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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PERFORMANCE AUDIT REPORT

ON

JAMAICA FIRST EDUCATION PROJECT (LOAN 468-JM)

March 4, 1975

Operations Evaluation Department

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Attachment: Project Completion Report

Note: Currency Equivalent - Pound (J£), Dollar (J\$)

1966	:	J£ 1 = US\$ 2.80
1967-1968:	J£ 1 = US\$ 2.40	
1969-1972:	J\$ 1 = US\$ 1.20	
1973-1974:	J\$ 1 = US\$ 1.10	

PERFORMANCE AUDIT MEMORANDUM
JAMAICA FIRST EDUCATION PROJECT

Introduction

This memorandum reports on an audit of achievements under the Jamaica First Education Project, for which Loan 468-JM of September 30, 1966, was fully disbursed in October 1973. It is based mainly on a review of the attached Project Completion Report (PCR), prepared by the Bank's Latin America and Caribbean Regional Office, as against relevant documents and material from Bank files, and on discussions held with Bank staff involved in the project.

The Project

At the request of the Government UNESCO sent an educational planning mission to Jamaica during 1964 to assist in the development of the country's educational program. Included in the mission's report of November 1964 were a number of suggested projects for which external financial assistance was recommended. In July 1965 the Bank, at its own initiative, sent an informal reconnaissance mission for preliminary identification of projects suitable for financing. In view of the Bank's preference, at the time, for education projects aimed at increasing productivity and diversifying traditional academic systems, the mission's interest was confined to proposed projects for expansion and improvement of midlevel facilities providing technical, vocational and general secondary education and to teacher training facilities. Towards the end of 1965 two UNESCO experts (an architect and an educator) assisted with the preparation of a project for which the Government requested a Bank loan in January 1966. No further project preparation mission was undertaken: the Chief of the earlier UNESCO planning mission, who had returned to the Ministry of Education in an advisory capacity, also served as advisor to the appraisal team during its mission in February 1966.

The appraisal mission found the project in a less advanced state of preparation than anticipated. Pre-negotiation issues centered around the proposed main project item -- construction of 66 new junior secondary schools (JSS) for children in the 12 to 14 age group. First, the appraisal mission had concluded that the capacity of the local contracting industry was limited in terms of skilled labor and productivity and that the scattered nature of construction sites would discourage international bidding. With

the intent of supporting a project to be implemented within three and a half years, the Bank requested a reduction in the number of JSS to be constructed and during negotiations it was agreed that only 50 be included under the project.

Secondly, the mission had judged the JSS draft designs and schedules of accommodation (timetables for space utilization in accordance with educational requirements), prepared by a newly created Planning Unit in the Ministry of Education, to be lacking in detail especially for purposes of accurate cost estimates. As a result, the Bank required retention of an experienced foreign consultant architect to review the JSS Master Plan and to finalize designs and schedules of accommodation.

Finally, the mission found that site acquisition for the JSS, to have been completed prior to the Loan Agreement, was proceeding very slowly. To avoid further delay, the Bank agreed that negotiations be held as soon as 20 sites had been fully acquired and some progress had been made towards acquisition of the remaining 30 sites.

Negotiations were carried out during July 1966. In addition to construction, equipping and furnishing of the 50 JSS, the project comprised the expansion of the College of Arts, Sciences and Technology (CAST), of the Jamaica School of Agriculture (JSA) and of four teacher training colleges. A technical assistance component of US\$ 0.3 million was included in the loan to assist with provision of 15 man-months of expert services for curricula development and scheduling at CAST and 11 man-years of similar services plus 5 man-years of teacher training fellowships for the JSA. The project also included 40 man-years of technical assistance and 8 man-years of fellowships for the JSS to be financed by a USAID grant of up to US\$ 1.3 million equivalent (PCR 1.02). During project preparation USAID had expressed an interest in providing technical assistance for the JSS program and in May 1966 it entered into an agreement with the Government to provide the required services, mainly for curricula development and teacher training.

Overall responsibility for project implementation was assigned to a Project Unit, consisting of a Project Coordinator and a Project Architect, to be employed on a full-time basis. The Bank loan, in the amount of US\$ 9.5 million equivalent, represented 50% of total estimated project costs and was to cover all foreign exchange costs (excluding the USAID contribution) and 32% of local costs.

Project Implementation

All project schools and colleges were constructed or expanded as planned and the quality of construction was generally satisfactory. However, delay was encountered for construction works, with the exception of the four teacher training colleges, and serious cost overruns occurred in the JSS item.

The six-year implementation period for the JSS was almost twice as long as the appraisal estimate and necessitated a postponement of the final closing date of the loan by more than two years, to October 1973. Whereas 33 of the 50 schools were completed and operating before the original July 1971 closing date and 42 had been completed by November 1971, the final 8 schools were not finished until August 1973: delayed choice of sites and slow bureaucratic procedures had prevented completion of site acquisition for these last schools until August 1969, one and a half years after the date specified in the Loan Agreement.

Construction of the first 18 JSS began in February 1968, six months behind schedule, due to delays in initial stages of project implementation. To avoid further delay, the consultant architects were asked to group preliminary designs and other bid documents for all 50 schools into a single package. The contract was then awarded to a general contractor who was to employ Jamaican subcontractors (PCR 2.05).

Delays in construction of individual schools resulted largely from originally inadequate choice of sites, inaccurate land surveys and too rigid adherence to master designs (PCR 2.03, 2.04). As a result, greater than planned quantities of site development and construction works were necessary and excessive quantity change orders were made throughout the construction period.

The JSS construction delays were largely caused, and in turn reinforced, by inefficient project management. The consultant architect received inadequate instruction from the Project Unit, in part due to appointment of only a part-time Project Architect during the first year of construction and to appointment of two replacements thereafter (PCR 3.01). In addition, the delayed site acquisition and necessary extra works made implementation of a planned three phased JSS construction program impracticable: as many as 47 of the schools were under construction simultaneously. This proved to be too great a burden for the consultant architect both in terms of timely delivery of final designs and specifications to the contractor and of supervision of construction (PCR 2.04). Finally, lack of skilled

labor available to subcontractors and a legal requirement to change labor teams each two weeks, to provide employment opportunities to greater numbers of local laborers, also contributed to delays and inefficiencies in implementation of the JSS construction program.

Local consultant architects, as required by the Bank, had been retained to prepare final designs for CAST and JSA, under guidance of the Project Unit Architect and the technical assistance experts. For CAST, the consultant architects' standards were excessively high and once completed, designs had to be revised under instruction from the Project Unit. The resulting delay and a lack of cooperation on the part of the principal of CAST, who contrary to Loan Conditions continued in the position on a part-time basis, postponed the beginning of construction for three years. Construction of the JSA began a year late, due to delayed preparation of final designs, and was further delayed by student strikes, contractor default and increased quantities of work owing to use of higher than planned standards. Construction of both schools was completed during 1971, roughly two years behind schedule.

Procurement of instructional equipment for project schools and colleges was also delayed: the first contracts were placed only by April 1969 though most equipment had been delivered and installed by the time the new or expanded facilities began operations. During project preparation draft master lists for equipment had been prepared in large blocks by teaching area and by school, in accordance with Jamaican procurement procedures. In order to meet Bank procurement requirements for international competitive bidding, these blocks were broken down by the Project Unit into more numerous smaller groups comprising different types of equipment. The Department of Supplies of the Ministry of Finance, responsible for procurement, was inadequately staffed to handle the preparation of the resulting large number of bid documents and in 1968, after repeated requests for assistance, the Bank agreed that the Crown Agents be hired to supervise procurement. Continued delay resulted from communications problems, slow instruction by the Ministry of Education and inefficiency on the part of the Crown Agents (PCR 2.09).

Distribution of equipment was also inefficiently carried out: upon receipt, equipment had to be stored, sorted and packaged before delivery to each school. In the process, some equipment was damaged or misrouted. The absence of local supplier representatives for some items and the Government's decision to take the risk of not insuring goods created further problems: lost or damaged equipment was not immediately replaced and spare parts and maintenance services were not readily available. Less complex

Bank procurement requirements, allowing for the packaging of bids by teaching area, as originally planned, might have eliminated some of the procurement difficulties and distribution problems (PCR 2.10). Allowance for off the shelf local purchase of smaller less costly items also would have simplified procurement and assured accessibility of spare parts for those items (PCR 2.09).

The project's final cost, US\$ 29.8 million equivalent, represented a 54% total increase over the estimated cost of US\$ 19.4 million, including contingencies. A 25% overrun, leading to a final cost of US\$ 2.5 million equivalent for the JSA, resulted from use of design standards higher than those appraised but the major overrun occurred in the JSS item where the final cost, US\$ 25.01 million equivalent, was 67% higher than estimated. The JSS overrun was mainly in the construction category, which was 82% above the estimated US\$ 10.48 million equivalent, but also in the high fee paid to the general contractor. The contractor performed a valuable service, taking over from the understaffed Project Unit a significant part of managerial and supervisory tasks, but at a rate of 12.5% on top of civil works costs. (Under the second Jamaica Education Project, Loan 727-JM, the Government agreed to make professional fees independent of cost increases.)

The US\$ 9.3 million equivalent overrun in civil works (including construction costs and professional fees) for the JSS was attributed in part to an average increase in construction area of 16% (US\$ 0.6 million equivalent), and to unforeseeable price increases over the implementation period (US\$ 1.3 million) (PCR Annex 2). In addition, 36% of the overrun (US\$ 3.4 million) was attributed to original underestimates of costs. The average actual cost of construction per square foot was US\$ 7.80 equivalent for the JSS while the appraisal estimate had been US\$ 4.80 equivalent. Both during appraisal and negotiations the Bank had questioned the validity of this lower figure, its own original estimate, based on similar accommodations, having been almost US\$ 7.20 equivalent. However, at negotiations the Government produced evidence substantiating the lower unit cost. When prototype designs were completed by the consultant architect in 1967, it was confirmed that the estimated baseline unit construction cost for the JSS should have been about US\$ 6.00 in 1966. The residual US\$ 4.0 million overrun was attributed to delays and inefficiencies, and to avoidable price increases, mainly the result of the 34-month delay in completion of the JSS item.

As a result of cost overruns the cost per planned student place at the JSS rose from the estimated US\$ 450 equivalent to US\$ 750 equivalent. Further, the Government contribution to total project cost more than doubled, from the estimated US\$ 8.6 million equivalent to US\$ 19.2 million equivalent.

Recurrent project costs have been in line with appraisal estimates of 9% of total Ministry of Education recurrent expenditures. The amount budgeted for project schools has been adequate though teacher salaries have absorbed too great a share for the JSS as a result of a too low student-teacher ratio, 27:1 in 1973/74 (whereas during appraisal 35:1, later revised to 30:1, had been targeted), in contrast to an average class size of 45 students; this discrepancy is explained by the scheduling of only 30 hours of direct class contact per teacher per week compared with 50 teaching hours required for each class (PCR 5.08). Recurrent costs per student at all Government JSS were slightly lower than expected, at US\$ 160 equivalent for 1973/74, mainly because all intended quality improvements were not undertaken.

Maintenance of project school buildings and equipment and furniture, as required by Loan Conditions, has been inadequate (PCR 5.14). Improved procedures have been recommended by the Bank, but have not yet been systematically undertaken.

Technical assistance required under the project was fully utilized by CAST and JSA. A UK expert assisted with the development of an improved schedule of accommodation for revised curricula at CAST. For the JSA, a Canadian advisor and a university team headed a major reorganization of curricula and scheduling and implemented the fellowship program. A university team provided under the USAID grant worked with the University of the West Indies to develop curricula and teacher training programs for the JSS. Draft syllabi were prepared by 1970, with some delay resulting from inadequate cooperation among the Project Unit, the USAID team and the University's Curriculum Committees. The USAID advisors also assisted in organizing in-service workshops for school administrators and teachers and in implementing the fellowship program. The main objectives of the USAID technical assistance program were achieved though US\$ 0.2 million of available grant funds and 11 man-years of planned expert services were not utilized.

Operating Outcomes

Enrollments and the output of graduates at CAST have been higher than planned due to intensified utilization of new and existing facilities (PCR 5.01). For the JSA, output has reached planned targets, but an inefficient admissions policy, providing for mid-year (January) entrance into the two and three year diploma courses has resulted in an inefficient use of facilities (PCR 5.03). The required provision of short courses for 50 students at a time, by the JSA, has not yet been implemented. Enrollments

at the project JSS increased as planned, exceeding the targeted 33,360 by 13% in 1973/74 though a low average attendance rate, 70% in 1972/73 (PCR 5.05), suggests an underutilization of facilities, in practice. A notable short-fall in implementation of JSS program objectives has been the lack of provision, to date, of the adult extension courses (PCR 5.07).

Output at the four project teacher training colleges has reached the agreed target. However, late in the implementation period, Bank supervision missions noted a shortage of teachers, particularly of practical subjects, for the JSS. (Junior secondary teachers were trained along with primary teachers mainly in the project teacher training colleges.) The shortage can be attributed in general to inadequate numbers of potential candidates from senior secondary schools, inadequate numbers of places available and high attrition rates. The appraisal target calling for 100% fully qualified JSS teachers by 1972 has not yet been achieved, nor have all principals benefitted from the new in-service programs to improve school administration: as a result the 90% utilization of JSS facilities has caused scheduling difficulties (PCR 2.07).

The quality of teachers and improved curricula at CAST and JSA appears to be adequate, as reflected in a continuing labor market demand for graduates. For the JSS, new curricula -- including exploratory courses in the fields of agriculture, industrial arts, home economics and arts and crafts-- have been satisfactory. However, supervision missions reported the need for an improved quality of teaching of science, mathematics and languages: UNDP assistance was obtained in 1971 to improve teacher training in these areas. Remedial training provided in literacy and mathematics has slowed implementation of the intended full JSS program, but is necessary for achieving the original project objective of raising the level of education of the average student in the 12 to 14 age group. The schools are providing an increasing number of Jamaicans with a strengthened educational background. The graduates are better prepared for pre-employment training or continued formal education than the graduates of the three "senior classes" appended to most primary schools prior to introduction of the separate junior secondary cycle.

The anticipated impact of provision of the JSS has, however, so far been significantly reduced: JSS graduates' opportunities for acquiring the necessary further pre-vocational training, formal or on-the-job, are limited. The unemployment rate in Jamaica has continually grown, from roughly 13% of the labor force in 1960 to 23% in 1972, and much of the unemployed group comprises technically unskilled young people, a category

including the JSS students: early employment has been obtained by a very small proportion of JSS graduates (PCR 5.06). A significant labor market demand for already skilled technicians persists, but above the junior secondary level adequate development of the necessary training capacity has not been achieved and the Government has proceeded more slowly than planned at appraisal with expansion of upper secondary facilities. The second Bank loan is providing assistance towards the needed expansion of upper cycle secondary schools offering comprehensive (pre-vocational as well as academic) programs and for the development of two small vocational training centers.

Of the project's general educational objectives, expressed in a supplementary letter, only one has been largely fulfilled: the Ministry of Education's supervisory services are being improved and in-service training for teachers and principals has been initiated. Other important objectives have not been fully achieved: the Government was to undertake a strengthening of the Ministry of Education's statistical and planning services, but little progress was made. (Technical assistance has been provided under the Bank's second education project to improve these services.) Likewise, some progress was made under the project with selecting and procuring textbooks, but an intended program for local textbook production was not developed.

The Bank's Role

The Bank's participation in the First Jamaica Education Project was confined mainly to the implementation of the construction/expansion program. With one exception, the Bank's supervision missions devoted only minor attention to the project's educational aspects and the Bank exerted little pressure on the Government to fulfill the educational objectives.

As regards the construction program, the Bank was already aware, at the time of project preparation, of problems likely to be encountered. In its effort to support an efficient lending operation, the Bank can be credited with reducing the number of JSS and requiring architect consultants to review designs and schedules of accommodation and to prepare accurate cost estimates. It should also be noted that during project implementation, Bank supervision missions were frequently carried out and supervision reports show that the problems associated with the construction program were well understood by the Bank staff. However, the brevity of the missions, averaging five man-days each, impeded active participation in resolution of those problems. A more direct and continuing Bank participation, especially during the early implementation period, might have resulted in a more economical construction program.

Specifically, the Bank could have moved earlier towards a strengthening of project management and exerted greater control over project costs. In large measure, the limitations of the administrative and managerial capacities of the Ministry of Education and the Supplies Department of the Ministry of Finance were recognized by the Bank prior to implementation. More timely provisions for expanded expertise in the Project Unit -- including an educator, economist, quantity surveyor, equipment/procurement specialist, and Bank insistence on appointment of a full-time architect -- could have improved the efficiency of project implementation. A well-integrated team of Project Unit specialists might also have allowed for more effective coordination of activities between the project implementing authorities and technical assistance advisors as regards both construction and achievement of educational objectives. (An expanded Project Unit and a Coordinating Committee, comprising representatives from relevant Ministries, have been required under the Second Education Project.)

Ideally, pre-project retention of necessary technical consultants, recommended in the PCR (7.01b), could also have speeded and improved the efficiency of project implementation. In view of the actual uncertainties remaining during early project implementation, however, the Bank could then have financed under the loan an extended two to four month mission, comprising an experienced architect and economist. Such experts could have assisted the Project Unit and consultant architects with preparation of final designs and cost estimates as well as construction schedules. (Similar but shorter early implementation "critical assistance" missions are currently being carried out by Bank staff.) The resulting cost and scheduling data could then have served as a model for project progress reporting, which was particularly weak under the project: its utility as a gauge of project progress was very limited.

In the effort to avoid delay, the Bank did not insist on reviewing final designs, as called for in the Loan Agreement, prior to award of construction contracts. However, part of the JSS construction overrun could have been eliminated directly by the Bank if it had systematically reviewed all designs, and required use of the simpler and adequate standards agreed upon during negotiations. Pre-qualification of subcontractors by the Bank might also have promoted a less costly JSS construction operation (PCR 2.06). Further inefficiency might have been eliminated had the contracts for the 50 JSS been awarded in smaller phased groups, as originally planned, rather than in a single package. Invitations to bid might have been extended only for groups of schools for which land acquisition had been completed and review of final designs and specifications, in terms of applicability and economy, had been completed.

In view of the increasing costs of the JSS construction item, the Bank might have considered reappraising the project, especially before construction of the last eight schools was undertaken. On the basis of the earlier implementation experience and in view of the limited possibilities for employment or continuing education, a decision might have been made to delete them from the project. The US\$ 4.4 million equivalent cost of these last schools, borne mainly by the Government, was extremely high (PCR 4.04), and undoubtedly strained resources available for the Government's other educational investment priorities.

Conclusions

Under the First Jamaica Education Project all schools and colleges were constructed or expanded and equipped as planned despite delays and significant cost overruns, mainly related to the JSS construction item. The project's quantitative objectives have been largely achieved: enrollments and output have equalled or exceeded targets. However, in respect of JSS graduates, benefits have been less than anticipated due to continuing high rates of unemployment among unskilled labor and inadequate provisions for continuing midlevel education and training. More efficient utilization of Government and loan resources might have resulted from greater Bank involvement, especially during the initial project implementation phase and, possibly, from deletion of the final eight JSS from the original Loan Project.

COMPLETION REPORT

JAMAICA - LOAN NO. 468 - JM

First Education Project

I. PROJECT DATA

1.01 The Loan

Borrower	Jamaica
Loan Amount	US\$ 9.5 million
Date of Loan Agreement	September 30, 1966
Effective Date	October 25, 1966
Original Closing Date	July 31, 1971
Final Closing Date	October 31, 1973
Terms of Loan	20 years, including 5 years of grace
Interest Rate	6% p.a.
Fiscal Year	July 1 - June 30
Current Exchange Rate	US\$ 1 - J\$ 0.88
Average Exchange Rate of Disbursements	US\$ 1 - J\$ 0.84
Appraisal Report	No. TO-553a of September 8, 1966

1.02 The Project. The project consisted of:

- (a) additional buildings, equipment and furniture for the College of Arts, Science and Technology (CAST) and the Jamaica School of Agriculture (JSA);
- (b) additional buildings, equipment and furniture for four teacher training colleges;
- (c) construction, equipment and furniture for 50 new junior secondary schools; and
- (d) technical assistance, comprising:
 - (i) 15 man-months of expert services for CAST;
 - (ii) 11 man-years of expert services and 5 man-years of fellowships for JSA; and
 - (iii) about 40 man-years of expert services and 8 man-years of fellowships for the junior secondary school program.

The total project cost was estimated at US\$ 19.4 million, to be financed by:

- (i) a Bank loan of US\$ 9.5 million;
- (ii) USAID grants of US\$ 1.3 million; and
- (iii) a government contribution of US\$ 8.6 million.

1.03 Project Objectives. The project had the following objectives:

- (a) to help meet the immediate needs for technicians in industry and agriculture through the provision of 390 additional student places in CAST and 330 additional places in JSA;
- (b) to help meet the staffing needs of junior secondary schools and to allow for a gradual upgrading of the teaching force in primary schools through the provision of 675 additional student places at four teacher training colleges;
- (c) to help:
 - (i) 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;
 - (ii) increase the number of qualified students for further formal education; and
 - (iii) make available workshops and instructors for general upgrading of the skills of the adult population; all this would come about through the provision of about 33,000 student places in 50 new junior secondary schools; and
- (d) to assist in the implementation of the proposed educational development through the provision of 52 man-years of expert services and 13 man-years of fellowships.

II. PHYSICAL EXECUTION

Civil Works

- 2.01 General. All physical facilities included in the project description have been provided and the construction of all project institutions have been practically completed. Serious problems were encountered, however, during project implementation, mainly because the project was too large in relation to the implementation capacity of the Education Ministry. At the time of appraisal, the construction period was estimated at three and a half years,

but construction was actually spread out over a six-year period (Chart). With the exception of JSA, construction of the post-secondary institutions met with only minor problems. Construction of the 50 junior secondary schools, however, was beset with problems during the entire period.

2.02 Post-Secondary Institutions. Outside experts were engaged to develop detailed accommodation schedules for CAST and JSA. Since the expert for CAST did not follow the agreed accommodation schedule and the principal of the college did not adequately cooperate, the preliminary designs, once completed, had to be redone. As a result, actual construction started 38 months later than expected, but was completed within the period foreseen. The new facilities of CAST are satisfactory. Construction of the extension to JSA started 13 months behind schedule, and took 15 months longer than expected because of student strikes, contract cancellation and cost overruns. The new facilities of JSA do not particularly reflect austere standards. Only slight delays were encountered in the civil works for the four teacher training colleges and the new facilities are satisfactory. Most of the construction delays in CAST and JSA could possibly have been avoided if the consultant had been engaged before appraisal, financed either by the Government or retroactively by the Bank.

2.03 Junior Secondary Schools. All sites for these schools should have been acquired before December 31, 1967 (Side Letter on Project Execution). At that time, however, six sites were still pending and it took till August 1969 before the government complied with this covenant. As a result, construction of the last school (Knockalva) started 19 months behind schedule. At the same time, selection of sites was not always carried out satisfactorily; factors like topography, access and availability of electricity and water were not properly taken into account, leading to unnecessary costs of site development and construction. Further, land surveys were not always accurate, which led to major variation orders, once construction was under way. Land acquisition is a cumbersome process in Jamaica. Thus, for future projects in Jamaica and comparable countries, consideration should be given either to the requirement of school site acquisition before loan effectiveness or cancellation of part of the loan amount if sites are not acquired by an agreed date.

2.04 The consultant architects, a consortium of one American and two Jamaican firms, performed generally satisfactorily. However, the grouping of all 50 schools into one bid package exceeded their capacity. As a result, various drawings were late, their supervision was not always adequate, and measures to increase their capacity, such as the use of helicopters for site supervision, increased reimbursable expenses. Closer supervision of the consultant architects by the project unit appeared necessary. Further, contrary to the Loan Agreement (Section 5.01(g)), the majority of the designs were only sent to the Bank for information after civil works bids had been opened. As a result, the designs were not always economical;

- (i) The average construction areas agreed upon during appraisal were in fact used as minima, increasing the total construction area by 16%;
- (ii) the specifications and design standards could have been more appropriate and economical;
- (iii) two model master-designs were developed, but they were sometimes applied too rigidly, requiring adaption of sites to designs rather than the reverse.

2.05 Civil works for all 50 junior secondary schools were grouped into one bid package because of delays in the preparation of bid documents. The contract was awarded to F.G.M., a consortium of one Canadian and two Jamaican firms, which employed Jamaican subcontractors. The involvement of the Canadian contractor was beneficial to the project, since F.G.M. took over from the understaffed project unit part of the task of coordinating, supervising and paying the individual subcontractors.

2.06 When the contract with F.G.M. was signed in January 1968, the government had not yet acquired six sites. Further, problems with two other sites, which had been acquired earlier, increased the number of schools in the last construction phase to eight. For these schools, the government insisted that F.G.M. should choose subcontractors from a specific list of firms, not all of whom had been included for their technical competence. F.G.M. complied with this demand to avoid further delays, and ended up taking over some building operations. Since the contract with F.G.M. was more a management contract than a regular construction contract, Bank involvement in the pre-qualification of subcontractors and in the award of subcontracts would have been justified.

2.07 The quality of construction of the buildings is generally satisfactory. Some false economies have been made by not adequately waterproofing the roofs and by using low-quality doors, louvers and sanitary fixtures, much of which is already in need of replacement. The accommodation schedule of the schools, with a use factor of more than 90%, appears tight in the Jamaican context, because of the large number of inexperienced school principals. As a result, most schools use the multipurpose hall for regular teaching to alleviate scheduling problems.

2.08 Delays. Almost all the project implementation delays can be attributed to the construction program, and in particular to the junior secondary school component. Actual construction started in August 1967 (for the teacher training colleges), or seven months behind the appraisal schedule, and took a total of 70 months, or 27 months longer than the appraisal estimate. Thus, the total delay was 34 months. All schools were in operation in August 1973, but two schools have not yet been properly completed.

- 2.09 Equipment. Because the Department of Supplies of the Ministry of Finance was understaffed, the Crown Agents were engaged to handle equipment procurement under the project. Communication problems, slow instructions by the Ministry of Education, and inefficiency of the Crown Agents caused many delays. Further, all items, regardless of type or quantity, were procured on the basis of international competitive bidding, which was cumbersome and at times impracticable for the large number of small items required for this project. The practice, presently being introduced in this Division for projects, of allowing procurement of small items in accordance with the borrower's regular procurement practices would have simplified the process and, most probably, also reduced costs.
- 2.10 Receipt, storage, sorting and delivery of equipment to schools, which was handled by the Department of Supplies, was also less than satisfactory. Equipment was sometimes sent to the wrong schools and some equipment never reached the schools. The Government took the risk during storage in the warehouse and transport to the schools of not insuring the goods. Thus, damaged and lost equipment had to be replaced by the Government (Loan Agreement, Section 5.07), but this is only slowly being done. Most of the distribution problems and part of the procurement problems could have been avoided if equipment had been grouped into bid packages by teaching area, as is now being done in many education projects, including the second education project in Jamaica.
- 2.11 The quality of equipment was not systematically tested during bid evaluation, and whatever testing took place hardly involved responsible Jamaicans. Also, the bid documents did not require suppliers to have local agents who could ensure the availability of spare parts and maintenance services. The inclusion of such a clause in all equipment bidding documents should be considered even though this might cause problems for some suppliers and might limit competition. With some exceptions, however, the quality of equipment is satisfactory.

Furniture

- 2.12 Three types of furniture were procured: wooden, metal and laminated plastic. Neither during bid evaluation nor upon receipt in the schools was proper testing carried out. The wooden furniture is fairly satisfactory, though there has been warping of some furniture due to the use of unseasoned timber. The design and workmanship of metal furniture, which was manufactured locally, is generally of low quality. The imported laminated plastic furniture has not stood up well to the climatic conditions and use and cannot be easily repaired or maintained locally.

Technical Assistance

- 2.13 Post-Secondary Institutions. No proper records could be found in the Ministry of Education on the use of technical assistance under the project, but the provision of technical assistance in the amounts foreseen was confirmed by

CAST and JSA, and in Bank records. An expert, financed by the UK Government, assisted CAST in elaborating the accommodation schedule on the basis of a revised curriculum (para. 2.02). Technical assistance for JSA was financed by the loan under contracts with the Guelph University (Canada) and the Florida State University (USA). Expert services for the teacher training colleges, which were not included in the project, were provided by UNDP and USAID.

- 2.14 Junior Secondary Schools. Technical assistance for the junior secondary school program, which was included in the project but not in the loan, was provided by USAID under a contract with the San Diego University (USA). However, this assistance was not used fully, owing to a lack of planning and definition of assignments. As a result, some experts ended up in teaching. The original intention was for a USAID grant of US\$ 1.1 million to be later supplemented with an amount of US\$ 0.2 million, but this supplement was not necessary since most of the objectives had been achieved by August 1969. A total of 29 man-years of expert services - 11 man-years fewer than foreseen - and eight man-years of fellowships was provided for this program.

III. ORGANIZATION AND MANAGEMENT

- 3.01 The Loan Agreement (Section 5.01(d)) required the appointment of a full-time project coordinator and project architect to be responsible for the execution of the project. It soon became clear that such staffing was inadequate for a project of this size. Nevertheless, the Education Ministry's Chief Architect functioned as part-time project architect during the first year, the project architect was twice replaced, and the post was vacant for periods of up to ten months. Administrative officers were added to the project unit after two years and it was not until 1972, in connection with the second education project, that a quantity surveyor and equipment specialist were appointed. Thus, the project unit was most of the time not adequately staffed, as required in the Side Letter on Project Execution.
- 3.02 The project unit did not receive effective administrative support from other entities in the Ministry of Education. Also, inter-ministerial cooperation was inadequate, particularly with the education planning unit, and intra-ministerial cooperation was unsatisfactory, particularly with the Land Authorities and the Department of Supplies in the Ministry of Finance. The latter unit was already understaffed before procurement for the Bank-financed project was added to its responsibilities, and the absence of a procurement officer in the project unit aggravated this problem.
- 3.03 As a result of the above, project management faced the following specific shortcomings:
- (i) no proper project-implementation schedule was ever worked out in detail;
 - (ii) site selection and acquisition were insufficiently controlled (para. 2.03);

- (iii) land surveys were not properly checked (para. 2.05);
- (iv) the execution of the construction program was not adequately supervised by the project unit;
- (v) payments to contractors were delayed;
- (vi) decisions were delayed and, once made, often changed, leading to delays and excessive variation orders for construction;
- (vii) procurement and delivery of equipment and furniture were not adequately supervised;
- (viii) no inventory has yet been made of the equipment and furniture available in the schools; and
- (ix) although financial records have been kept accurately, they do not provide an adequate basis for cost analysis.

- 3.04 The weakness of the project unit was the one major cause of the delays encountered and of the resulting cost overruns. At the same time, costly arrangements had to be made to overcome some of those weaknesses. The main contractor for the junior secondary schools, F.G.M., took technical supervision over from the project unit and ensured a satisfactory construction quality, but at a fee of 12½% of civil works cost, or about US\$ 2.3 million. Likewise, the Crown Agents arranged for procurement at a fee of 7% of equipment costs, or about US\$ 120,000. Neither at the project's conception, nor during its implementation, did the Ministry of Education conceive of the sheer magnitude of work involved. The experience with the implementation of the second education project so far does not show a major improvement of this condition.
- 3.05 Progress reporting was not wholly adequate, both in content and in timing. Progress made was only described in general terms and delays were not fully analyzed. Since progress reporting is an important management tool, both for the borrower and for the Bank, it should be given more attention. In this regard, guidelines for progress reporting already introduced in this Division should prove useful. Bank supervision missions visited Jamaica on the average every seven months but only for about five man-days per visit, which was insufficient to fully appreciate and help overcome some of the above implementation problems. Only little assistance was provided by the Bank in the earliest stages, when Bank involvement was most needed. The recent trend in this Division of mounting supervision missions to assist project units at critical moments, particularly during the early stages of project implementation, should be of benefit to our borrowers.

IV. COST AND FINANCING

Project Cost

4.01 The estimated and actual cost by project items was as follows (see also Annex 1):

	<u>Estimated</u> (US\$ million)	<u>Actual</u>	<u>Excess</u> %
CAST	1.26	1.18	- 6
JSA	2.02	2.52	25
4 Teacher Training Colleges	1.10	1.11	0
50 Junior Secondary Schools	<u>15.02</u>	<u>25.01</u>	<u>67</u>
	19.40	29.82	54

4.02 Higher construction costs, particularly for the junior secondary schools and JSA (paras. 2.02 - 2.06), are the major reason for the cost overruns; actual construction costs for the entire project were 70% higher than estimated. Professional fees increased more than proportionally because of the involvement of the main contractor (para. 3.04) and high reimbursable expenses; actual professional fees were 190% higher than estimated. The costs of equipment, furniture and technical assistance were well within appraisal estimates, partly because equipment and furniture lists were reduced in the later stages of project implementation and because less technical assistance was provided than foreseen (para. 2.14).

4.03 The likelihood of cost overruns became apparent in the early stages of project implementation. During appraisal, construction costs had been estimated at US\$ 7.20 per square foot, but on the government's insistence this figure was reduced to US\$ 4.80 per square foot during negotiations. Further, the contingencies estimate of 12% did not adequately take into account the probable price increases, particularly in view of the fact that baseline-cost estimates had been kept to a minimum and construction costs were already increasing at 4-5% p.a. in 1966. However, the bulk of the cost increase, mainly as a result of inefficiency and accelerated price increase, could not have been foreseen.

4.04 The construction cost increase for the junior secondary schools accounted for 85% of the total cost overrun. The last eight schools in particular showed very large cost increases (para. 2.06). Construction costs for this project item were US\$ 7.80 per square foot on the average, but US\$ 11.00 per square foot for the last eight schools. Likewise, the total cost per student place, which had been estimated at US\$ 450, amounted to US\$ 750 on the average, but US\$ 1,250 for the last eight schools. The total cost overrun in the construction of the 50 junior secondary schools of US\$ 9.3 million can be attributed to the various factors as follows (see also Annex 2):

1. Underestimates at appraisal stage (para. 4.03)	US\$ 3.4 million
2. Increase in construction area (para. 2.04)	US\$ 0.6 million
3. Unforeseeable price increase within original implementation schedule	US\$ 1.3 million
4. Avoidable price increases, delays, and inefficiencies	<u>US\$ 4.0 million</u>
	US\$ 9.3 million

The analysis shows that more than 40% of the cost overrun or some US\$ 4 million of expenditures could probably have been avoided if the project had been implemented by a well-staffed, efficient project unit.

- 4.05 Toward the end of 1972 the new government in Jamaica established a commission (the De Costa Commission) to inquire into the award of contracts under the former administration. This commission investigated also the appropriateness of contract awards under the first education project. The commission's report criticized the way in which the project was implemented, including the procedures for the award of some contracts (para. 2.06). However, no question had arisen during the course of the commission's inquiries of possible irregularities in the award of contracts financed from Bank loans, or of possible misapplication of Bank funds. Assurances to this effect have been provided in writing by the government.

Finance

- 4.06 The loan was expected to be disbursed at 53% of the project cost excluding the USAID-financed technical assistance component (para. 1.02). This disbursement percentage was gradually reduced to 5% for the last disbursement application, while no disbursements were made on an additional US\$ 2.6 million (Annex 3). USAID contributed US\$ 1.1 million and the UK Government some US\$ 30,000 in technical assistance (paras. 2.13-2.14). The Jamaican Government provided the remaining funds amounting to US\$ 19.2 million, or 120% more than expected. In addition, the government financed the purchase of land and the cost of project management. Government counterpart funds were available promptly when needed.

Recurrent Costs

- 4.07 The 1974/75 budget includes J\$ 8.0 million for recurrent expenditures of the project institutions. This constitutes 9% of the total recurrent budget of the Ministry of Education, about the same proportion as estimated in the appraisal report. The total budgetary appropriation for recurrent funds of the project institutions is adequate, but the composition could be improved.

In particular, a too high proportion is allocated for teacher salaries, as a result of the low student-teacher ratio of 27:1 (para. 5.08). At the same time, inadequate amounts are available for materials and maintenance, covering only about two-thirds of the needs. A general provision in the Ministry's budget for maintenance is used to finance major repairs of older school buildings, and does not compensate for the shortage of maintenance funds in the new project institutions (para. 5.14).

- 4.08 The projections of total recurrent expenditures for education in the appraisal report are close to the actual figures. Enrollments have increased as expected, except for non-project junior secondary schools, where the delays in project construction have also delayed implementation of the Government's larger expansion program. Costs per student at the JSS are slightly lower than expected, since several intended measures to improve quality have not been implemented. Further, the appraisal report indicated that recurrent expenditures by the Ministry of Education would be kept within the limit of 19% of total government recurrent expenditures. The actual proportion is 16.5%, caused by a larger than expected increase of total government expenditures (Annex 4).

V. OPERATING RESULTS

Enrollments and Graduates

- 5.01 Planned and actual numbers are as follows:

	<u>Enrollments</u>		<u>Graduates</u>	
	<u>Planned</u>	<u>1973/74</u>	<u>Planned</u>	<u>1973/74</u>
CAST	735	1,272	245	338
JSA	500	350-530	140	140
Teacher Training Colleges	1,530	1,533	1,000	1,000
Junior Secondary Schools	33,360	37,674	-	-

- 5.02 CAST. The numbers of students and graduates of CAST are higher than foreseen, since buildings that were to be replaced under the project continue to be used, and because facilities are used more intensively than expected. CAST maintains close contact with industry and expands or contracts courses according to needs. Its graduates are in high demand. Thus, the achievements surpass the project's objectives.
- 5.03 JSA. The structure of enrollment in JSA leads to an inefficient use of facilities. New entrants are admitted half way during the academic year, resulting in a fluctuation of enrollments between 350 in the first semester and 530 in the second. In 1974 the school was transferred from the Ministry of Agriculture to the Ministry of Education, which is reconsidering this

situation. Because of more emphasis on two-year instead of three-year courses, JSA has been able to meet the overall target of 140 graduates p.a., all of whom can find jobs easily. The project included provision of facilities for short courses enrolling 50 students at a time and with an annual output of about 1,000. These courses have not yet been provided and all facilities are used for the regular teaching program. Thus the project's objectives have so far only partly been achieved.

- 5.04 Teacher Training Colleges. The numbers of students and graduates are as foreseen and primary teachers are being upgraded. Thus the project's objectives have been fully achieved.
- 5.05 Junior Secondary Schools. With Bank agreement, the class size in the junior secondary schools has temporarily been increased from 40, as appraised, to 45, and additional furniture has been provided under the project. This would increase the enrollment capacity - in single shift - from 33,360 to 37,530. Official enrollments surpass this figure. However, actual school attendance is rather low. The average attendance rate was only 70% in 1972/73, with a low 62% in Westmoreland and a higher 82% in Manchester. There is no evidence of improvement: the average attendance rate was 77% in the year before. No special study has been made of the causes of non-attendance, but this is not a special phenomenon confined to the junior secondary schools. The Ministry of Education's over-enrolling of students in the expectation of low attendance can be considered as being realistic.
- 5.06 The junior secondary schools were intended both to provide a better preparation for pre-employment and on-the-job training for those leaving school at age 15, and to increase the number of qualified students for further formal education. No intentions were expressed as to the relative number of those leaving and those continuing. In practice, however, not more than 5% of the graduates find employment as a result of generally high unemployment in Jamaica. The above dual objective is no longer considered realistic by the Ministry of Education, which has decided to offer upper-secondary education in all project schools by introducing a second shift, starting in the 1974/75 school year. Although the facilities would be used more efficiently, it is doubtful that this constitutes an efficient use of Jamaica's human and financial resources.
- 5.07 An additional objective of this project item, expressed in the appraisal report only, was that the schools would offer extension classes for a general upgrading of the skills of the adult population. No systematic effort has been made, however, to develop such courses. The schools are used in the afternoons, mostly by former students, for academic courses leading to the Jamaica School Certificate. These courses will probably be discontinued once the schools are used in double shift. Thus several of the project's objectives have not been achieved so far and are unlikely to be achieved in the near future.
- 5.08 Staffing. The staffing of the post-secondary institutions is in accordance with expectations. For the junior-secondary schools, the Government intended to achieve a student-teacher ratio of 35:1 (Side Letter on Educational Objectives), but this was later considered too high and reduced to 30:1 in the Loan Agreement for the second education project (Loan No. 727-JM). This ratio

reached 34:1 in 1971/72, but was only 27:1 in 1973/74, though the class size is 45 (para. 5.05). The reason for this discrepancy is the small number of teacher contact hours of 30 per week in comparison with the 50 teaching hours required.^{1/} A satisfactory proportion of 90% of the junior secondary teachers is fully qualified.

Curricula

- 5.09 Post-Secondary Institutions. No intentions were expressed in the project documents on this subject, but the curricula of CAST, JSA and the teacher training colleges have been improved with outside technical assistance and are satisfactory. Thus the project's objectives of quality improvement have been achieved.
- 5.10 Junior Secondary Schools. A National Curriculum Development Committee and, more recently, a Curriculum Development Thrust have worked out the course content and prepared syllabi and teacher manuals for this program. An important contribution has been made by USAID technical assistance (para. 2.13) and the curriculum is generally satisfactory. There is general agreement in Jamaica that the new junior secondary schools constitute a great improvement over traditional junior secondary education.
- 5.11 The concept that the junior secondary schools would in fact provide secondary-level education to all those attending seems unrealistic. Since there is no entrance selection and because of the uneven quality of education offered in many primary schools, large numbers of entrants are not of the expected level. For example, up to 40% of the new entrants are not fully literate. Thus much time and effort are spent on remedial teaching rather than the intended junior secondary program.
- 5.12 Concerning the intention to establish facilities and a program to produce textbooks and instruction materials adapted to local requirements (Side Letter on Educational Objectives), so far activities have been concentrated only on selecting and procuring, rather than preparing and producing, these materials. This situation should improve, however, when the Educational Television, Materials and Aids Center, provided under the second education project, starts operation. The textbooks and materials available generally meet local requirements as currently perceived.
- 5.13 Supporting Services. The government undertook to strengthen the Ministry of Education statistics and planning services (Side Letter on Educational Objectives). These services have been slightly strengthened, but the expected results have not been achieved. A clear definition of statistical data needed or of the purpose of data collection and processing is lacking. Further, those statistical data that exist are often outdated or incomplete. Planning is being carried on, but related chiefly to projects. An overall plan as a basis

^{1/} Based on a usual student timetable of 40 periods per week, additional periods when classes are divided for practical work, and local timetable adjustments.

for education policy does not exist, nor is any systematic progress toward this readily discernible. The statistics and planning services have recently been strengthened with experts under the second education project. According to the intentions, the supervisory service has been strengthened.

- 5.14 Maintenance. Maintenance is mainly carried out on the initiative of school principals and is generally inadequate (Loan Agreement, Section 5.01(c)). The institution of a maintenance program and the development of a maintenance manual, as recommended by the Bank, are badly needed, since no guidance is presently given to the principals. Further, tools which have been lost or are worn out are not systematically being replaced, a matter which is becoming urgent in several workshops. Shortages of funds are partly responsible for this situation (para. 4.07).

VI. COVENANTS

The following agreements have not, or have not adequately, been complied with by the borrower:

- 6.01 Project Execution. Section 5.01(a) of the Loan Agreement required that the project be carried out with due diligence and efficiency and with due regard to economy. Project implementation has been less than efficient, causing large cost overruns (Chapters II, III and IV).
- 6.02 Project Unit. Section 5.01(d) of the Loan Agreement required a full-time Project Coordinator and Architect and para. 3 of the Side Letter on Execution of the Project required that the project unit be kept adequately and competently staffed. The project unit was without a full-time project architect for extended periods of time, and the project unit was continuously understaffed (paras. 3.01-3.04).
- 6.03 Site Acquisition. Para. 6 of the Side Letter in Execution of the Project required that sites for all junior secondary schools be required before December 31, 1967. On that date, only 44 sites had been acquired and the last site was acquired in August 1969 (para. 2.03).
- 6.04 Approval of Designs. Section 5.01(g) of the Loan Agreement required that the plans, specifications, and work schedules be furnished to the Bank for its approval promptly upon their preparation. The designs were not sent promptly upon their preparation, and the majority were only sent to the Bank after construction bids had been opened (para. 2.04).
- 6.05 Testing and Installation. Paras. 1(e) and 5(b) of the Side Letter on Execution of the Project required that equipment and furniture be installed and tested, and that they should be inspected when delivered to sites. This has not been properly done (paras. 2.10 - 2.12).
- 6.06 Insurance. Section 5.07 of the Loan Agreement and para. 5(b) of the Side Letter on Execution of the Project required that damaged and lost goods be replaced. A number of equipment items which had never reached the schools have not yet been replaced (para. 2.10).

- 6.07 Use of JSA. Para. A.4 of the Side Letter on Educational Objectives and Administration expressed the government's intention to offer short courses in JSA. These courses are not yet being offered (para. 5.03).
- 6.08 Student-Teacher Ratio. Para. B.6 of the Side Letter on Educational Objectives and Administration expressed the government's intention to achieve a student-teacher ratio of 35:1 in junior secondary schools. However, the Loan Agreement of the second education project indicated a student-teacher ratio of 30:1 for these schools. The actual ratio is 27:1 (para. 5.08).
- 6.09 Maintenance and Materials. Sections 5.01(c) and 5.02 of the Loan Agreement required adequate maintenance of buildings and equipment, and the provision of adequate funds for operation and maintenance of the project institutions. Maintenance is generally inadequate, and funds for materials and maintenance insufficient (paras. 4.07 and 5.14).

VII. RECOMMENDATIONS

7.01 General

- (a) In countries where no proper maintenance system exists, projects should include provisions - such as expert services, training and equipment - to build up or strengthen the maintenance capacity (para. 5.14).
- (b) If a project comprising a complicated construction/expansion program is sufficiently advanced in preparation, the engagement of the necessary architectural consultants might be considered before appraisal and financed retroactively or by an engineering loan (para. 2.02).
- (c) More flexibility is needed in adapting a loan agreement to changing circumstances. When long delays occur or prices increase faster than expected, the project content and loan amount should be re-appraised (paras. 2.01, 4.03 and 4.04).
- (d) For countries where land acquisition is a cumbersome process, consideration should be given to either the requirement of land acquisition before loan effectiveness or cancellation of part of the loan amount if sites are not acquired by an agreed date (paras. 2.03, 2.06 and 4.04).

7.02 Project Management

- (a) Where a large construction contract is awarded to a main contractor who will employ subcontractors, the Bank should pay more attention to the pre-qualification of and contract awards to subcontractors (para 2.06).

- (b) More attention should be given to progress reporting and guidelines should be developed to make such reporting more meaningful (para. 3.05).

7.03 Procurement

- (a) The Bank should more liberally allow procurement of small items according to borrower's regular procurement procedures (if satisfactory) and without international competitive bidding (para. 2.09).
- (b) Bid documents for equipment should include a standard clause requiring suppliers to have local agents who can ensure the availability of spare parts and maintenance (para. 2.11).

7.04 The Project

Field supervision of the project's educational aspects should be undertaken on a regular basis.

Latin America and the Caribbean Office

July 1974

JAMAICA - LOAN No. 468-JM

Project Cost: Estimated and Actual

	<u>Civil Works</u>	<u>Professional fees</u>	<u>Equipment</u>	<u>Furniture</u>	<u>Technical Assistance</u>	<u>Total</u>
<u>ESTIMATED</u> (in '000 US\$)						
CAST	649	65	353	157	31	1,255
JSA	1,125	122	320	122	327	2,016
Teacher Training						
Colleges	915	91	23	72	-	1,101
Junior Secondary						
Schools:						
- 42 first	9,004	825	919	1,036	1,127	12,911
- 8 last	1,477	134	156	165	173	2,105
- subtotal	(10,481)	(959)	(1,075)	(1,201)	(1,300)	(15,016)
Total	<u>13,170</u>	<u>1,237</u>	<u>1,771</u>	<u>1,552</u>	<u>1,658</u>	<u>19,388</u>
<u>ACTUAL</u> (in '000 US\$)						
CAST	790	50	260	52	31	1,183
JSA	1,795	368	161	58	137	2,519
Teacher Training						
Colleges	903	133	27	43	-	1,106
Junior Secondary						
Schools:						
- 42 first	14,609	2,297	911	718	948	19,483
- 8 last	4,422	695	154	115	146	5,532
- subtotal	(19,031)	(2,992)	(1,065)	(833)	(1,094)	(25,015)
Total	<u>22,519</u>	<u>3,543</u>	<u>1,513</u>	<u>986</u>	<u>1,262</u>	<u>29,823</u>
<u>ACTUAL - ESTIMATED</u> (in %) ^{a/}						
CAST	22	-23	-26	-67	0	-6
JSA	60	202	-50	-52	-58	25
Teacher Training						
Colleges	-1	46	17	-42	-	0
Junior Secondary						
Schools:						
- 42 first	62	178	-1	-30	-16	51
- 8 last	199	419	-1	-30	-16	163
- subtotal	(82)	(212)	(-1)	(-30)	(-16)	(67)
Total	<u>71</u>	<u>186</u>	<u>-15</u>	<u>-36</u>	<u>-24</u>	<u>54</u>

^{a/} As a percentage of estimated costs.

JAMAICA - LOAN No. 468-JM

Analysis of the Cost Overrun in Civil

Works for the Junior Secondary Schools
(in '000 US\$)

Appraisal Cost Estimate:

(incl. 12% contingencies)

- school construction	8,027	
- site development	<u>1,568</u>	
	9,595	
- professional services, 10%	959	
- staff housing	<u>887^{a/}</u>	<u>11,441</u>

1. Underestimates at Appraisal/Negotiations Stage

(a) Unit Cost

Construction cost had been estimated on the basis of US\$4.80 per sq. ft., but the actual cost at that time was US\$6.00 per sq. ft. Thus, cost estimates should have been higher as follows:

- school construction	2,007	
- professional services, 10%	201	
- staff housing	<u>222</u>	2,430

(b) Contingencies

A contingency allowance of 12% had been included in the cost estimates. However, no prototype designs were available yet, so that a physical contingency of 10% would have been appropriate. Further, at the time of appraisal construction costs were increasing at 4-5% p.a., so that the price contingency should have been at least 10%. With a total contingency allowance of 20%, cost estimates would have been higher as follows:

- school construction	717	
- site development	112	
- professional services, 10%	83	
- staff housing	<u>79</u>	<u>991</u>

Total Underestimate 3,421

2. Increase in Construction Area

The construction area for the 50 schools had been estimated at 1,280,000 sq. ft., but the actual construction volume was 1,482,000 sq. ft. The resulting cost increase (at corrected unit cost) was:

a/ The working papers suggest that this amount includes provisions for professional services and contingencies.

- school construction	566	
- professional services, 10%	<u>57</u>	<u>623</u>

3. Unforeseeable and Unavoidable Price Increases

According to the original implementation schedule, construction of the schools would start in July 1967 and be completed in August 1970. On the basis of the actual construction cost increase during that period, the average price increase would have been 18.2%, as against the 10% which could have been foreseen. The resulting cost increase was as follows:

- school construction	945	
- site development	140	
- professional services, 10%	109	
- staff housing	<u>99</u>	<u>1,293</u>

4. Other Factors

Actual total cost of civil works	19,031
Professional fees at the assumed rate of 10%	<u>1,903</u>
Total cost	20,934
Appraisal cost estimate	- 11,441
Cost increases explained above	<u>- 5,337</u>
Other cost increases resulting from delays, avoidable price increases and inefficiencies	<u>4,156</u>

JAMAICA - LOAN No. 468-JM

Expenditures^{a/} and Disbursements
(in '000 US\$)

Fiscal Year and Semester	Cumulative Expenditures		Claimed Actual Expend- itures	Disburse- ment Percent- age	Actual Disburse- ments	Cumulative Disbursements	
	Estimated	Actual				Actual	Estimated
1967							
1st	95	-					50
2nd		361	361	53	191	191	
1968							
1st	2,700	366	5	53	3	194	1,425
2nd		921	555	53	294	488	
1969							
1st	8,150	2,669	1,748	53	927	1,415	4,275
2nd		2,931	262	53	138	1,553	
1970							
1st	14,500	5,865	2,934	53	1,555	3,108	7,600
2nd		14,518	8,653	44	3,808	6,916	
1971							
1st	18,100	14,518	0	44	0	6,916	9,500
2nd		17,085	2,567	24	616	7,532	
1972							
1st		20,622	3,537	24	849	8,381	
2nd		23,065	2,443	24/14 ^{b/}	581	8,962	
1973							
1st		23,065	0	14	0	8,962	
2nd		26,171	3,106	14	435	9,397	
1974							
1st		26,171	0	14	0	9,397	
Jan. 1974		27,173	1,002	14/5 ^{c/}	103	9,500	
After Jan. 1974		29,823	2,650	0	0	9,500	

^{a/} Excluding USAID - financed technical assistance.

^{b/} Reduced to 14%, effective March 16, 1972.

^{c/} Percentage at which last disbursement was made.

JAMAICARecurrent Expenditures 1972/73: Projected and Actual
(Ministry of Education)

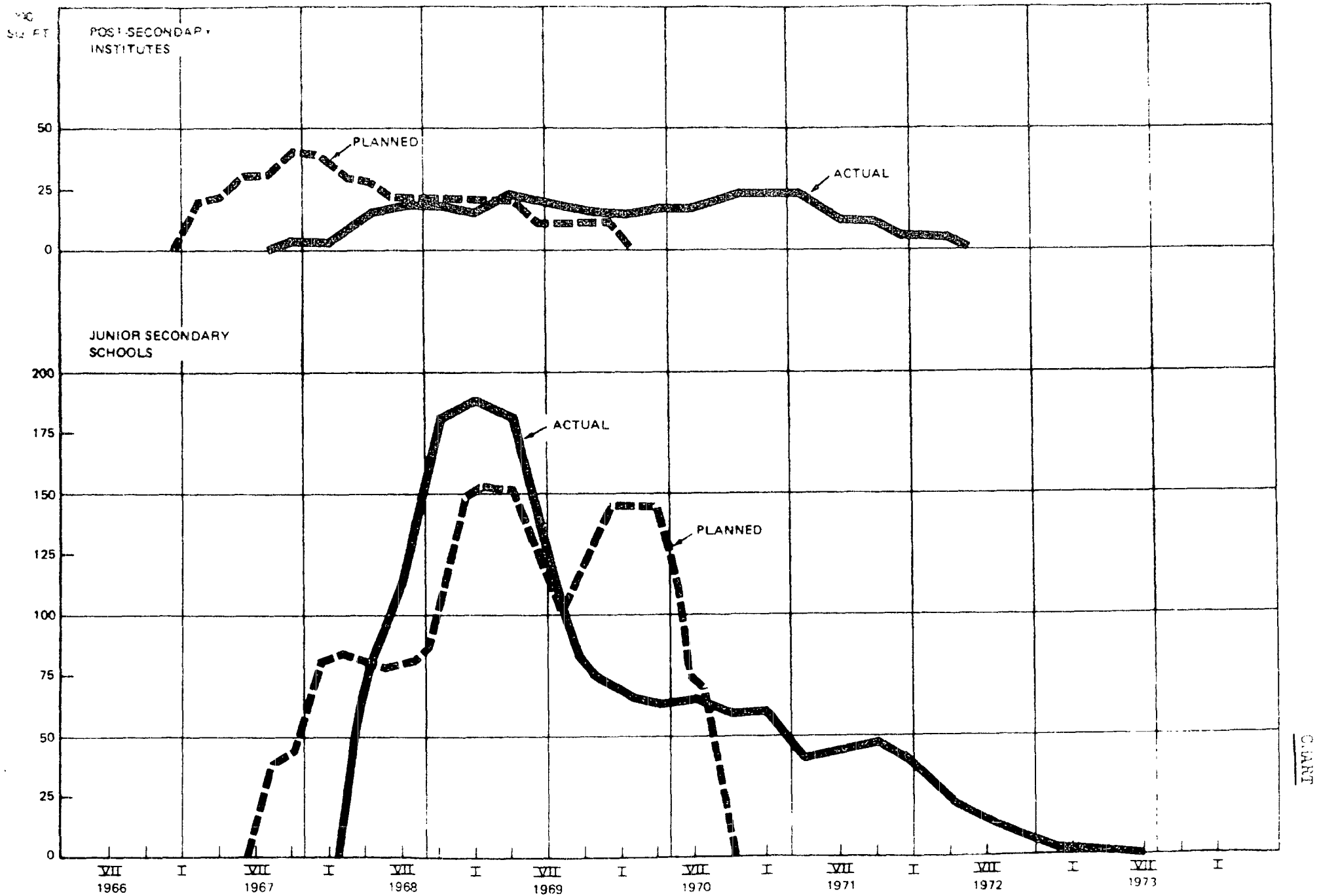
	<u>Projected^(a)</u>		<u>Actual^(b)</u>	
	<u>000 J\$</u>	<u>%</u>	<u>000 J\$</u>	<u>%</u>
Primary Education	12,080	44	19,650	46
Secondary Education	11,730	42	13,560	31
Higher Education	2,570	9	3,670	9
Other Expenditures	<u>1,470</u>	<u>5</u>	<u>6,210</u>	<u>14</u>
TOTAL	27,850	100	43,090	100
Proportion of total Government Recurrent Expenditures	19.0 %		16.5 %	

(a) Appraisal report, Annex 8, at J\$ 1 = J\$ 2;
projections made on prices at time of appraisal

(b) "Revised Estimates" of the 1972/73 budget

JAMAICA - LOAN NO. 468-JM

Construction: Planned and Actual



CHART