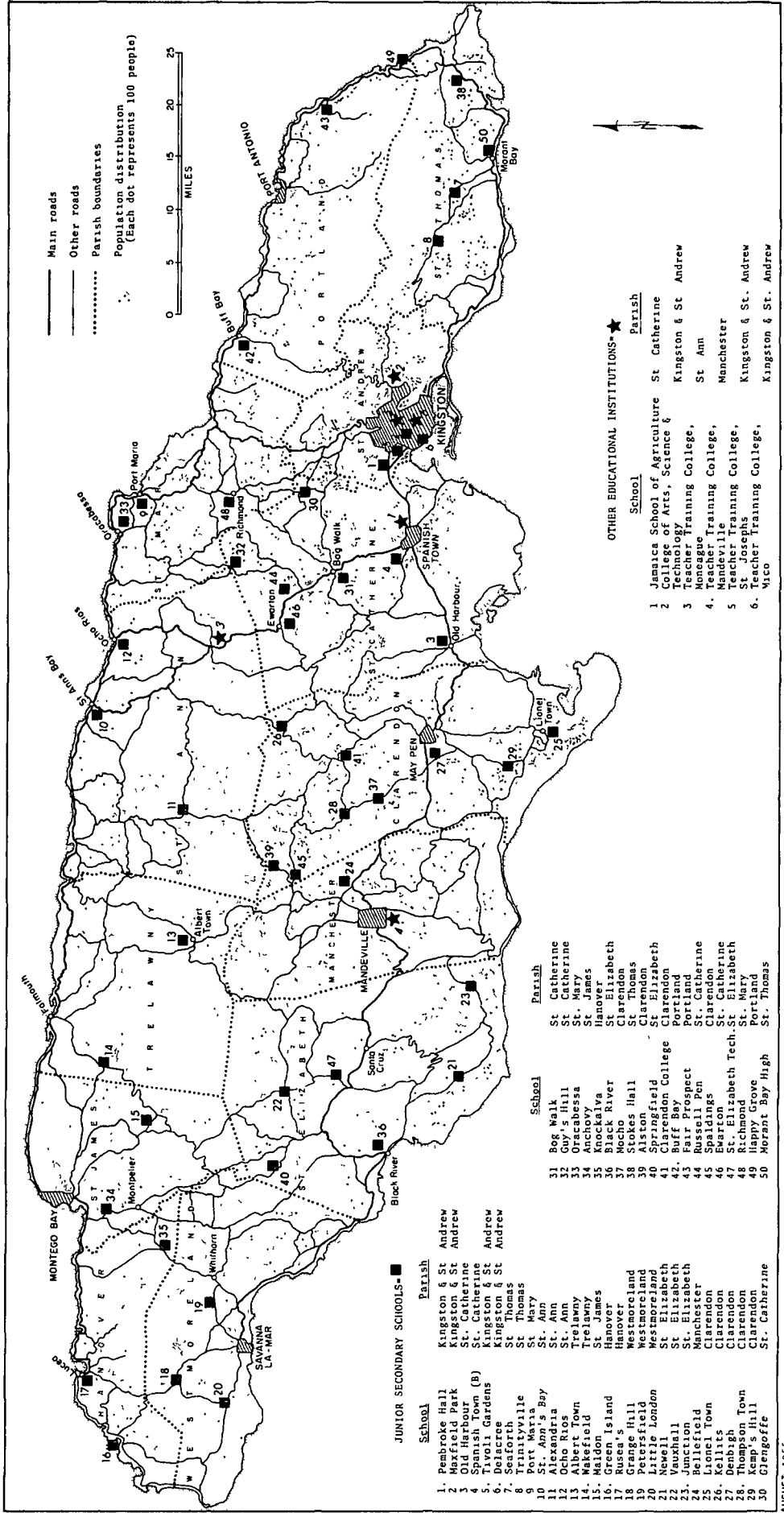
Type of Education	1964/65				1980/81 Projected				
	Percentage of Age Group Enrolled	Student Teacher Ratio	Cost per Student (£)	Total Cost (£'000)	Percentage of Age Group Enrolled ^{1/}	Student Teacher Ratio	Cost per Student (£)	Number of Students ('000)	Total Cost (£'000)
Primary (6 through 11)	88 ^{2/}	58:1	11.50	3,735	90 ^{2/}	35:1-40:1	20-23	389	7,800 - 9,000
Primary (12 through 14)	75)				-	-	-	-	N11
Secondary General (Forms 1-3)	10)				90	30:1	40	176	7,000
Secondary General (Forms 4 and 5)	10)	18:1	68	1,469	23)	23:1	60-70	30	1,800 - 2,100
Secondary General (Form 6)	2.4)				8.5)		75	10.4	800
Secondary Technical & Vocational (Forms 1-3)	1)		140	456	-	-	-	-	N11
Secondary Technical & Vocational (Forms 4&5)	2)				13		140	16	2,200
C.A.S.T.				95					500 - 700
Higher Education				111					500 - 600
Teachers Training				347					900 - 1,300
Administration				323					400 - 500
Libraries and Other				188					600 - 700
Total Ministry of Education				6,724					22,500 - 24,600
Total Jamaican Recurrent Expenditure				43,555					125,000 ^{3/}
% of Recurrent Budget for Ministry of Education				15.4%					18.0% - 19.7%

^{1/} From Project Request Documents.

^{2/} The 1964/65 percentage is for the age group 7 through 11. The projected figure is for the age group 6 through 11 in line with plans to increase junior primary education from $6\frac{1}{2}$ to 6 years.

^{3/} Assuming 7% annual increase excluding salary increases and inflation. Over the past five years recurrent expenditure increased at the rate of 10% per annum, including an estimated 3% for salary increases and inflation.

JAMAICA EDUCATION PROJECT



JUNIOR SECONDARY SCHOOLS*

School

- 1. Pembroke Hall
- 2. Boxfield Park
- 3. Ocho Rios
- 4. Spanish Town (B)
- 5. Tivoli Gardens
- 6. Delacree
- 7. Seaforth
- 8. Trinityville
- 9. Port Maria
- 10. St. Mary
- 11. Alexandria
- 12. Ocho Rios
- 13. Albert Town
- 14. Makefield
- 15. Maldon
- 16. Green Island
- 17. Crane Hill
- 18. Westmoreland
- 19. Peter'sfield
- 20. Little London
- 21. Newell
- 22. Vauxhall
- 23. Junction
- 24. Leifield
- 25. Leifield
- 26. Kellits
- 27. Denbigh
- 28. Thompson Town
- 29. Kemp's Hill
- 30. Glengoffe

Parish

- Kingston & St. Andrew
- Kingston & St. Andrew
- St. Catherine
- Kingston & St. Andrew
- Kingston & St. Andrew
- St. Thomas
- St. Mary
- St. Ann
- St. Ann
- Trelawny
- Trelawny
- St. James
- Hanover
- Westmoreland
- Westmoreland
- St. Elizabeth
- St. Elizabeth
- St. Elizabeth
- Manchester
- Manchester
- Clarendon
- Clarendon
- Clarendon
- St. Catherine

OTHER EDUCATIONAL INSTITUTIONS*

School

- 1. Jamaica School of Agriculture
- 2. College of Arts, Science & Technology
- 3. Teacher Training College, Monaque
- 4. Teacher Training College, Manchester
- 5. Teacher Training College, St. Josephs
- 6. Teacher Training College, Neco

Parish

- St. Catherine
- Kingston & St. Andrew
- St. Ann
- Manchester
- Kingston & St. Andrew
- Kingston & St. Andrew