DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

PROJECT PAPER

PERU

EDUCATION SERVICE CENTERS

Project Number: 527-0148

LA/DR:77-7

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: [A] A = ADD, C = CHANGE, D = DELETE

PP

2. DOCUMENT CODE: 3

3. COUNTRY ENTITY: PERU

4. DOCUMENT REVISION NUMBER: [ ]

5. PROJECT NUMBER (7 digits): 527-0148

6. BUREAU/OFFICE: A. SYMBOL: LA; B. CODE: 05

7. PROJECT TITLE (Maximum 40 characters): Education Service Centers

8. ESTIMATED FY OF PROJECT COMPLETION: FY 79

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 77; B. QUARTER 4 (Enter 1, 2, 3, or 4); C. FINAL FY 79

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 –)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL	15	385	400	740	850	1,590
(GRANT)	(15)	(385)	(400)	(740)	(850)	(1,590)
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY	–	–	–		1,610	1,610
OTHER DONOR(S)						
TOTALS	15	385	400	740	2,460	3,200

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 77 F. GRANT	E. 1ST FY 77 G. LOAN	H. 2ND FY 78 I. GRANT	H. 2ND FY 78 J. LOAN	K. 3RD FY 79 L. GRANT	K. 3RD FY 79 M. LOAN
(1) EH	600	600		400		650		540	
(2)									
(3)									
(4)									
TOTALS				400		650		540	

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) EH					1,590	
(2)						
(3)						
(4)						
TOTALS						

12. IN-DEPTH EVALUATION SCHEDULED: MM 12, YY 80

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

[2] 1 = NO, 2 = YES

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: Gerald Gower — Gerald F Gower

TITLE: Acting Mission Director

DATE SIGNED: MM 7, DD 14, YY 77

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM 07, DD 18, YY 77

AID 1330-4 (1-76)

I N D E X

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS PART I

1. TRANSACTION CODE: [A] A = ADD, C = CHANGE, D = DELETE — PAF
2. DOCUMENT CODE: 5
3. COUNTRY/ENTITY: Peru
4. DOCUMENT REVISION NUMBER: [ ]
5. PROJECT NUMBER (7 digits): [527-0148]
6. BUREAU/OFFICE: A. SYMBOL: LA; B. CODE: [05]
7. PROJECT TITLE (Maximum 40 characters): [Education Service Centers]
8. PROJECT APPROVAL DECISION — ACTION TAKEN: [A] A = APPROVED, D = DISAPPROVED, DE = DEAUTHORIZED
9. EST. PERIOD OF IMPLEMENTATION: YRS. [0 4] QTRS. [ ]

10. APPROVED BUDGET AID APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 77 F. GRANT	E. 1ST FY 77 G. LOAN	H. 2ND FY 78 I. GRANT	H. 2ND FY 78 J. LOAN	K. 3RD FY 79 L. GRANT	K. 3RD FY 79 M. LOAN
(1) EH	600	600		400		650		540	
(2)									
(3)									
(4)									
TOTALS				400		650		540	

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) EH					1,590	
(2)						
(3)						
(4)						
TOTALS					1,590	

11. PROJECT FUNDING AUTHORIZED — A. GRANT / B. LOAN
ENTER APPROPRIATE CODE(S): 1 = LIFE OF PROJECT, 2 = INCREMENTAL LIFE OF PROJECT — [2]
C. PROJECT FUNDING AUTHORIZED THRU FY [7 9]

12. INITIAL PROJECT FUNDING ALLOTMENT REQUESTED ($000)
B. ALLOTMENT REQUEST NO. 3

A. APPROPRIATION	C. GRANT	D. LOAN
(1) EH	400	
(2)		
(3)		
(4)		
TOTALS		

13. FUNDS ~~RESERVED FOR ALLOTMENT~~ allotted
TYPED NAME (Chief, SER/FM/~~FSD~~) FCO
SIGNATURE: [signature]
DATE: 8/23/77

14. SOURCE/ORIGIN OF GOODS AND SERVICES: [X] 000 [ ] 941 [ ] LOCAL [ ] OTHER ____

15. FOR AMENDMENTS, NATURE OF CHANGE PROPOSED

FOR PPC/PIAS USE ONLY	16. AUTHORIZING OFFICE SYMBOL	17. ACTION DATE MM DD YY	18. ACTION REFERENCE (Optional)	ACTION REFERENCE DATE MM DD YY

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

ASSISTANT
ADMINISTRATOR

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

PART II

Name of Country: Peru Name of Project: Peru Education Service Centers
Number of Project: 527-0148

Pursuant to Part I, Chapter 1, Section 105 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Grant to the Government of Peru (the "Cooperating Country") of not to exceed Four Hundred Thousand United States Dollars ($400,000) (the "Authorized Amount") to help in financing certain foreign exchange and local currency costs of goods and services required for a project which will establish Education Service Centers in four school districts having predominantly disadvantaged populations and will test on an experimental basis the capability of the Education Service Centers to increase the quality, availability, and use of education services for students and adults ("Project"). Four Hundred Thousand United States Dollars ($400,000) of the A.I.D. financing herein authorized and approved for the Project will be obligated when the Project Agreement is executed.

I approve the total level of A.I.D. appropriated funding planned for this Project of not to exceed One Million Five Hundred Ninety Thousand United States Dollars ($1,590,000) Grant funding including the funding authorized above, during the period FY 1977 through FY 1979. I approve further increments during that period of Grant funding up to $1,190,000, subject to the availability of funds in accordance with A.I.D. allotment procedures.

I hereby authorize the initiation of negotiation and execution of the Project Agreement by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegations of Authority subject to the following essential terms and covenants and major conditions; together with such other terms and conditions as A.I.D. may deem appropriate:

A. Source and Origin of Goods and Services

Except for Ocean Shipping, goods and services financed by A.I.D. under the Project shall have their source and origin in the Cooperating Country or in the United States, except as A.I.D. may otherwise agree in writing. Ocean Shipping financed under the Grant shall be procured in the United States.

B. Condition Precedent to Initial Disbursement

Except as A.I.D. may otherwise agree, prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, the Cooperating Country shall furnish in form and substance satisfactory to A.I.D., evidence that the Cooperating Country will provide in a timely manner all counterpart contributions required for the Project.

C. Conditions Precedent to Disbursement for Construction

Except as A.I.D. may otherwise agree, prior to any disbursement, or the issuance of any commitment documents under the Project Agreement to finance the construction of an Education Service Center, the Cooperating Country shall furnish in form and substance satisfactory to A.I.D. with respect to such Education Service Center:

(1) evidence that the Ministry of Education has valid legal title, free and clear, to the premises on which the Education Service Center is located; and

(2) a maintenance plan for the Education Service Center.

D. Covenants of the Cooperating Country

Except as A.I.D. may otherwise agree, the Cooperating Country shall covenant that:

(1) The Cooperating Country shall contribute at least the equivalent of $735,000 for commodities, capital costs, and operational costs;

(2) The Cooperating Country shall provide adequate funding to continue the operation and maintenance of the Education Service Centers after December 1981;

(3) The Cooperating Country shall give each Education Service Center Director the authorities and responsibilities necessary to assure the effective and efficient operation and maintenance of his Education Service Center; and

(4) The Cooperating Country shall prepare and submit to A.I.D. at appropriate stages during the Project plans of operations, satisfactory to A.I.D. in form and substance, which plans describe the research, design, implementation and evaluation activities to be carried out under the Project.

Assistant Administrator for
Latin America

8/19/77
Date

Clearance:
GC/LA,JLKessler _____ Date 8/17
LA/DR,CBWeinberg _____ Date _____
LA/SA,RWeber _____ Date 8/17
LA/DR,KKelly _____ Date 8/17

GC/LA,TLGeiger:lb:8/2/77
TG/

AUG 10 1977

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR (LA)

FROM: LA/DR, Charles B. Weinberg

Problem: To authorize the $1.59 million Peru Education Service Centers grant project.

Discussion: The DAEC reviewed the Project Paper for the Peru Education Service Centers grant on Friday, July 29, 1977. All the concerns of the DAEC were adequately answered by the Mission representative during the course of the review meeting (briefly summarized below), and the DAEC recommended some minor modifications to the PP. These have been made, and the project is ready for authorization.

The purpose of the project is to test, on an experimental basis, the capability of centralized education service centers to increase the quality, availability and use of education services by students who attend schools throughout the school district (Nucleos Educativos Comunales - NECs). The service centers will also be used for adult education and other community activities. Four school districts have been selected for this initial pilot program -- Cachicadan, Huamachuco, Pacasmayo and Trujillo. The first two NECs are predominantly rural and are located in the sierra, whereas the latter two are coastal semi-urban and urban centers experiencing rapid growth due to migration from the sierra.

The AID contribution of $1.59 million will finance long and short term technical assistance ($320,000), participant training ($165,000), and will assist in the construction ($760,000) and equipping ($345,000) of the four pilot service centers. The GOP contribution will also finance the construction and equipping of the service centers, as well as their operational costs. The host country contribution is estimated at $1.61 million or 50% of the total project cost of $3.2 million, thus satisfying the minimum contribution requirement of Section 110(a) of the FAA.

This project was initially proposed as a loan. The PRP was reviewed and intensive review authorized for FY-1977 funding. A feasibility study conducted during intensive review concluded, however, that, although the service center concept is basically feasible, further study is required before proceeding with a country-wide program. As a result, the Mission concluded that major investments should be delayed until a pilot grant project to test the concept could be implemented and evaluated. The acting AA/LA approved the Mission's request to change the project from a loan to a grant in June, 1977.

Although the project appears in the FY 1977 Congressional Presentation, an Advice of Program Change was forwarded to the Congress on August 5, 1977, because of the change in the project design and the shift from loan to grant financing. The four year project will be incrementally funded with $400,000 obligated in FY-1977, and the balance obligated in FY-1978 and FY 1979.

The following paragraphs summarize the Mission's responses to the DAEC's concerns:

(1) Target Group

With two of the proposed centers to be established in semi-urban and urban areas, the DAEC questioned the characteristics of project beneficiaries and their consistency with the mandated target group. The proposed number and rural-urban mix of centers were also questioned. The Mission responded that in the case of Pacasmayo (semi-urban) the majority of the families have a per capita annual income of approximately $200 and are dependent on agriculture for their livelihood. In the case of the second urban center, Trujillo, the center will be located in the central core of the city where most of the poor live and work. A per capita income of $175 is estimated for families of children attending school in this district. In addition, the majority of the residents of both Pacasmayo and Trujillo who will benefit from the service centers are recent migrants from the sierra. This group was specifically identified in the Peru ABS strategy statement as the number two priority group to be reached through the Mission's program. The characteristics of the project beneficiaries, therefore, are consistent with the target group as defined by the Mission. The Mission also explained that the proposed mix of service centers was selected as the minimum necessary to generate the data needed to test the service center concept across the geographic and socio-economic spectrum in Peru before expanding to a nation-wide program.

(2) Replication

In response to the DAEC's concern about the cost of replicating the service center program on a national basis, the Mission has added data to the PP on the expected cost of providing services to approximately 60% of the school age population in Peru. (The remaining 40% live in areas where service centers would not be practical due to the dispersion and isolation of schools in these areas.) The total cost, including Ministry of Education capital and recurrent costs, is estimated at $50 million or 10% of the yearly MOE budget. The Mission believes this is an acceptable level given that the MOE budget has been growing in real terms

and is expected to continue to do so in the future. To assist in expanding the program to the national level -- if the pilot test is successful -- the Mission is considering a follow-on loan in FY-1981.

(3) Service Center Operation and Administration

An annex has been added to the PP which demonstrates how the centers are expected to operate on an hour-by-hour and grade-by-grade basis. A hypothetical schedule has been developed for the center in Cachicadan to show how students from the various schools in the district will be scheduled to attend center activities. The same principle is applicable for the other centers.

The Mission has also added a condition precedent at the request of the DAEC. The CP requires that the specific responsibilities of, and relationships between, the NEC director, the centro base director and the service center director be clearly delineated before funds are disbursed.

T . Project Paper is attached for your information (TAB B).

Recommendation: That you sign the attached Project Authorization and Request for Allotment of Funds (PAF) form (TAB A), thereby authorizing the Mission to negotiate and sign a Project Agreement for the Education Service Centers Project.

Attachments: TAB A - PAF
TAB B - Project Paper

LA/DR:KKel[illegible]rgah:8/16/77

I. SUMMARY AND RECOMMENDATIONS

A. Face Sheet

B. Recommendations

USAID/Peru recommends that AID/W authorize a grant to assist the Government of Peru, through the Ministry of Education (MOE), to test the capability of Education Service Centers to increase the quality, availability and use of educational services. The A.I.D. grant would be incrementally funded as follows: i) FY 77 = $250,000; ii) FY 78 = $800,000; and iii) FY 79 = $540,000.

C. Summary Description of the Project

In 1972 the Government of Peru initiated an extensive reform of the education system. A key element of the Education Reform has been the creation of over 800 school districts (Nucleos Educativos Comunales - NECs) which are intended to promote local participation in the education process and to develop a more relevant curriculum responsive to regional and local needs. A problem confronting the vast majority of these NECs is the inadequate supply of educational equipment, materials, and facilities necessary to properly deliver educational services and make the system more responsive to the needs of Peru's growing school population. In response to this problem, the GOP is considering the possibility of establishing on a national basis centralized units, called Education Service Centers, which would provide facilities and services for frequent and regular use by students attending other schools in the district, as well as community residents seeking non-formal education opportunities. The GOP lacks the resources to attempt to provide each school in Peru the desired level of facilities and equipment. Service Centers are viewed as a promising alternative given the inability of the present system to provide minimally adequate facilities and services on an individual school basis. Prior to launching a national or full scale regional program to establish Service Centers, a pilot project is recommended to test and evaluate the concept through implementation under diverse conditions.

The purpose of the project is thus to test on an experimental basis the capability of Education Service Centers to increase the quality, availability, and use of educational services for students and adults in selected school districts containing predominantly disadvantaged populations. Under the project, Education Service Centers will be established, equipped, operated and evaluated in four school districts which demonstrate varying cultural, geographic and socio-economic conditions. The four school districts (Cachicadan, Huamachuco, Pacasmayo, and Trujillo) are located in the department of La Libertad which is part of the MOE's Eighth Education Region. Two of these NEC's are predominantly rural and are located in the sierra, and two are coastal urban and semi-urban centers experiencing rapid growth due to migration from the sierra. The project will be implemented by the MOE through its regional office in Trujillo.

By the end of the project, Education Service Centers should be in operation in the 4 school districts serving a combined student and adult population of approximately 30,000. The types of services which will be provided include libraries, pre-vocational and job skill training workshops, natural and physical science laboratories, school gardens/ agriculture plots, art and music education, physical education facilities, health care, audio visual services, in-service teacher training, and the production and distribution of teaching materials. The Service Centers will be evaluated with regard to the educational effectiveness of the services provided, their cost, the degree of coverage and usage, the degree of community support, and the potential for replicability.

A.I.D. funding will be required to assist in the construction and equipping of the four pilot Service Centers. A.I.D. will also finance approximately sixty-three months of technical assistance including a learning resources center specialist, a vocational education specialist, a research and evaluation specialist, an education economist, and education specifications and architectural engineering specialists. Fifty months of U.S. and third country training will be provided for selected MOE and Service Center administrative and instructional personnel, and in-country training programs will be organized for all personnel assigned to the Service Centers. The total A.I.D. contribution has been estimated at $1,590,000. The GOP's contribution to the project will include funds for equipping and constructing the Service Centers, as well as operational costs including salaries for administrative and instructional personnel, materials, and maintenance expenses. The GOP's contribution has been estimated at $1,610,000, or 50% of total project costs.

The project will be implemented over 4 years including 2 years to observe and evaluate the Service Center operations. A.I.D. obligations will be required over the first three years of the project.

D. Summary Findings statutory

The project meets all applicable/criteria, as indicated in the Statutory Checklist, Annex III. The Mission Director's 611 (e) certification is included as Annex II. Based on the detailed discussions of project analyses contained in Part III and of implementation planning contained in Part IV, it is the conclusion of the Mission that the project is technically sound, socially, economically and financially feasible, and ready for implementation. A brief summary of the principal factors affecting project feasibility is included below.

1. Technical

Preliminary drawings for the four Service Centers have been prepared with size requirements based on the projected demand for the services to be offered. Two of the Centers will include the remodeling of

existing structures. Sites have been identified for all four centers, and satisfactory evidence that the MOE has a free and clear title to the sites will be a condition precedent to disbursement for construction in each case. The preparation of final plans and specifications and construction services will be contracted from the private sector in accordance with A.I.D. procedures. Final architectural designs will result in functional buildings reflecting the Peruvian ambience and local tradition.

The remodeling of the existing structures and construction of new buildings is technically feasible in all aspects. No special manufactured elements are required, and all construction materials are available in Peru. Engineering and construction firms are available in Peru with considerable experience in construction of this nature and an adequate competitive response is anticipated. No structural, foundation or architectural problems are foreseen which could not be readily resolved utilizing conventional design methods, and no major environmental problems are anticipated.

2. Social and Pedagogical

Most of the approximately 30,000 immediate project beneficiaries fall within Peru's poor majority. Three distinct types of NECs (rural sierra, semi-urban coast and urban coast) have been chosen as sites for the project and will afford the GOP an opportunity to test the Service Center concept as a way of meeting the learning needs of the target population in diverse cultural, geographic and social settings.

The socio-cultural feasibility of the project depends on tailoring the Service Centers to the educational needs in each NEC, achieving cooperation among NEC officials involved in the Centers and obtaining community participation in Center activities. Satisfactory evidence has been presented to confirm that these three facets of the project are manageable.

If the project is successful, the Service Center concept will become a truly innovative aspect of the Education Reform and one which the GOP will be anxious to extend on a national basis. It would appear that between ten and twenty years is the best estimate of the time required before a national Service Center system could be in operation.

The educational services being proposed for the four Centers are based on the unique educational needs of the students and community residents to be served in each school district. The equipment and services conform to new curricula being implemented under the Education Reform, and will help to reinforce the Reform goal of providing a practical relevant education. The services to be offered emphasize a learning by doing methodology and foster active student involvement in the learning process. The project is pedagogically sound.

3. Financial

A summary financial plan is shown below:

	US $ 000		
Project Input	A.I.D.	GOP	TOTAL
Technical Assistance	320	-	320
Training	165	-	165
Commodities	345	80	425
Capital Costs	760	1,230	1,990
Operational Costs	-	300	300
TOTAL	1,590	1,610	3,200

The GOP contribution includes $875,000 of in-kind costs (including $75,000 of community contributions) and $100,000 of salaries of current MOE personnel who will be assigned to the project. The balance of $635,000 represents the net additional cash outlay by the GOP to carry-out the project. The project's cost estimates have been developed based on reliable data and are considered to be reasonably firm.

4. Economics

The economic analysis concludes that the establishment of Education Service Centers is a cost effective way to improve Peru's education system after considering certain qualitative parameters. The cost of providing relatively comparable services in the four NEC's on an individual school basis would result in costs roughly three times that of the Service Center alternative. The proposed Service Center concept is viewed as an attractive alternative which, within the bounds of Peru's financial resource base, meets minimal qualitative requirements.

5. Administration

The Mission has concluded that the MOE has the capability to carry-out the Project. Technical assistance and training have been built into the project design to augment this capacity where necessary. The grass roots structure to reach the target group, in the form of the NEC, is in place. The Mission maintains excellent relationships with the two organizations in the central MOE, the Sectoral Planning Office (OSPE) and the National Education Research and Development Institute (INIDE), which will play important roles in implementation of the project. Adequate linkages appear to exist between the central MOE, the MOE's Eighth Regional Office in Trujillo, and the four NECs for which Service Centers are proposed. While the Mission has not had direct experience with prior programs in the Eighth Region, evidence from the Bilingual Education grant project being implemented in the Fifth Region (Cuzco) indicates that satisfactory relationships can be developed at the regional and local levels.

E. Project Issues

There are no outstanding issues.

II. Project Background and Detailed Description

A. Background

1. GOP Goals and the Education Reform

The social and economic goals of the Government of Peru emphasize increased employment, increased production, and a "social democracy of full participation". The Education Reform Law, promulgated in 1972, is one of the key instruments to achieving these goals, as indicated in the 1975-78 National Development Plan.

The Education Reform resulted from a comprehensive and detailed analysis of the education system. This analysis highlighted a variety of ills within the education system which made it impossible for the education system to positively contribute to the achievement of national development goals. The most salient ills of the education system prior to the Reform included: (i) an overly academic orientation to education with the result that not enough people were being trained for the types of jobs the economy required; (ii) a rote learning system contributing to very high drop out and repeater rates; (iii) an urban elitist bias in the curriculum partly accounting for an increase in the absolute number of illiterates; (iv) a centralized bureaucracy unresponsive to local needs and regional differences; (v) inadequately trained teachers tied to traditional values and norms; and finally (vi an overdependence on the national government which was incapable of providing adequate educational, materials, equipment and other resources needed in the system.

The Education Reform Law represents a bold and integral attack on these problems and deficiencies within the education system. Since 1972 considerable progress has been made in several key areas, especially curriculum reform and teacher training. However, the most ambitious element of the Reform to date deals with the nuclearización or nuclearization process. In order to promote grass roots (local level) participation in the education process and to develop a more relevant curriculum responsive to regional and local needs, a total of 803 school districts or Nucleos Educativos Comunales (NEC) have been created throughout Peru. 1/ All schools, public and private, below the university level, fall within the jurisdiction of the NEC.

As conceived in the Reform, all people and all organizations, including businesses, voluntary associations, educational institutions constitute the NEC. Within each NEC, one school, usually a public school, is designated as the centro base (central school). The centro base is a school which offers all three cycles of basic regular primary education (grades 1-9) and also houses the NEC

1/ The original 819 NECs have been reduced; eventual number is around 800.

professional staff which serves all schools within the district. 2/ The centro base is chosen on the basis of its proximity to other schools in the district and its ability to provide services throughout the district. Operating the NEC is the responsibility of the school district director working with a community education council, made up of between 10 and 20 individuals representing different sectors within the community. 3/

The Reform law deals in great detail with the nuclearization process and specifies for it the following objectives:

(i) to promote cooperation and family/community participation in the educational process as well as extending educational programs to the community;

(ii) to provide adequate educational services to the whole population residing within the school district;

(iii) to integrate schools within the NEC via functional linkages;

(iv) to promote intersectoral cooperation within the district; and

(v) to assure the optimum utilization of educational facilities and equipment, as well as those, located in the NEC, which possess potential educational value.

Thus far under the Reform, substantial progress has been made in the nuclearization process. Although 803 NECs have been formed and staffed, the professional quality of the personnel varies greatly and needs to be upgraded. USAID/Peru under the Decentralizing Educational Planning Grant Project is helping to improve the quality of NEC staff, especially the planners. The MOE with its own funds is also periodically providing in service training to upgrade the quality of the NECs' staffs in order that they perform their functions more competently.

Within the limitations of the available staff, most NECs as one of their first activities have already carried out a "situational diagnosis" of the NEC which describes various aspects of the NEC, including its socio-economic conditions, geography, major economic

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2/ The staff of most NECs consists of a NEC director, a Promotion Team consisting of 4 professional educators (a supervisor and 3 subordinates in curriculum, education extension and guidance) and an Administrative Assistance Unit in charge of providing administrative support and managing material and financial resources.

3/ The make up of the council is as follows: Between 10 and 20 individuals with approximately 40% representation from teachers, 30% from parents and 30% from other community interest groups.

activities, institutional makeup, demographic conditions, education problems, and the status of Reform efforts. While the quality of the "diagnoses" varies considerably, the vast majority do confirm the fact that educational equipment, infrastructure and services are woefully inadequate in most NECs. This is especially true in government schools and in rural areas. In addition to the "diagnoses", USAID personnel and consultants, during field trips to schools, have confirmed on the poor quality of educational services and the lack of even minimal equipment in most NECs. Additional confirmation of this is found when one examines the amount of money the MOE spends on educational material/ equipment and books. For basic regular (primary) education, for example, the MOE spent $1.05 per student in 1975 and 1976, which is considerably below United States' levels. While no quantifiable data are available to demonstrate the inadequancies, it is clear that the majority of Peruvian schools do not contain the equipment necessary to properly deliver educational services.

2. The Service Center Concept

In response to the inadequacies of services and equipment, the GOP conceived the idea of a centralized unit, called a Service Center, which conceptually offered an attractive alternative to the staggering costs implied by equipping all schools individually. While no formal calculations were made, it was clear to the MOE that the resources required to provide each school in Peru with the desirable level of facilities and equipment would be well beyond the GOP's capacity. Thus, the main rationale behind the Service Center concept was to find the cheapest solution to meeting the educational needs of the growing Peruvian school population.

In the context of the Reform, the concept of an Education Service Center is directly linked to the centro base. The location of the centro base is of vital importance for NEC directorate staff in fulfilling its functions, especially those which relate to establishing technical and pedagogical norms, coordinating, supervising, monitoring and evaluating educational activities. The school which constitutes the centro base is usually close to and readily accesible from other schools and has relatively better physical plant and equipment than other schools in the NEC. Given the functions that the NEC is expected to perform and the importance attached to the centro base, it is not surprising that the Service Center idea was conceived as a part of and in relation to the centro base. Article 36 of the Reform Law, even before the concept of a Service Center was clearly defined, established that "the centro base in order to function as a Service Center would contain the physical plant, facilities and equipment for laboratories, workshops, libraries, and guidance services. The equipment could be either permanent or mobile, according to the zone in which the NEC is located. This equipment will be used by education programs and schools and by the community in general, according to Article 38 of the present Law."

The precise way the Service Center would function, the specific services to be provided, the extent of coverage, the type and number of personnel needed to run the Centers, and other details were not spelled out when the original idea was conceived. It was understood, however, that the Service Center would mainly be used by students from those schools located in close proximity to the centro base, although mobile units and other means were to be employed to reach the more distant schools. The pre-feasibility study, the PRP, and finally the feasibility study have contributed to the refinement of the conceptual model for the Service Center and have provided reasonably clear answers to the questions mentioned above.

3. Project Development and Studies Undertaken

a. Pre-Feasibility Study

The pre-feasibility study carried out by a local consulting firm in 1975 was the initial attempt at defining more clearly what a Service Center would consist of, the services it should provide and how it would operate. At the pre-feasibility stage, it was thought that the Service Center concept was most likely to be applied in urban areas and for this reason the two sites chosen for the pre-feasibility study were a school district in a pueblo joven, Vitarte, located to the east of Lima, and a middle class school district, Pueblo Libre, near downtown Lima.

The two Service Center models proposed for Vitarte and Pueblo Libre were the first concrete applications of the conceptual model. Both Centers were designed to service student population in excess of 22,000 each and contemplated two new facilities costing approximately $1,800,000 and $1,700,000 to construct and equip. The study also established a typology for various kinds of Service Centers.

The study's principal utility was that it demonstrated for the first time that a Service Center would be the best method for maximizing the use of existing infrastructure and equipment and minimizing the need for new infrastructure and equipment. The Service Center concept as applied to these two school districts also represented a first effort at estimating the comparable costs for providing similar services on an individual school basis. The pre-feasibility study estimated that it would cost between two to three times the cost of the Service Center alternative to equip the schools in the two NECs with the kinds of facilities proposed for the Centers.

The major deficiencies of the pre-feasibility study related to the cost estimates, the typology, operation details

and finally social analysis. While the capital costs of the two centers proposed were relatively sound, it was generally felt that operational costs were under estimated. Also, the typology developed in the study and the associated capital costs ignored the vast majority of rural school districts within Peru. The costs associated with the simplest model were based on the idea that Service Centers could only operate in urban areas. Additionally, the models for Vitarte and Pueblo Libre did not provide a sufficient sense of how the Service Centers would operate. What would be a typical schedule? From how far would students be coming? Who would the Service Center staff consist of and what would be their responsibilities? The final area in which the study was deficient was that very little social analysis was provided. For example, while it was clear that community participation and cooperation were vital to the success of the Service Center, the study did not provide any sense if this assumption was realistic.

b. Project Review Paper

Prior to initiating the development of the PRP, both USAID and the GOP concluded that additional studies of Service Center feasibility should be reoriented, given the desire to apply the Service Center concept to poorer parts of the country, especially in rural areas and pueblos jovenes. There was a need to find less costly models for Service Centers, one which would be smaller and capable of reaching the target population.

In preparation for the development of the PRP a trip was made to a fairly typical rural school district in the Cuzco Region. The visit to the district confirmed the dearth of educational materials and equipment in the vast majority of the 25 schools located within the NEC. While a few of the teachers in the NEC were making effective use of locally available resources and other materials to complement their teaching, the majority lacked the understanding and resources to make effective use of such teaching aids.

As a result of this trip it was concluded that it was possible to apply the Service Center concept to rural areas, that the size of a Service Center could be considerably smaller and less costly than what was proposed in the pre-feasibility study and that the types of services to be provided would vary significantly depending on the location of the Service Center. The PRP proposed three basic models of Service Centers. The first, model A, was the least costly proposed and was designed to serve the needs of teachers, and indirectly students, in the more sparsely populated NECs where there is no general access nor ease of travel by a sufficient number (500)

of students to a central location. This model was conceived to perform the following functions: (i) designing, producing, distributing, storing and lending educational materials and equipment to individual schools; (ii) providing Center staff consisting of two and possibly three education specialists to assure design, production, distribution and use of the services by working directly with individual teachers throughout the IEC, and (iii) providing a children's book lending service to the various schools. A second type, model B, was to serve directly a minimum of 500 students and was designed to consist of a basic structure providing one common classroom, one combination science/biology laboratory to accomodate 40-45 students, and one combination manual arts/agriculture workshop also for 40-45 students. Model B Service Centers were to be located at sites where sufficient land was available to allow for physical education activities, experimental garden plots and other agricultural activities. The main services provided by a model B Center were designed to facilitate the teaching of science and pre-vocational subjects in basic regular education (grades 1-6). The third and last type proposed, model C, was designed for more heavily populated, low income urban areas and would perform all of the functions described for models A and B as well as others. The model C center, based on the Learning Resource Center concept now being utilized in some developing countries, was designed to offer a greater range of services for students from non-formal as well as formal programs. Additionally, model C centers were to provide community as well as educational services.

The PRP proposed the construction of approximately 40 model A, 55 model B, 40 A and B combinations, and up to 6 model C Education Service Centers at a total cost of $15,500,000, of which $9,500,000, was to be provided, as a loan, by AID. The number of students served, the number of student hours provided and the estimated costs (capital and operating) for each of the three models were as follows:

Type	No. of Students Served	No. of Student hrs/week	Per Student Capital & Operating Cost 1/
Model A	3,800	-	$2.50 - - *
Model B	500 3/	1,750	$7.70 - $16.50 * 2/
Model C	12,500 3/	43,680	$0.08 - $ 0.17 **

1/ Capital costs for all three models are amortized over 25 yrs.

2/ Wide range reflects uncertainty about extent to which the existance of Center will permit existing teachers who are free when their students are at the Center to be utilized for other educational activities.

3/ Assumes each student will use the Service Center for an average of 3.5 hours per week.

* Annual cost.

** Student hour cost; range reflects differing assumptions on the extent to which facilities are being used to capacity.

Based on a 36 week school year the total annual number of student hours proposed for all model B & C Centers in the PRP was 15,419,880, with a student/hour cost of $.08. 1/

c. Feasibility Study

As a result of the PRP, the Mission and the GOP were convinced that the Service Center concept had potential for application in rural areas of Peru and that much more detailed information would be required prior to the development of the Project Paper, which should be based on a field study of several NECs in various Education Regions of Peru. With funds from the Decentralizing Educational Planning grant project, the Mission and the GOP began preparation for the design of a feasibility study of 10 NECs shortly after the PRP was reviewed and approved. AID/W comments as contained in the PRP approval and guidance cable (STATE 303080), MOE reactions to the pre-feasibility study and the PRP, as well as Mission concerns formed the basis for drawing up the scope of work to be performed in the feasibility study.

The data to be gathered by the two consulting firms were to establish feasibility for the Service Center concept by: (i) determining the capital and recurrent costs to build and operate each type of Service Center proposed; (ii) demonstrating that such costs, especially operating, were manageable for the MOE and would permit replication on the scale contemplated in the PRP and eventually nationwide; (iii) developing firm prototype designs of physical infrastructure required for each of the three models proposed in the PRP and which could be generalized to other school districts; (iv) developing criteria which would permit selection of those NECs to be included in the project; (v) assessing community and institutional willingness to support the project during design, building and operation stages; and (vi) confirming that existing infrastructure, including both buildings and equipment, could be utilized by Service Centers.

1/ Calculation based on dividing number of student hours into $1,163,100, the annual amount required for B & C Centers. Also assumes lower estimate for model C Centers.

Two local consulting firms, Corporación de Racionalización y Consultoría, S.A. (CRC) and Manseriche, S.A., were awarded contracts to carry out feasibility studies in two different areas of the country. The NECs to be studied were chosen to represent the diverse cultural, economic, geographic and social conditions found in Peru in order to permit generalizing to national conditions. In selecting the NECs, particular attention was given to selecting especially isolated and rural NECs in order to determine how remote and small a NEC could be and still have a viable Service Center.

Contracts were awarded in October 1976. CRC was assigned 5 NECs in the Eighth Education Region, with headquarters in Trujillo. The Eighth Region consists of the department of La Libertad and parts of the departments of Cajamarca and Ancash. Of the five NECs chosen three are in the sierra and rural; two are coastal and more urban. Manseriche S.A. was also assigned 5 NECs; 4 in the Fifth Education Region with headquarters in Cuzco and 1 in the Seventh Education Region with headquarters in Puno. Of the 5 NECs, 4 are rural and one is urban. The Fifth Education Region consists of the Departments of Cuzco, Apurimac and Madre de Dios; the Seventh Region consists of the department of Puno. Complete drafts of the studies of the NECs were submitted by both firms in May 1977 for review by the MOE and USAID.

Although both the MOE and USAID agreed that there were very significant differences in the quality of the two sets of studies submitted, there was sufficient evidence presented, primarily from the one performed by CRC, to conclude that the idea of establishing Service Centers in varying cultural, economic, geographic and social conditions within Peru was, in fact, feasible. The CRC study made a cogent case that Service Centers have potential for working in rural NECs containing disadvantaged populations. As a result of the studies the MOE and the Mission were in a much better position to proceed with final project design.

The types of Service Centers proposed by both firms were variations on the three models presented in the PRP. In some cases sub-Service Centers were proposed for the more rural NECs. The number of students to be directly served by a Service Center or sub-Center, based on the two firms' proposals, ranged from as few as 354 to 31,228. Both firms also proposed mobile units to extend services to students in the more isolated areas of the rural NECs. The specific array of services suggested by the two companies was very similar, with some minor modifications, to those presented in the PRP. These services were mainly directed at improving the quality of instruction in the natural and physical

sciences, agriculture and in pre-vocational training; lesser emphasis was placed on improving quality in social sciences, language, mathematics, art, and physical education. Additional services included the production and distribution of teaching material, libraries, health care, nutrition education, guidance/ psychological counseling, teacher and NEC staff training, and community development.

4. Rationale for Grant Financing and Reduced Project Scope

Despite the significant advances and abundant information gathered as a result of the feasibility studies, the Mission and the MOE had serious misgivings about the ability to proceed with the project as designed in the PRP. While the studies demonstrated that the Education Service Center concept as conceived in the PRP is feasible, they were not able to provide the Mission and the GOP with the assurances and information necessary for going ahead with a project on the scale contemplated in the PRP

There are several reasons for not proceeding with a $15.5 million project ($9.5 of which was to be loan financed by AID) to build, equip and establish Education Service Centers on a wide-scale regional or national basis. First, the capital and operating costs involved in building, equipping and operating the Service Centers represent a large outlay of resources at a time when Peru's economy is in a difficult period. The level of operating costs, especially, appear to be too high for the MOE to absorb at this time under a large scale program.

The second reason for deciding that it was inappropriate to proceed with the project as conceived in the PRP deals with the community interest in the Service Center concept and its willingness to participate in the design, building and operation of the Centers. While the studies demonstrated community interest in the concept and willingness to help develop the Centers, the evidence for this was largely based on sample survey data and observation of community efforts in other education programs. Given the critical importance of the community support component to the success of the project, especially in rural areas, the Mission and the GOP believe that additional confirmation of the element will be required through first hand experience at Centers, before being able to adequately assure replication on a large scale.

The final reason which suggests that it would be inadvisable to proceed with the PRP level of effort deals with the physical designs for the Centers. The studies confirmed that a

significant amount of education infrastructure could be readily incorporated and utilized by the Service Centers, thus reducing the need to always build new structures and buy new equipment. Additionally, the mix of services to be offered at the Centers will vary somewhat from place to place. Therefore, prototype physical designs are very NEC specific and for this reason, the studies were not able to produce physical prototypes generalizable beyond the NECs sampled. As a result, it is anticipated that if and when a larger, nationwide program is attempted, some expenditures will be required in each NEC for preparing specific infrastructure and equipment plans. The Mission and the MOE believe, however, that these expenditures can be minimized and that an increased degree of standardization will be possible by further refinement of cost data during a pilot program.

For the reasons expressed above, the Mission and the GOP believe that any major policy and investment decision on the scale contemplated in the PRP must be delayed until a pilot program is executed and evaluated. Joint MOE and USAID analysis of the feasibility study has led to the design and development of such a project which is based on utilizing the minimum resources necessary to permit testing the potential of Education Service Centers as a solution to the inadequate and poor quality education services found in many parts of Peru. The project herein proposed is much more experimental than originally supposed and has been scaled down to reflect its highly experimental and pilot nature. Although the project has been reduced considerably, the total annual number of hours of instruction to be provided in the four Service Centers is still considerable, more than one third of that presented in the PRP, and at a slightly lower cost, $.07 per student hour vs $.08. Additionally, substantial increases in the amount of technical assistance and evaluation components have been added to the project design in order to adequately measure the impact of a pilot program. Based on the highly experimental and pilot nature of the project, its reduced scale and the previously mentioned reasons, the Mission concluded that a grant-funded, scaled-down project was more appropriate at this time.

5. GOP Commitment to Project

The project being proposed herein has been designed in close collaboration with the MOE. The Peruvian National Development Plan 1975-1978 in its program of Public Investment for Education lists Education Service Centers as a high priority along with other strategic projects. An additional indication of the high level of GOP interest in the project is based on the above normal size of the host country contribution to the project which represents over 50% of project costs. The Minister of Education recently confirmed

MOE interest in the project in a letter to the Mission Director (see Annex I) and also reiterated the high priority and value the Ministry places on this project as a means for making a lasting, significant and unique contribution to Peru's Education Reform effort.

6. Relationship to Mission Program Strategy

The project proposed herein is supportive of all three Mission program strategies as presented in the FY 1979 Annual Budget Submission. The two Service Centers proposed for the sierra NECs of Cachicadan and Huamachuco directly address the needs of the sierra poor. The two other Service Centers proposed for the coast, directly address the needs of the migrating poor, who recently came from the overcrowded sierra and moved to the coast in search of better employment opportunities and access to basic urban services (health care, education) which were lacking or deficient in the areas they left. While the majority of project beneficiaries fall within the poor majority, the benefits are not restricted exclusively to this group. The innovative and experimental nature of the project has relevance for meeting the educational needs of all Peruvians. In this sense, the project is supportive of overall GOP efforts to institutionalize the Education Reform. If successful the project should offer the GOP an attractive solution for providing educational services to all Peruvians.

B. Detailed Description (see also Logical Framework -Annex IV)

1. Logical Framework Narrative

a. Goal and Purpose

The goal of all projects for the Education

of this project is to assist in the eventual attainment of that goal by testing on a pilot and experimental basis the capability of Education Service Centers to increase the quality, availability and use of educational services for students and adults in selected school districts containing predominantly disadvantaged populations. The Service Center concept is based on the inability of the education system to provide minimally adequate facilities and services on an individual school basis. By significantly reducing the level of capital investment required to provide services and equipment to all schools individually, the Service Center concept should permit the government of Peru to address more adequately the educational needs of its citizens.

If the test of the Service Center concept brings positive results and proves to be a viable solution to GOP problems in providing adequate educational facilities to everyone, then the education system will have been made more responsive to the needs of all Peruvians, including the poor majority.

b. Assumptions Linking Project Purpose to Goal

Critical assumptions, and their validity, are discussed below.

1) The GOP is committed to the concept of developing relevant education programs for disadvantaged Peruvians. This assumption appears to have continued validity given the ongoing and continuing efforts the GOP is undertaking for the poor. Projects in pre-school and bilingual education are two examples which demonstrate this commitment.

2) Sufficient resources will be forthcoming from the GOP and other donors to implement educational programs in areas where disadvantaged Peruvians reside. While short-term economic difficulties have reduced the expansion of the resources available for education, the GOP still allocates one of the highest percentages of the national budget to education within Latin America. An improvement in economic conditions should, as in the past, lead to a growth in resources available for education.

3) Costs of operating Service Centers are manageable for the GOP. The extent to which the Service Center proves to be successful in providing improved educational services, and at what price, will influence the speed with which the concept is tried elsewhere within Peru. The preliminary estimates are that the increase in operating costs for the Service Centers will be low enough to permit a gradual expansion of the concept nationally over a ten to twenty year period.

4) The national level planning office is committed to decentralization of the educational planning process and is responsive to local level educational demands. The experience to date under the Decentralizing Education Planning grant project is demonstrating the continued validity of this assumption. The decentralizing of the planning process and the increasing of local level responsibilities are continuing and are beginning to bear positive results.

5) Planning and budgeting of education programs at the local level will result in meeting local community education needs. This assumption continues to be valid and has also been confirmed based on the ongoing experience with the decentralizing process.

c. End of Project Status

It is anticipated that by the end of 1981, the Service Center concept will have been successfully tested under varying cultural, geographic and socio-economic conditions and the purpose of the project will have been achieved. More specifically:

1) 3 types of Education Service Centers should be in operation in 4 school districts serving a combined student and adult population of approximately 30,000.

2) The following services should be provided to students and adults in 4 school districts: libraries; job skill training workshops; natural and physical science labs; school gardens and agriculture plots; primary classroom, art, and science workshop; health case (nurse); audio visual support; production and distribution of teaching material; in-service teacher training; physical education; and, community development.

3) 6 Peruvians from the Eighth Education Regional offices and MOE with specialties in vocational education, basic regular education and school administration should be carrying out additional training of Service Center staff with minimal outside assistance.

4) 116 Service Center personnel (90 teachers and 26 administrative/support) should be operating 4 Service Centers with minimal outside assistance.

5) The evaluation of 4 Service Centers and their impact on Education Services will be completed.

6) In addition, we believe that in order for the Service Center concept to be considered a viable solution to the GOP's education services problem, the four pilot Service Centers will have to affect learning and achievement, occupational aspirations, job possibilities and provide services at a reasonable cost. While it is difficult to set levels for these outcomes, the following targets have been selected for measurement as an indicator of the quality of the educational services provided: (i) 20% higher student test scores for subjects offered at Service Centers. (Compared with test scores of those not using Service Center or having similar facilities in same subjects); (ii) a 10% increase in the number of students attending Service Centers aspiring to or choosing technical careers at completion of Basic Regular Education grades (1-9) (Compared to those not using Centers); (iii) a 10% decrease in unemployment rates for graduates who have attended Service Centers (Compared to those not using Centers); and, (iv) a combined GOP annual cost per pupil (capital and operating combined) at four Service Centers of less than $15.00.

d. Assumptions Linking Project Outputs to Purpose

1) NEC administrative staff will cooperate to improve educational services offered at Centers. The field work and data collection carried out during the feasibility study revealed significant cases in which cooperation is presently occurring in the education process and has suggested various ways to insure that it occur under the project.

2) The private costs of transportation and student opportunity costs will not be a deterrent to using the Service Center. In all four NECs the students who will be using the Centers are all within walking distance from their schools. In those cases (Trujillo and to a lesser extent, Pacasmayo) where public transportation would be required to go from the student's home to the Center, the cost would be the same as is presently being spent.

3) A commitment exists to maintain the Centers and replace equipment as needed. Sufficient GOP counterpart will be made available to cover the necessary resources for proper maintenance. Training in maintenance will also be provided to Service Center staff.

4) Sufficient resources will be forthcoming to pay the salaries of Service Center staff. Sufficient GOP counterpart will be budgeted to cover all personnel costs. Additionally, the outlay required for new teachers is substantially reduced by the number of teachers who will be released from their present jobs due to reductions in teaching load.

5) Communities will participate in the development and operation of Service Centers. The feasibility studies cited various examples of community cooperation with the education system. A variety of mechanisms will be employed to foster this cooperation.

e. Outputs

In order to achieve the end of project conditions mentioned above, the following project outputs will be required:

1) Four Education Service Centers will constructed and equipped by 1979.

2) The following services will be provided in varying degrees in the Centers by 1979: (i) four libraries; (ii) twenty-nine job skill training workshop; (iii) eight natural and

physical science labs; (iv) two school gardens/agriculture plots; (v) twelve primary classroom/art/science/workshops; (vi) four health care (nurse) facilities; (vii) four audio visual support units; (viii) four sites for production and distribution of teaching material; (ix) four in service teacher training programs; (x) four physical education programs; and, (xi) four community development programs.

3) 90 instructional and 26 administrative personnel will be trained by 1979.

4) 6 Eighth Region and MOE personnel will be functioning as trainers of Service Center teachers and administrators by 1979.

5) Evaluation reports will be completed concerning the following information: (i) effectiveness of services including student achievement tests and follow up study of samples of graduates; (ii) calculations of student costs; (iii) study of coverage and usage; (iv) evaluation of community support, including financial contributions; (v) evaluation of possibilities for self financing and revenue generation; and, (vi) determination of replicability.

f. Assumptions Linking Project Inputs to Outputs

1) A sufficient number of qualified candidates are available for training. Based on experience with other USAID grant projects in the education sector, this assumption appears valid, especially since all of the training is short-term.

2) A construction capability exists within Peru to ensure the completion of Service Centers within the stated time period. Given the small number of sites and relatively simple designs which are contemplated, this assumption appears valid.

3) Construction materials will continue to be available at reasonable prices. Base on recent years' experience the price increases for the materials needed for the project have not increased dramatically.

4) Prices for school equipment will remain reasonable. Since nearly all of the equipment to be used at the Centers is to be purchased in the U.S., where price increases have been moderate, this assumption appears valid.

5) Foreign expertise is available to assist with the adaptation of the Service Center concept to Peruvian

conditions. Given the relatively small number of individuals to be required, the respective fields, and the length of lead time available, no problems are anticipated in obtaining all technical assistance in a timely fashion.

g. Inputs

In order to achieve the outputs the following AID and GOP inputs will be required:

A.I.D.

1) Technical Assistance

United States and third Country technicians will be required for sixty three months over the life of the project at a cost of $315,000. One long term technician will be located in Trujillo and will travel on a regular basis to the other 3 project sites. Periodic visits will be made to Lima to consult with USAID and MOE officials. The short term technicians will also spend nearly all of their time in the Eighth Region.

One learning resources center specialist for 3 years will assist MOE personnel in organizing, administering, implementing and evaluating the results of the pilot program.

One vocational education specialist services for 12 months at various intervals will assist MOE personnel in training teachers and organizing the pre-vocational programs at each test site.

One research and evaluation specialist serving for a period of 8 months at various intervals will assist MOE, Eighth Education Region and Service Center personnel in designing and carrying out evaluations of project results.

One education economist serving for 5 months at various intervals will help design and carry out the cost analysis of the project.

One education specifications specialist and one architectural engineering specialist serving for 1 month each will help in the final design of the 4 Service Centers.

2) Training

United States and Third Country - Forty six months of short term participant training for $100,000 will be provided

to selected Service Center administrative and instructional staff (for 34 months) and other MOE and Eighth Regional personnel (6 for 16 months). Areas of training will include school administration, research/evaluation, vocational education, science education, cost analysis and educational testing. The training will take place in the United States or third countries and will involve both academic and non-academic training, a significant portion of which will be acquired through on the job experiences gathered at Service Center type institutions found outside of Peru.

In-Country Training - $65,000 will be used to finance training programs and courses for all personnel who will be working at the four Centers. This training is designed to utilize the 50 months of United States and third country training mentioned above. The training mainly will occur prior to the opening of each Service Center and will be conducted by those who have received overseas training, other MOE employees and technical assistance personnel. Periodic follow up on-the-job training for Service Center instructional and administrative/support personnel is also contemplated. The training of Service Center directors and instructors is expected to last three months, a two month course is programmed for Service Center librarians, and courses of one month duration for maintenance and Service Center office staff. The $65,000 will be used to cover travel, per diem and preparation of materials to be used in the training programs and courses.

3) Commodities

$345,000 will be required to equip the four Service Centers with laboratory, shop and other equipment, and books. Sample illustrative lists of most of the equipment to be purchased are found in Annex V-A.

4) Capital and Other Costs

Construction - Approximately $700,000 of AID financing will be required for partial financing of construction of the four Service Centers. Included in this amount is $30,000 for supervising construction and $50,000 for preparing final architectural and engineering plans and designs.

Teaching Materials and Publications - $30,000 will be needed for preparing teaching materials, including publications to be used by the Service Centers staff. Some of these materials will be produced in Peru while others will be purchased or modified from either local or foreign material.

Evaluation - $30,000 for Peruvian and outside experts to evaluate project results. Baseline data will be collected prior to inaugurating the four Service Centers. Semi-annual evaluation reports will be prepared as well as a final evaluation. The $30,000 will cover salaries, per diem, in country travel and data processing for Peruvian and United States or third country personnel. (For summary of Cost of USAID inputs see the Financial Analysis).

GOP

1) Commodities

A total of $80,000 will be required from the GOP with $60,000 to be used to buy initial office equipment and furniture for the four Service Centers, and $20,000 to be used for replacement laboratory/workshop equipment and books in the fourth year of the project.

2) Capital and Other Costs

Land and Existing Infrastructure - An in-kind GOP contribution of approximately $800,000 has been attributed to the value of land and existing infrastructure in the four school districts. By far the largest portion of this total ($710,000), is attributed to the land and building available in the Trujillo school district.

Construction - $410,000 will be provided by the GOP to partially finance construction costs for the four Centers. Of this total, it is estimated that approximately $75,000 will be provided by the communities in the four school districts in the form of cash contributions and donations of materials or labor.

Personnel - $20,000 will be contributed in the form of salaries of Eighth Region and MOE personnel (6) who will be receiving participant training and assisting in the in-country training courses at the 4 Service Centers. The contribution is attributable to already existing personal and will cover their salaries while they receive United States or third country training and while they are providing support to the project.

3) Operational Costs

Administrative/Support Personnel - 26 new personnel will be hired by the MOE to help manage and maintain the four Service Centers. The MOE will provide their salaries which will total $100,000 for two years.

Instructional Personnel - 18 new teachers will be required in order to operate the four Service Centers, at a cost of $75,000 for two years. In addition to these teachers, 72 teachers who are already employed will also be required to operate the four Service Centers. These 72 teachers will be available to assume new duties as a result of a reduction in teaching loads at the various schools in each of the four school districts. The reduction is made possible by the number of hours the students are using the Centers. The MOE has confirmed that teachers can be assigned to the Service Center as a consequence of the reduced teaching load.

No attempt has been made to indicate salaries or place a value on the work of volunteer or other personnel available from other Ministries (e.g., a nurse from the MOH) who will be working at the Centers.

Materials - A total of $50,000 will be needed for purchasing materials and supplies to be used in the four Centers over a two year period. This amount covers the materials and supplies used by the students in the various labs, classrooms and workshops.

Maintenance - A total of $35,000 will be provided by the GOP to cover maintenance of the four Service Centers over a two year period. These funds will largely be used for replacement of parts and servicing of Service Center equipment.

Utilities and General Expenses - $40,000 will be used to cover utilities, supplies and general expenses for operating the four Service Centers over a two year period. The supply category covers the needs of the administrative/support staff.

For a summary of GOP inputs see Financial Analysis section.

2. Description of the Four NECs Selected and the Detailed Proposals

a. Methodology Used in the Study

As was previously mentioned, based on the quality of the two sets of feasibility studies submitted, the GOP and USAID selected those from the Eighth Education Region as the site for the project. The firm which carried out the study of Eighth Region,

Corporación de Racionalización y Consultoría S.A. (CRC), employed a multidisciplinary team consisting of 4 professionals who supervised various elements of the study, 5 field supervisors who were responsible for managing data collection in each of the five NECs studied, and various data processors, draftsmen and interviewers. The team's professional background drew on varying disciplines, including non-formal education, anthropology, history, sociology, education, economics, school administration, business administration, civil engineering, and architecture.

The methodology used by CRC entailed the following process. Based on extensive review of existing information (including the Education Reform Law, various other relevant MOE and GOP legislation, census data, the pre-feasibility study, the PRP and the RFP), and detailed discussions with GOP and USAID officials, the conceptual model of Service Centers was further developed and refined. Simultaneously, initial field visits were made to five NECs in order to obtain an on site perception of the nature of the problem. Shortly thereafter, preliminary data collection instruments were developed which would permit the firm to gather the necessary data required by the study's design.

This design called for collecting data on the following topics: (i) the socio-economic context of each NEC in order that the services proposed for the Service Center be related to the social and economic conditions present; (ii) the structure and social characteristics of each NEC as they relate to the growth of the NECs population, migration, occupational mobility, and standard of living; (iii) educational supply and demand to determine present and future educational needs of the population and the extent to which the system will provide for these needs; (iv) the implications for growth in NEC personnel and infrastructure (land, buildings, machines, equipment, furniture and tools); (v) community participation as perceived directly and through data collection instruments in order to estimate the degree to which communities would actively play a role in the development of the Service Centers; and (vi) acceptability of the Service Center concept by the various groups and individuals residing within the NEC.

b. Feasibility Study Proposals

After gathering, processing and analyzing all the data, the consultants presented detailed proposals for each of five school districts. (Their proposals can be found in the feasibility study.) The five proposals had several features in common. These were: (i) to reach the largest possible portion of the NEC's student population, through the use of series of sub-Service Centers

and mobile units, in addition to the main Center; (ii) to maximize the use of available infrastructure before proceeding to construct new facilities; and (iii) to design the services to be offered at the Center in response to the communities' educational needs.

USAID and the MOE carefully evaluated each of the proposals and reached several conclusions. These were: (i) that it would be unwise to attempt to establish a Service Center in the Llamellín NEC (department of Ancash) given the highly dispersed population and the isolation of the NEC. (The NEC can only be reached six months per year, and requires more than two days travel to reach it); (ii) while supporting the idea of maximizing coverage, the use of mobile units (in Cachicadán, Huamachuco and Pacasmayo) appears to be too expensive a solution and therefore a decision was made to locate Service Centers at the centros bases and to reach outlying schools and students indirectly; and (iii) minor modifications were required in the array of services programmed for all four NECs.

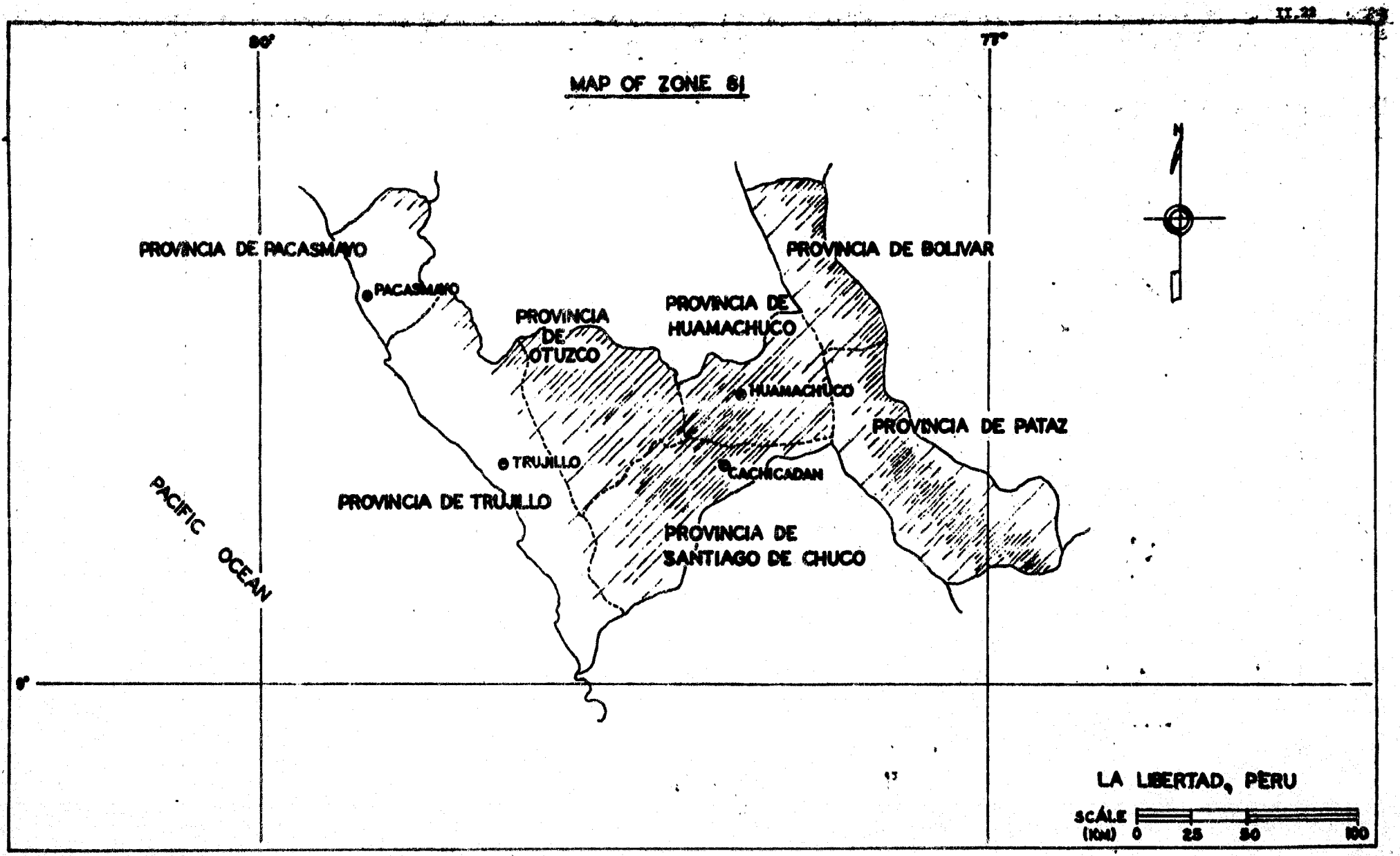
c. Detailed Proposals

The four NECs for which Service Centers are proposed are located in Zone 81 of the Eighth Education Region; two are in the sierra and are rural, the other two, on the coast and urban. (See attached map). The four NECs, Cachicadán, Huamachuco, Pacasmayo and Trujillo have student populations which range in size from approximately 2,500 in Cachicadan to over 30,000 in Trujillo. The four NECs are reasonably representative of the degree of cultural, economic, geographic and social diversity which exists within Peru. They also represent the minimum and close to the maximum size NECs in which a Service Center is likely to be feasible. What follows is a description of each of the four Service Centers being proposed.

Cachicadán

Cachicadán is a population center of approximately 1,500 individuals, located in the sierra of the department of La Libertad. Agriculture is the prevailing economic activity with marketing and crafts also present. Average per capita income is around $100.00/year. (A detailed discussion of the economic and social conditions in the four NECs is presented in the Social Analysis.)

The town has three schools which together offer through the third cycle of basic regular education. The total school population in Cachicadán is 875; the school population in


80°
77°
MAP OF ZONE 6J
PROVINCIA DE PACASMAYO
PACASMAYO
PROVINCIA DE OTUZCO
PROVINCIA DE HUAMACHUCO
PROVINCIA DE BOLIVAR
HUAMACHUCO
PROVINCIA DE PATAZ
TRUJILLO
CACHICADAN
PROVINCIA DE TRUJILLO
PACIFIC OCEAN
PROVINCIA DE SANTIAGO DE CHUCO
8°
LA LIBERTAD, PERU
SCALE (KM) 0 25 50 100

the rest of the NEC is 1,529. School enrollment has been growing at an average rate of 2.1% since 1974 and projections for demand have been based on this growth rate.

The general condition of the educational infrastructure is poor. Few specialized facilities exist (labs, workshops), and libraries, books and education material are nearly absent.

The Service Center being proposed for Cachicadán will contain the following facilities: 1 children's classroom/lab/art/music/shop (60); 1 general shop (30); 1 agricultural shop/school garden (30); 1 general science lab (30); 1 home economics shop (30); 1 library/audio-visual unit/materials reproduction room (60); 2 sports fields (60); 1 auditorium/classroom/meeting room (200); 3 offices; 1 teacher meeting room; 1 maintenance/warehouse room; 1 health unit; 1 cafeteria (70); and 1 guard house. Student capacity for each facility is listed in parenthesis.

The services to be offered at the Center include: pre-vocational (including agriculture) training; practical education in general science; art and music education; physical education; library services for students, member of the community and other schools in the NEC; audio visual equipment for Service Center classes; minimal student health services; educational materials reproduction facilities for all NEC teachers; teacher training facilities for all NEC teachers; and community meeting facilities. (For the layout of the Service Center facilities see Figure II-1.)

All students living in Cachicadán will have no significant additional distance to walk to reach the Service Center than their present school.

It is estimated that approximately 937 students will make use of the facilities on a weekly basis, with those in cycle I attending three hours per week and cycles II and III, six. Additional use of the facility would be available to adults in the community and students from other schools in the NEC when not in use by the 3 schools in Cachicadán. The teacher training service to be offered at the Center would be scheduled during school vacations.

The Service Center will operate 12 hours a day, 6 days a week for 36 weeks per year. The average teaching load would be 36 hours per week. Not including the auditorium, the sports facilities and the cafeteria, the hourly student capacity of the Service Center is 240. (A typical weekly schedule for a Service Center can be found in Annex VI)

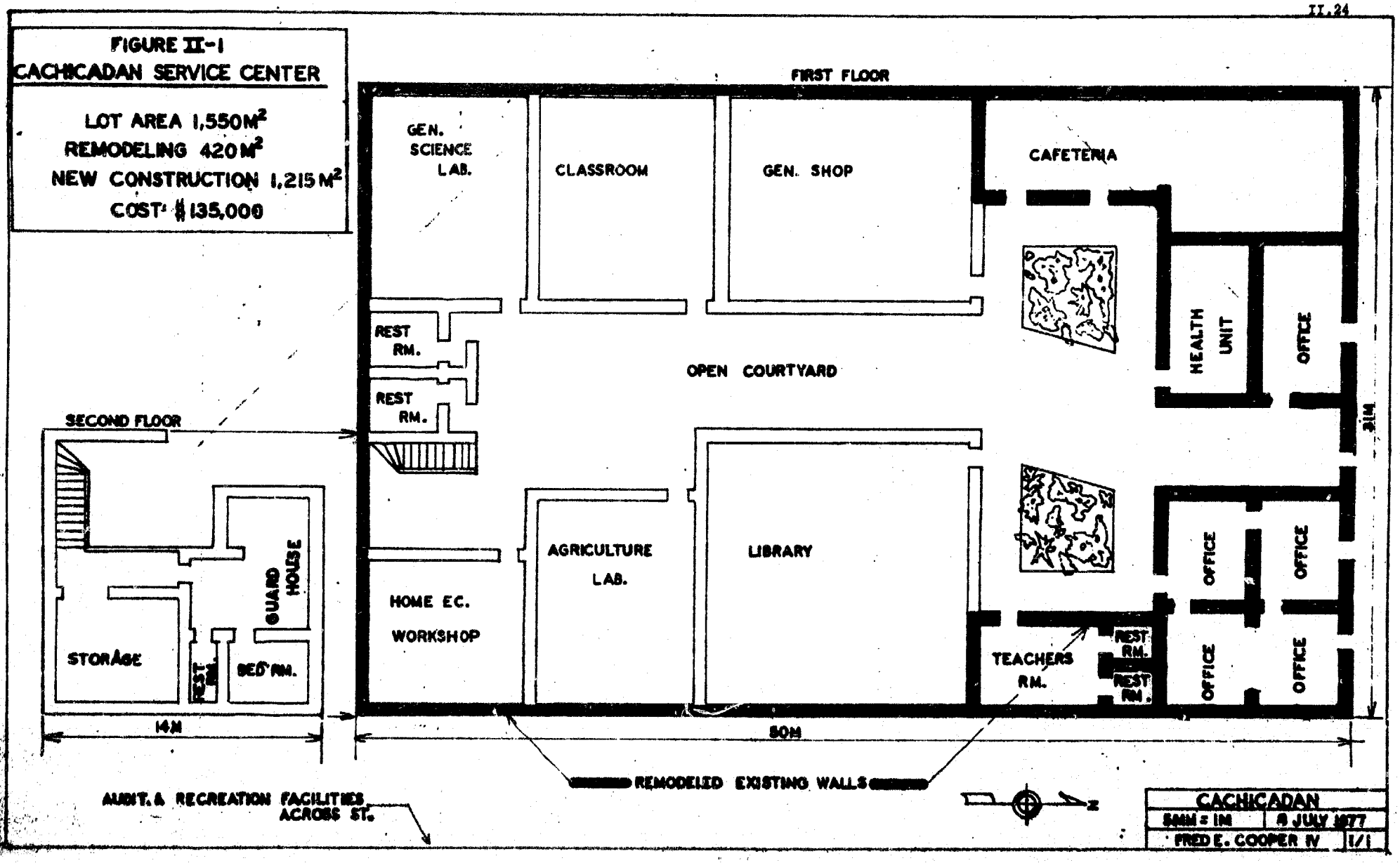


FIGURE II-1
CACHICADAN SERVICE CENTER
LOT AREA 1,550M²
REMODELING 420M²
NEW CONSTRUCTION 1,215M²
COST: ₱135,000
FIRST FLOOR
GEN. SCIENCE LAB.
CLASSROOM
GEN. SHOP
CAFETERIA
HEALTH UNIT
OFFICE
REST RM.
REST RM.
OPEN COURTYARD
SECOND FLOOR
GUARD HOUSE
STORAGE
REST RM.
BED RM.
AGRICULTURE LAB.
LIBRARY
HOME EC. WORKSHOP
OFFICE
OFFICE
OFFICE
OFFICE
TEACHERS RM.
REST RM.
REST RM.
31M
14M
50M
REMODELED EXISTING WALLS
AUDIT. & RECREATION FACILITIES ACROSS ST.
N
CACHICADAN
5MM = 1M
8 JULY 1977
FRED E. COOPER IV
1/1

Equipment for the various facilities has been selected on the basis of its appropriateness for the NEC. Illustrative equipment lists for most of the facilities can be found in Annex V-A. These lists represent the best estimates of the type and quantity of equipment that would be required on the average. Final determinations of equipment needs will be made on the basis of the advice of technical assistance personnel.

A total of 3 administrative/support personnel and 5 teachers will be required to operate the Center. Of these, all of the former and 3 of the latter will be new personnel. It is expected that 2 teachers in Cachicadán who are presently teaching in the three schools would be available to work at the Center because of a reduction in teaching load. For a detailed breakdown of costs see the Financial Analysis.

Huamachuco

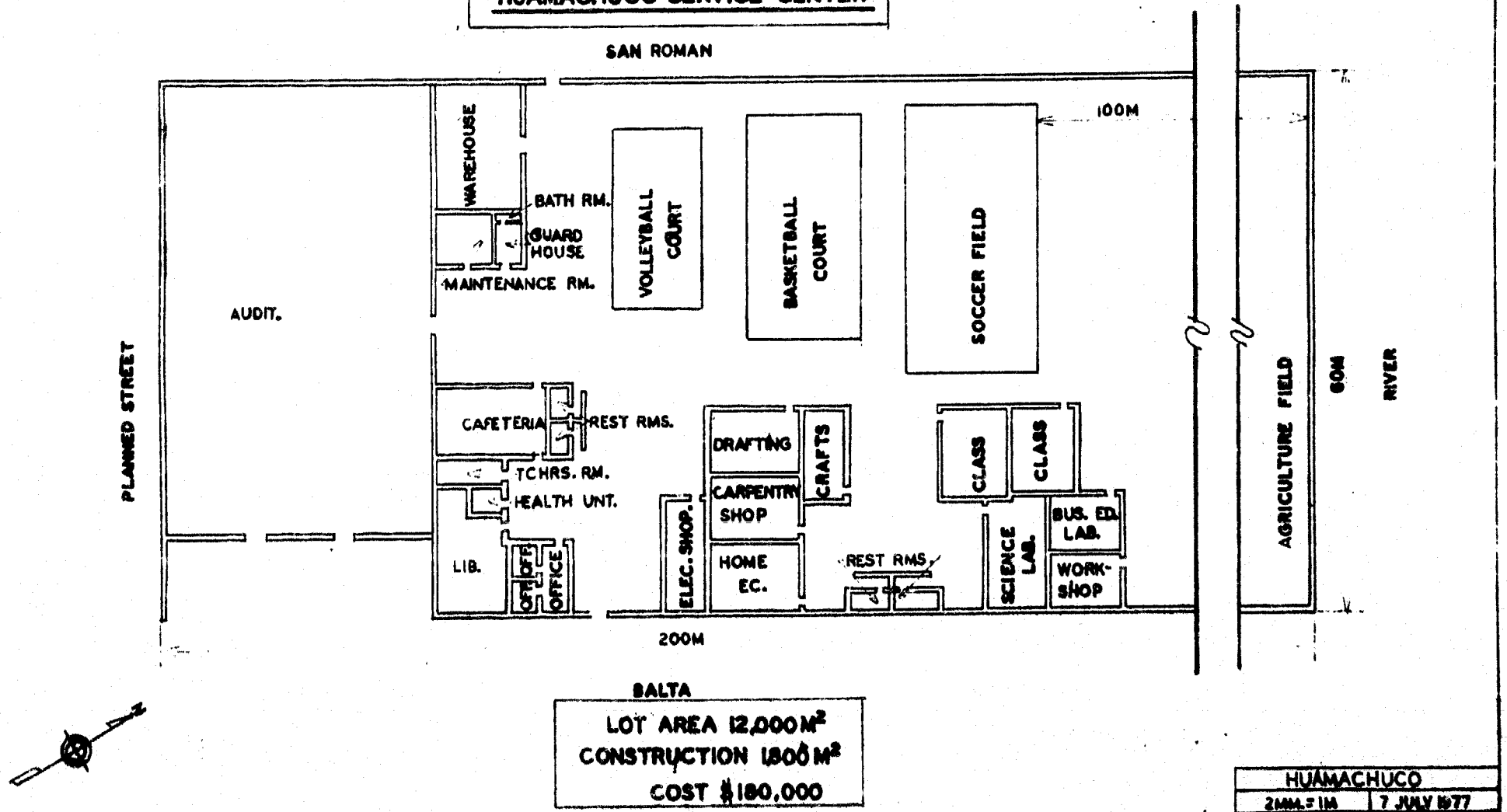
Huamachuco is a population center of approximately 9,000 individuals located in the sierra of the department of La Libertad. As in Cachicadán, agriculture is the prevailing economic activity with marketing and crafts as secondary activities. Average per capita income also around $100 per year.

The town has 10 schools operating in 7 buildings, and which together offer all three cycles of basic regular education, two cycles of basic labor education, The total school population in Huamachuco is 2,699; the school population in the rest of the NEC is 3,077. School enrollment has been growing at an average rate of 2.3% since 1974 and projections for demand have been based on this growth rate.

The general condition of educational infrastructure is fair to poor. As in Cachicadán, few specialized facilities exist (labs, workshops) and libraries, books and educational material is scarce.

The Service Center being proposed for Huamachuco will contain the following facilities: 2 children's classrooms/lab/art/music/shop (60); 1 agricultural shop/school garden (30); 1 general shop (30); 1 home economics shop (30); 1 business education classroom (30); 1 general science lab (30); 1 library (60); 2 sports fields (50); 1 auditorium/classroom/meeting room (275); 4 offices; 1 teacher room/audio visual unit; 1 maintenance room; 1 materials reproduction room, 1 warehouse; 1 health unit, 1 cafeteria (100); and, 1 guard house. (for the layout of the Service Center facilities see Figure II-2). The services to be offered at the Center are the same as those in Cachicadán.

FIGURE II-2
HUAMACHUCO SERVICE CENTER



LOT AREA 12,000 M²
CONSTRUCTION 1800 M²
COST $180,000

HUAMACHUCO	
2MM.=1M	7 JULY 1977
FRED E. COOPER IV	V.1

It is estimated that approximately 2,889 students will make use of the facilities on a weekly basis. The number of hours student of various levels will use the Center is the same as in Cachicadán. Use of the Center by other schools in the NEC, community members and for teacher training is the same as in Cachicadán. The Center will operate on the same schedule as in Cachicadán, with an hourly student capacity of 330, not including, the auditorium, sports facilities, and the cafeteria.

The kind of equipment and typical costs can be found in Annex V-A. A total of 4 administrative/support personnel and 15 teachers will be required to operate the Center. Of the 15, 10 would be new.

Pacasmayo

Pacasmayo is a semi-urban town of around 20,000 residents located on the coast of Peru, one hour north of Trujillo in the department of La Libertad. It has a diversified economic base, with most of the economically active population engaged in industrial and commercial activities that serve the city and surrounding agricultural area. Average per capita income is around $200 per year.

The town has fourteen schools (excluding pre-school education) operating in eleven facilities. The total school population in Pacasmayo is 5,898 including 375 in pre-school education; school enrollment in the rest of the NEC is 845. The schools in Pacasmayo offer all cycles of basic regular and basic labor education, along with other non-formal programs. Both day and night programs exist. School enrollment has been growing at 5% per year since 1974 and projections for demand have been based on this rate.

Educational infrastructure is in generally fair condition, although some overcrowding exists. While schools have more specialized equipment and facilities than in Cachicadán and Huamachuco, they are still insufficient to effectively offer the new programs called for under the Education Reform.

The Service Center being proposed for Pacasmayo will contain the following facilities: 3 children's classroom/lab/art/music/shop (60); 1 auto-mechanics shop (30); 1 soldering/welding/sheet metal shop (30); 1 electricity/electronics shop (30); 1 home economics shop (30); 1 business education classroom (30); 1 handicrafts shop (30); 1 general science lab (30); 1 library (110); 3 sports fields (70); 1 auditorium/classroom/meeting room (325);

5 offices; 1 teachers meeting room; 1 audio visual/material reproduction room, 1 warehouse/maintenance area; 1 health unit, 1 cafeteria (150); and, 1 guard house. (For the layout of the Service Center facilities see Figure II-3).

The services offered at the Center are nearly the same as those in the other two. In addition to these facilities at the Center, a total of three labs in biology, chemistry and physics, located at one of the other schools in town will be used as a regular part of the Center. The distance between the Service Center site and this school is around one half mile. All students in Pacasmayo are within 30 minutes walking distance of both locations.

It is estimated that approximately 6,253 students will make use of the facility on a weekly basis, with the same number of hours per cycle as previously indicated. Use of the Center by others, for the same purposes mentioned in the other NECs is also contemplated during those hours and weeks when the Center is not being used by students from the 14 schools in town.

The Center will operate 14 hours a day, 6 days a week for 36 weeks per year. Teaching load is the same as in the other two NECs. Not including the auditorium, the sports facilities, and the cafeteria, the hourly student capacity of the Center is 525. Examples of equipment to be used at the facilities can be found in Annex V-A. A total of 5 administrative/support personnel and 20 teachers, including 5 new ones, will be required to operate the Center.

Trujillo

NEC 11 in Trujillo is located in the center of the city which is the departmental capital. The city's economic base is highly diversified and per capita income of approximately $175 is estimated for families of students attending school in the NEC. Although only approximately 7,000 people live within the NEC, over 32,160 students attend its schools.

The NEC has 36 schools (excluding pre-school education) operating in 25 facilities. The total school population in the NEC includes 588 in pre-school education. The schools in Trujillo offer all cycles and modes of education available in Peru. Both day and night programs exist. School enrollment has been growing at 5% per year since 1974 and projections for demand have been based on this rate.

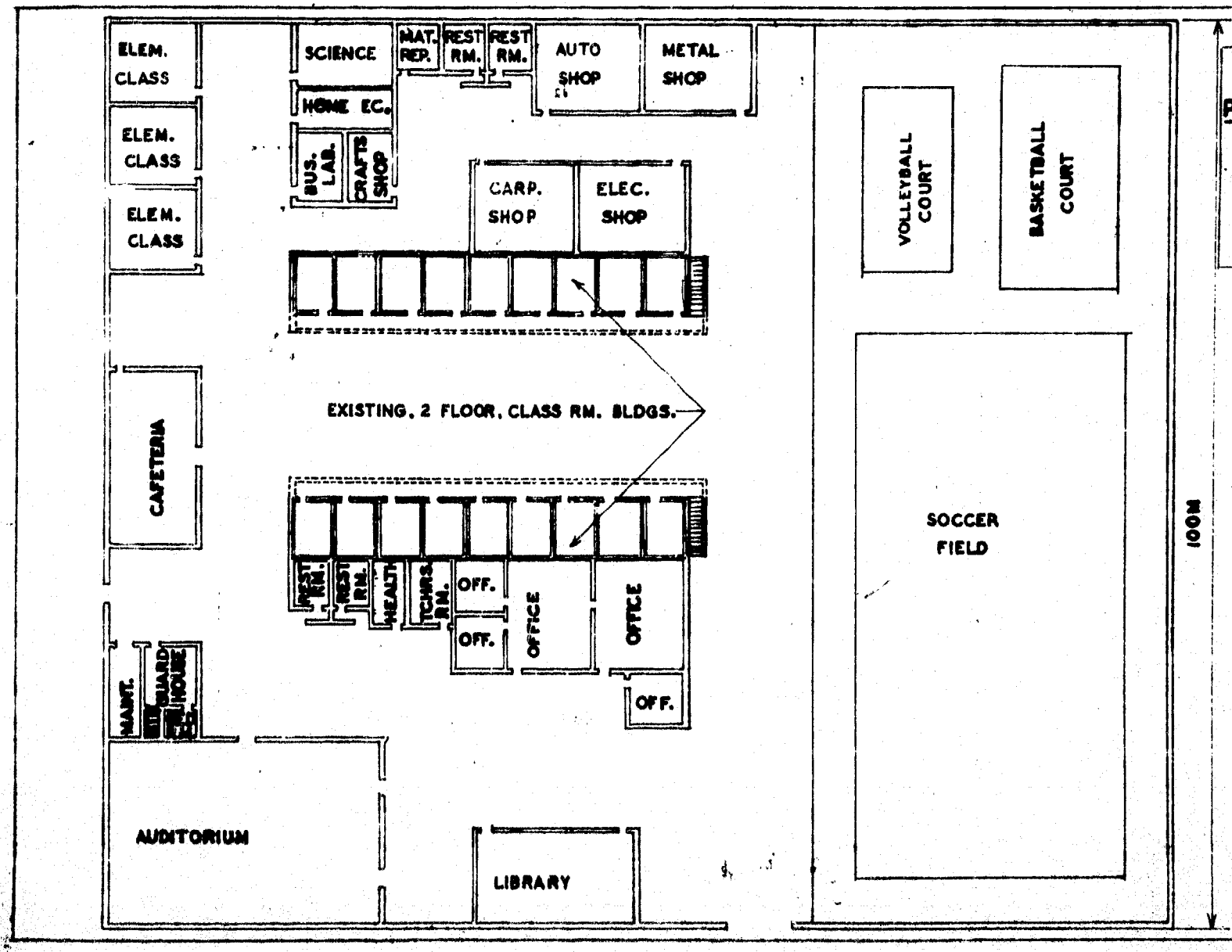


FIGURE II - 3

PACASMAYO SERVICE CENTER

LOT AREA 12,000M²

CONSTRUCTION 2,800M²

COST $420,000

PACASMAYO	
2MM = 1M	12 JULY 1977
FRED E. COOPER IV	1/1

Educational infrastructure varies widely within the NEC. The majority of schools are in fair condition, with a small number in good condition and having some specialized equipment. The remaining schools have very few specialized facilities or equipment and some overcrowding exists.

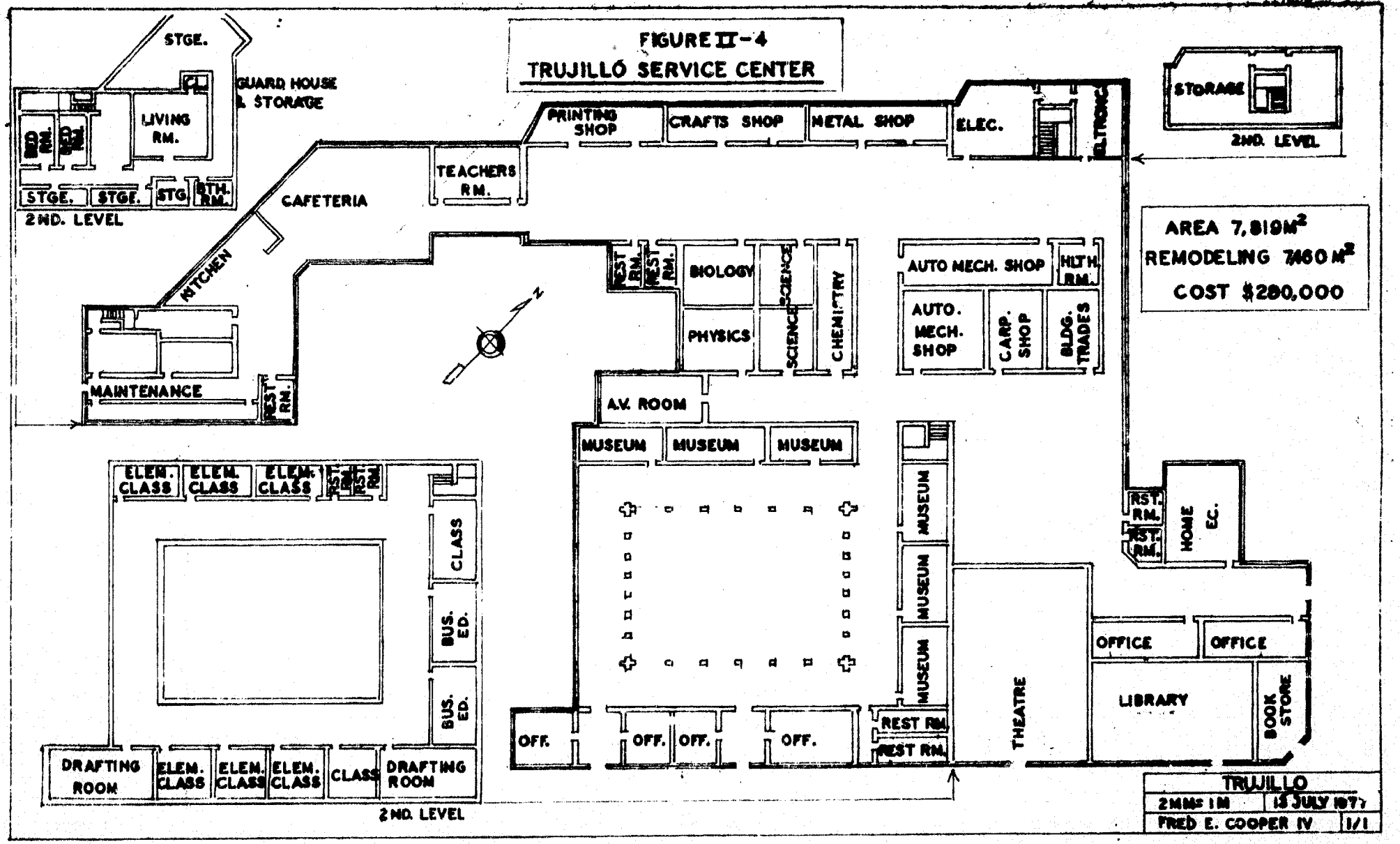
The Service Center being proposed for the Trujillo NEC will contain the following facilities: 6 children's classrooms/lab/art/music/shop (60); 2 automotive and general mechanics shop (30); 1 soldering/welding/sheet metal shop (30); 1 electricity shop (30); 1 electronics shop (30); 1 carpentry shop (30); 2 business education classrooms (30); 1 printing shop/ materials reproduction unit (30); 1 handicrafts shop (30); 2 home economics shops (30); 2 general science labs (30); 1 biology lab (30); chemistry lab (30); 1 physics lab (30); 1 library (200); 1 museum; 2 classrooms/meeting rooms (80); 6 offices; 1 cafeteria (200); 1 warehouse; 1 maintenance room; 1 health unit; 1 audio visual room; 1 teachers room; 1 theatre (400); 1 bookstore; and 1 guard house. (For the layout of the Service Center facilities see Figure II-4.)

The services offered at this Center are nearly the same as the three other centers, with the addition of the theatre, the museum and the bookstore. The theatre already exists and has potential for generating income; the museum will capitalize on the buildings historical background and help link it with the community; and finally the bookstore may also earn revenue for the Center.

As in Pacasmayc, in addition to the facilities at the Center, 10 labs and workshops (biology, chemistry, physics, natural sciences, carpentry, cooking, sewing and business education), located at several schools within the NEC, will be used as a regular part of the Center. All schools within the NEC are within thirty minutes walking distance of each other.

It is estimated that 22,728 students will make use of the facility on a weekly basis. This includes all of those in the three cycles of basic regular education; and cycles I and II of basic labor education. Cycle III basic labor education students will not regularly use the Center, based on their need for more sophisticated vocational equipment, which will not be available at the Center. The same number of hours per cycle will be offered as in the three other Centers. The Center will also be open to the use of others, when not in use by the students from the thirty six schools.

FIGURE II-4
TRUJILLO SERVICE CENTER



TRUJILLO	
2MM= 1M	15 JULY 1977
FRED E. COOPER IV	1/1

The Center will operate 14 hours a day, 6 days a week for 36 weeks per year. Teaching load is the same as in other NECs. Not including the theatre and the cafeteria, the hourly student capacity of the Center is 1,560, including 360 at the other sites. Examples of the equipment to be used at the Center can be found in Annex V-A. A total of 14 administrative/ support personnel and 50 teachers, none of whom would be new, will be required to operate the Center.

III. Project Analyses

A. Pedagogical Analysis

The feasibility study was based on extensive data collection in each of the NECs studied and examined in detail the perceived educational needs of the NEC residents. Additionally, the study was carried out in close coordination with the MOE and consequently the services, facilities and equipment being proposed in each of the four NEC's are educationally appropriate for each School district. All of the equipment and services conforms to the new curricula being employed in the Reform and have been determined to be at the appropriate level of sophistication for each NEC. Thus, for example while a carpentry workshop and carpentry tools are provided in several NECs, the shop in Trujillo is significantly more sophisticated than that proposed in either Cachicadán or Huamachuco.

The types of services being proposed are directly supportive of Education Reform efforts to provide education which is work related. All cycles of basic regular education emphasize the importance of and need for formacion laboral or pre-vocational training. Thus far in the Reform, this area has been somewhat neglected. For this reason a significant emphasis is being given to the provision of this type of service at the four Service Centers. Similarly, the teaching of sciences within Peru, due to lack of resources, does not usually afford the student the opportunity to directly observe scientific phenomena in real or laboratory situations. The type of laboratory and scientific equipment being provided at the four Service Centers should have a positive impact on the quality of science teaching in the four school districts where the Service Centers are established and should result in significant improvements in students' understanding of basic scientific principles. The curriculum for cycle I (grades 1-4) of basic regular education calls for inclusion of music and art education as subject matters also important for the development of creative and manual skills. Once again, financial constraints have made it difficult to purchase the necessary equipment and supplies to implement these programs. For this reason, art equipment and simple musical instruments have been included in the children's classroom/workshop for cycle I primary students.

Space requirements for each of the major types of rooms found in the four Service Centers were based on the following requirements:

Facility	Capacity	Per Student Space
children's classroom/workshop	60	1.5 sq. meters
all agricultural and vocational workshops	30	4.0 sq. meters
home economics workshop	30	1.7 sq. meters
Business education classroom	30	1.5 sq. meters
Science laboratory	30	1.5 sq. meters

These requirements are within acceptable Peruvian and United States norms.

B. Social Analysis

1. Social Organization - Overview

Peru's social structure has long been characterized by a relatively rigid division between major social and ethnic classes: a small, "white" elite, a slowly growing mestizo middle class, and a large indigenous peasant mass.

Since the 1968 Revolution, the Peruvian Army has instituted several social changes, particularly an extensive agrarian reform, which have contributed to some modifications in the country's social make-up. Essentially, this has meant the disappearance of coastal and sierra landholding elites and the emergence of Indian and mestizo landowners. It has also lead to a rapid growth of a large group of impoverished peasants, who previously had been seasonal agricultural workers and thus far have not benefitted from changes wrought since 1968.

A pattern of extensive migration from the highlands or sierra to the coast of Peru, especially to Lima, has existed since World War II. Attracted by the possibility of employment in an emerging industrial and manufacturing sector, and access to the better services available in the cities (e.g. education, health), peasant populations have been migrating, in large numbers, to the various urban enclaves along the Peruvian coast. Two major developments in the last decade,namely the rapid growth of Peru's fishing industry and the Agrarian Reform have produced a further increase in the tempo of peasant migration to coastal cities.

The prospect of social and economic mobility has drawn mestizo and indian peasants, formerly limited to peonage on haciendas and mines or subsistence farming in remote areas, to the cities where they are taking up economic niches created by the expansion of industrial and urban service sectors. The strong belief among rural

migrants that prospects for a better life lie in the cities, makes it unlikely that social reforms and innovations, short of creating major industrial and commercial centers in the sierra, will stop or even decrease significantly this demographic trend.

Possibilities of social mobility and improved economic opportunities over the last 20 years notwithstanding, over 50% of Peru's population live in poverty-stricken conditions, primarily in rural areas. Mainly as a result of the internal population shifts, large pockets of poverty also exist in urban centers. Typically, peasants who migrate to the cities eventually settle in squatter communities (pueblos jovenes) located on the periphery of urban areas. More often than not, living conditions there (housing, infrastructure, and employment) are similar, if not worse, than those in the countryside. It is this mass of poor peasants, many of them newly arrived in the cities or with high expectations of moving to the cities, which constitutes the most socially and economically deprived strata of Peru's population.

2. Beneficiaries

The project will be directed at two distinct beneficiary groups: (i) the immediate beneficiaries - approximately 30,000 primary and secondary school students and adults in formal and non-formal education programs in the four NEC's to receive a Service Center; and (ii) the ultimate beneficiaries - the approximately 130,000 target poor residing in the four school districts. The former will receive a better education through improved learning facilities and services; the latter will benefit via improvements in the community resulting from diffusion of this improved education.

The project will be directed at poor people in three different types of school district settings: (i) rural sierra (Cachicadan and Huamachucho); (ii) a semi-urban coastal town (Pacasmayo); and (iii) a large coastal urban city (Trujillo). As noted in the Project Description the pilot, experimental nature of the project is responsible for the variety in types of sites selected. It is believed that the locales which have been chosenrepresent the spectrum of cultural, economic, and geographic and social conditions in which the vast majority of Peruvian poor live.

Although a distinction is made between the beneficiaries - students and community poor, on the bases of immediacy of contact with the project and the type of community they live in, both share the same socio-cultural, economic, and ecological characteristics. Therefore, in the discussion which follows, which is based on community type, the two groups will be treated together.

a. Rural Sierra - Cachicadan and Huamachuco

With the exception of population density (while Huamachuco has 77,046 with over 9,000 living in its nucleated center, Cachicadán has 12,000 inhabitants and a nuclear center of 1,500), and related availability of goods and services, the socio-cultural characteristics of the two school districts are almost identical.

Both districts are relatively isolated areas (6-8 hour trip on poor roads from Trujillo, the departmental capital), located in the higher elevations (2,800 to 3,600 meters above sea level) of the front range of the Peruvian Andes.

The districts are divided into two distinct sectors, nucleated urban towns the major ones are Cachicadan and Huamachuco and the surrounding hinterland. The towns are the focal point of activity in both districts. They are the seats of local government, headquarters of Ministry offices, and centers of commercial activity. Moreover they are the location of such services (electricity, potable water, and sewage as well as most, health, educational, religious and entertainment facilities) as are available.

Residents of the towns are predominantly mestizo. The majority earn their main source of income in white collar occupations (teachers, medical personnel, agricultural extension agents, clerks, administrato[illegible], in commercial activity, as semi-skilled craftsman (carpenters, masons), and unskilled day laborers. Even though the income of many may be lower than the campesinos, the fact they are town dwellers and are identified as mestizos places them in a social position which is superior to the campesinos.

Both districts have nuclear "urban" centers but are still predominantly rural. Data from the feasibility study indicate that 66% of the inhabitants of the Cachicadan NEC and 73% of those in the Huamachuco NEC reside in small hamlets of several households or in isolated homesteads. The wide majority of these people are campesinos (there are minor enclaves of Quechua speakers) who are living in conditions of extreme poverty, and are far removed from the mainstream of contemporary Peru.

In the countryside the basic social unit is the extended household. It usually consists of parents and children plus an added relative or two (normally aged grandparents or unmarried siblings of the parents). In a hamlet or geographic sub-area the individual units are tied through kinship and compadrazgo (co-parenthood) bonds. Although beginning to disappear, the internal leadership of geographic sub-areas is established through a socio-religious cargo system by which men gain prestige and authority through acts of service to the community.

The principal occupation of the majority of residents is farming and the conditions under which it is practiced are clear indicators of the poverty level of the campesinos. It is carried out on a modified subsistence basis. Farm sizes are small (5 hectares is the average), divided into a number of dispersed plots, and often located on the marginally arable, steep upper slopes of the mountains. In most cases the farms are individually owned and each member of the household who is physically able, plays an active role in the operation of the farm.

The technology employed is extremely rudimentary. Typical tools consist of a steel-tipped wooden plow usually driven by oxen, a digging stick, and a wooden grain shovel. Few farmers employ modern inputs such as improved seed varieties, fertilizers, insecticides, and herbicides, and among those who do, there is confusion about mixtures, dosages and application procedures.

Principal crops are tubers and grains and, as might be expected by the traditional technology and poor location of the farms, yields are low. In the main, crop production is oriented toward household subsistence purposes although there is limited participation in local and regional markets. In addition to growing crops, most households own some livestock (a few sheep, pigs, chickens, and guinea pigs). Unlike crops, the major orientation of animal by-products - egg, cheese, wool and meat - is toward the market, but on an extremely small scale. The only production for market of any consequence is being carried on by cooperatives. But even in these cases the commercial agricultural activity is relatively limited.

Most households are also involved in a form of cottage industry, which whether primary or secondary is certainly complementary to agriculture. Common activities include cloth weaving, reed furniture and basket making, ceramcis, and wood working. Like farming, these products serve to meet the subsistence needs of the household as well as to provide a source of cash income.

The basic social unit in the towns is also the moderately extended household. Unlike the countryside, there is no informal leadership structure since authority and social control are in hands of the appointed municipal officials. The economic activity of town dwellers shows considerable variety. Many are engaged in agriculture - either as regular or part time day laborers on the cooperatives in the areas or on small farms they maintain in the countryside. Others earn their living as unskilled construction laborers and street vendors or semi-skilled artisans. A few, from the new local ruling class, are involved in modest commercial enterprises or work in white collars occupations.

With the exception of the few professionals and businessmen, income in both urban and rural areas is exceedingly low. It is estimated that yearly per capita income for the wide majority of the population is below $100.

Quality of life indicators such as housing conditions, infrastructure works, and nutritional and health status are generally below standard although town residents live in a slightly better conditions. As noted earlier, infrastructure works such as electricity, potable water, and sewage systems exist only in the urban centers. Although the wealthier town dwellers have better quality housing (plastered walls, wood or cement floors, windows and ventilation), the majority of the urban houses have the same adobe wall and earthen floor structures of the countryside.

The dietary pattern of the peasants are closely allied to their farming practices; that is, campesinos generally eat what they produce. Food staples include tubers and cereals. Items such as meat and animal by-products are less frequently eaten, because of the tendency to market animal food stuffs. Fruits and green vegetables are almost completely absent from the diet. Food habits are similar in the towns. Because tubers and grains are relatively less costly and the variety of products available in the local market is limited, there is little variation except for a slight increase in the consumption of meat products, and fruits and vegetables.

Health status of the target population in both districts is low. The feasibility study revealed that almost 90% of the primary school students have at one time or another suffered from viral, respiratory, and gastrointestinal disorders. Despite this high incidence of illness, 88% of the students said they had never visited or only rarely visited a doctor. Factors which contribute to the high incidence of illness include substandard diet and environmental health conditions, inadequate medical facilities (there is one small hospital in Huamachuco and only a health post with no professionals in residence in Cachicadán), the high cost of visiting a doctor, as well as confidence in household remedies, and reliance upon local curers.

Of the three different types of school districts, rural sierra is the one in which the value of formal training is least understood and appreciated. Except for the mestizos living in the towns, children receive little encouragement from their parents to continue studying. Although more severe in the hinterland than in the towns, the overall drop-out, repetition, and absenteeism rates are high, owing in large part to the obligation children have to work on the family farm.

The physical facilities in both NECs are woefully inadequate. Field observations revealed severe overcrowding in classrooms (student-teacher ratios of 50 to 1), physical plants in poor

states of repair, many of the schools in rural areas have only one room), insufficient amounts of teaching supplies and materials, and lack of adequate lighting, sanitary facilities, recreation space, work shops, laboratories, and libraries, An additional problem in the hinterland is retaining qualified teachers. The stark living conditions, and the physical, social, and intellectual isolation of living in the countryside cause many qualified personnel to either decline assignments in the outlying areas or leave as soon as they find a more appealing post or other source of livelihood. To fill the void NEC directors contract temporary teachers, most of whom have finished secondary school but do not have the specialized training of the professional teacher. As a result the quality of education in the countryside suffers even more.

An important consequence of the impoverished conditions is outmigration. Although the population has continued to increase modestly in both districts, growth rates are below the national mean and far below most urban areas. According to feasibility study data, almost 70% of the households surveyed in Cachicadan and 44% of those in Huamachuco have family members who have migrated. The majority go to cities along the coast, such as Trujillo or Lima for the purposes of either finding a better job or continuing their education.

b. Semi-Urban Coastal - Pacasmayo

Pacasmayo is a semi-urban town located on the Pan-American highway 67 miles north of Trujillo along the coast. Typical of coastal towns it is undergoing a rapid growth in population (12,000 in 1961 to over 18,000 in 1972). The principal reason for this growth is the immigration of people from the countryside, particularly the sierra.

The majority of the people living in the NEC are recent (within the last 20 years) migrants from the rural sierra. They are typical of the large number of campesinos who are moving to the coast in search of a better life. They are in the process of becoming mestizos and more assimilated into the national mainstream as is evidenced by a decrease in importance of their extended kin ties, an increase in the significance of the in nuclear family, and their employment in wage labor as opposed to subsistence farming.

For the most part they reside in a section of town resembling a pueblo joven located at the southeastern edge of the town. Although living conditions are inferior to those found in the more established section of the town, in general, they are an improvement over those of the sierra. Housing materials are slightly more substantial; walls normally have a coat of plaster both inside and out, wooden or cement floors are becoming more widespread, and living space is both adequate and divided into units related to the basic needs of the inhabitants. Electricity is available throughout and potable

water and sewage systems where not already in place are being projected for the near future.

Health and nutrition status gives a further indication of the improved condition of the target group in Pacasmayo compared to those in the sierra. To be sure, there is the normal incidence of childhood diseases but the occurrence of poor nutritional and environmental health related illnesses such as gastro-intestinal, and respiratory disorders is comparatively less than in the sierra. In addition, contact with modern medical services is considerably higher. Only 14% of the students reported they have never visited a physician when ill, while 52% said they have gone a number of times, and 20% see a doctor on a regular basis.

A better diet is also responsible for the improved health status of students in Pacasmayo compared to those in Cachicadán and Huamachuco. Estimates based on the feasibility study suggest that 75% of the students are receiving a fairly adequate, balanced diet; the other 25% appear to suffer from mild to moderate protein deficiencies. Food articles which are eaten most regularly include rice, soups, and fish. Meat, fruit, fresh vegetables, milk, and eggs are products less often consumed.

The education attainment of the target group also shows an improvement over that of the sierra. An essential indicator is that almost 75% of the adult population has completed primary school, and additional 20% has had at least some primary education, and only 5% is illiterate. Moreover, residents of the district generally recognize the benefits of education as a vehicle for social mobility and encourage their children to pursue it to the extent possible.

Although educational infrastructure is in better condition than in the sierra and although there are no one-room schools, the facilities are still clearly inadequate. Overcrowding is a serious problem since there are shortages of classroom furniture and didactic materials. Workshop, laboratory and recreation facilities are also insufficient to meet the needs of the school population.

While the target group in Pacasmayo is not as poor as in the previous group, they generally fall within the poor majority. Based on the feasibility study, major occupations of household heads in the district are: (i) agricultural wage laborers (on sugar plantations and co-ops), and fishing; (ii) unskilled industrial workers (the majority in a local cement factory); and (iii) store owners, artisans, and street vendors. The feasibility study data also indicated that the mean yearly per capita income is only approximately $200.

c. Coastal Urban District - Trujillo

Located along the coast, approximately 339 miles north of Lima, Trujillo is representative of an ever increasing number of secondary cities (Lima alone has been and still is the primary city) in Peru. It is the administrative capital of the Department of La Libertad and has the full complement of goods and services found in most urban areas. Like other cities in Peru, especially those on the coast, Trujillo is experiencing a rapid population expansion. Comparative census data demonstrate a six-fold increase, approximately 37,000 to about 240,000, in the 32 year period between 1940 and 1972. In addition to natural population growth, the reason for this increase, as in Pacasmayo, is the influx of peasants from the rural mountain areas.

Schematically the city can be envisioned as a series of concentric circles. The innermost circle - the core - is the commercial and service center. Surrounding the core are more established residential neighborhoods (urbanizaciones), while on the periphery are the relatively recent squatter settlements.

The Service Center, projected for the NEC located in the core area of Trujillo, will serve students from a variety (upper middle class to extreme lower class) of socio-economic groups. Some come from fairly well to do suburban neighborhoods, others from centrally located slum areas, and still others from the impoverished pueblos jovenes surrounding the city. Census data indicate the entire population living within the NEC is about 7,000 people. Yet enrollment records show that there are approximately 32,000 students matriculated in district schools. Theoretically a prerequisite for admittance is residence in the same district in which the school is located. A comparison of population and enrollment figures clearly indicates that the residence requirement is not being closely followed. Large numbers of students, by falsifying addresses, are attending classes in NEC-11 schools although they live in other districts. Although exact data are unavailable, estimates made by local school officials suggest that approximately 60-65% of the entire NEC-11 student population lives in inner city slums and pueblos jóvenes.

There are several reasons for the influx of students into the core districts. In the first place the construction of education facilities has not kept pace with the rapid population growth of the city, particularly in outlying areas. Therefore students are obligated to attend schools in the center of the city where a disproportionate number of the facilities are located. Secondly, the education program in Trujillo has a significant night school component. The large majority of people studying in the evening work during the day in the center of the city although they live in the outlying areas. Therefore, it is convenient for them to attend school near their place of work. Finally, the target population is upwardly mobile, and by and

large, view education as a vehicle for advancement. Believing that institutions in the core area are superior, they devise strategies, including falsification of residence, to gain access.

The feasibility study indicated that the socio-economic characteristics of the beneficiaries show considerable variation. At one extreme, and in limited numbers, are students from professional households with yearly per capita incomes of over $1,600, clearly identified with upper middle social strata of Trujillo. A significant proportion, perhaps 30%, are from modest commercial and skilled and semi-skilled blue collar families with yearly per capita incomes of about 675, and live in the middle and lower middle income neighborhoods which ring the core area.

At the other extreme, and comprising perhaps 60-65% of the beneficiaries, are people who are in many ways similar to the target group of Pacasmayo. They live in the pueblos jovenes and inner city slum areas. The majority are relatively recent migrants from the sierra who have come to the city in search of improved economic and educational opportunities and are rapidly adopting urban mestizo values and customs. For the most part, they are monolingual Spanish speakers, and have acquired a greater reliance upon the nuclear family and national institutions to fulfill social needs and provide basic services. Although most come from subsistence farming backgrounds they now earn their living as unskilled industrial and commercial laborers, domestics, semi-skilled artisans (mechanics, shoe repairmen, electricians, dressmakers) and street vendors. According to the best available data, yearly per capita incomes are approximately $175 which, as in the case of Pacasmayo, clearly places them among the poor majority.

Living conditions are inferior to those in Pacasmayo. Because of the more rapid increase in population, crowding is more pronounced and there is a higher incidence of temporary housing made of substantial materials such as clapboard and tin. Although most pueblos jóvenes and inner city slum areas have electric lighting, service is irregular. Potable water and sewage facilities are not as widespread as in Pacasmayo, and large areas totally lack such services.

Educational facilities within the NEC are generally substandard. With two exceptions, physical plants are in poor states of repair. In some cases buildings which suffered severe damage during the 1970 earthquake have yet to be reconditioned. In other cases where schools were completely destroyed, classes are still being held in rented ill-suited buildings. Cracked ceilings and walls, broken windows, and inadequate lighting are commonplace. Overcrowding, with student-teacher ratios in the range of 50 to 1, is another serious problem as is the general lack of didactic materials, and classroom furniture. An addition, there are scant workshop, laboratory and recreation facilities.

3. Socio-cultural Feasibility

The socio-cultural feasibility of the project hinges on three major issues: (i) tailoring the Service Center to the educational needs of the target group in each NEC; (ii) achieving cooperation among NEC officials necessary for efficient, maximum utilization of Service Center facilities; and (iii) obtaining local level participation. There are no evident constraints concerning the first matter; however, there are potential, but surmountable, difficulties with the second and third.

a. Tailoring

As described in the Project Description, the Service Center planned for each of the NEC's is designed to meet the unique socio-cultural characteristics and educational needs in each district. The Center in Cachicadan is structured to meet the needs of the town's school population, and to a lesser extent indirectly reach the dispersed school population in the rest of the NEC. In Huamachuco, the design is similar but has added components (mechanics, building-trades, and electronics) to provide exposure to fields where there are potential local employment opportunities.

In Pacasmayo the plan calls for training in accordance with the variety of economic activities (farming, industry, commerce, skilled trades, service sector) which exist there. In addition, elements such as laboratories and libraries are included to accommodate secondary school students aspiring to higher education.

In accordance with the variety of job opportunities in urban environment and the heterogeneity of the student population, the Center proposed for Trujillo is the most diverse. It includes a wide array of services for primary and secondary school students, as well as for adults in diverse non-formal programs.

While the Service Center in each community will have physical facilities designed on the basis of the unique socio-economic conditions of the NEC it serves, the tailoring of the Center to the educational needs of the target group will not stop there. It is anticipated that as teachers and community residents become users of these facilities, modifications or additions to the courses and materials available will occur. Community opinions and suggestions about the contributions offered by the Center will be frequently sought; fostering such participation, in fact, will be a key function of the Service Center director.

b. Cooperation Among Administrators

According to the organization envisaged in this demonstration project, the director of the NEC will be in charge of the

Service Center's governance and the director of the Service Center is supposed to report to him and follow his directives. In addition, the latest by-laws of the NEC's reaffirm that the Service Center is an integral component of the NEC's centro base and, thus, presumably under the jurisdiction of the centro base director.

There are various sources of potential difficulty in this administrative set up. First, it remains unclear who will have the ultimate say as to the center's functioning; the NEC director or the centro base director. The specification of mutually exclusive job responsibilities will take place during early stages of project implementation.

Second, whether the ultimate head of the Service Center is the NEC director or the centro base director, the director of the Service Center will in all four NECs be directly in charge of a superior and well-endowed building and resource in the community. By contrast, the NEC director or the centro base director, though officially "in charge", will enjoy less material status. This disparity between authority and access to resources may lead to some rivalries. These will be minimized through the development of guidelines delineating the respective functions of all officials.

An additional source of potential difficulty may arise from the fact that while the director of the NEC and the centro base director will have the ultimate responsibility for the Center, it will be the Center director who will be specifically trained and thus most capable of making the best decisions for the Center's proper functioning. To minimize this potential problem it is anticipated that both the NEC director and the centro base director will be included in the on-the-job training programs to be provided prior to inaugurating the four Service Centers.

A final potential problem surfaces in relation to the NEC in Trujillo, where the Service Center will operate in more than one place, even though the main location will be by far the largest. The problem relates to a proprietary attitude toward school facilities which is held by many school directors. In theory, the director of the NEC has ultimate administrative authority over the school district. However, in practice it is not uncommon for school directors to operate autonomously and often in direct opposition to the NEC director by using personal influence with higher level officials in the MOE. This autonomy extends to the disposition and use of education materials physically located within their schools. Instructions from the NEC director to share facilities are often interpreted as infringements on personal domain or area of authority. Frequently they are ignored or vetoed from above.

It is unlikely to expect that this behavioral pattern will change by itself, and the difficulty it presents to the Service Center concept is obvious. The strategy likely to neutralize this

constraint is one which uses a "trade-off" principle. It is important to school directors that their institution offer a quality education. Few schools within the NEC, particularly at the secondary level, are adequately equipped to meet the needs of their students. By offering access to Service Center facilities to a school director, it is likely that he will be willing to let students from other schools use his school's facilities since use of the Service Center will enable him to more adequately fulfill the learning needs of his students.

c. Community Participation

Initial participation by the communities in designing and helping to build the Service Centers does not appear to be a problem. Based on the feasibility study, there is ample evidence of high interest in the project in all four NECs. In Cachicadán and Huamachuco local officials have tentatively agreed to provide land for building sites. In Pacasmayo and Trujillo, land which is already under the control of the NECs, has been provisionally designated for the Centers. Furthermore, in the sierra NECs, citizen participation in the physical construction of schools and other projects for the benefit of the community is commonly contributed. Also, there is evidence that Parents Associations in the towns of the sierra NECs, as well as those in Pacasmayo and Trujillo, have in the past organized fund raising social activities to build and support the schools.

The potential problem is rather one of sustaining participation in order to transfer learning to the ultimate beneficiaries. In all areas, except the hinterland of the sierra, the vehicle which seems most likely to continue participation is the Parents Associations. It is an institution with which local residents have become familiar and which they recognize as functioning in support of school activities. Efforts will be made to encourage existing associations to sponsor events of a social nature (athletic competitions, dances, student exhibits) as a way of attracting new members thereby drawing them closer to the educational system.

Parents Associations, however, are not common among the peasants. If asked, they will likely contribute labor for the construction of the Centers usually asking for food in exchange. However, given their limited amounts of formal training and equally limited appreciation of the value of education, considerable grass roots promotion will be necessary to sustain their interest. A potentially feasible way to enhance participation is to ask peasant leaders to assist in the design of teaching materials for the rural schools. Their intimate knowledge of rural life could help put such materials in a context which is meaningful and readily understandable by the students. At the same time it would serve as a learning experience for those who participate. Interest could also be generated through field days on the school farms. Useful instruction in farming, which is important to the campesinos, could help demonstrate the

relevancy of education and stimulate further interest. Finally, recreation events could be used to draw community residents to the schools. During field trips it was noted that athletic competitions among students are well attended by community residents. This could be used to transfer to other facets of educational activities at the Centers.

The participation of the community will also be sought in the area of curriculum planning. This crucial community input will be obtained: (i) by asking Service Center users to rate the facilities and to make suggestions to improve them, and (ii) by presenting reports on the Service Center to the CONSECOM and asking this body to react, comment and make suggestions. The Service Center director will play a key role in obtaining these inputs.

4. Social Impact and Spread Effect

The project will have a positive social impact in a number of ways. In general, it will provide improved education services for the 27,000 primary beneficiaries most of whom are from Peru's poor majority. The services are designed to fit the cultural, economic, geographic and social environments of the students, as well as address their principal learning needs. It is anticipated that, organized in this manner, the project not only helps prepare students for more advanced study, but also will help increase the supply of trained and trainable labor at the local level. In the sierra, especially, the pre-vocational training related jobs available in the immediate area, is likely to help reduce the percentage of students who migrate to continue their education. Indirectly, the project will increase overall community exposure to education. The greatest potential impact of the project is that, if successful, it will demonstrate a mechanism for providing quality, low cost educational services to the poor majority in different cultural, economic, geographic and social settings, which can be replicated nationally.

If the project purpose is achieved it is anticipated that the Education Service Center concept will be an attractive alternative for the GOP in providing educational services and facilities. The solution is, of course, viable only in those areas where significant population concentrations exist to justify the establishment of a Service Center and, for this reason, many school districts will never be affected by this project. However, for the majority of the 803 school districts the Service Center concept, if successful, does have potential for improving the quality and availability of educational services.

The speed with which Service Centers are established in other school districts is directly related to increases in the size of the MOE budget and the general economic state of the nation. It would appear that a time frame of between 10 to 20 years would be the best estimate of the period in which the Service Center solution could be in operation nationally. This relatively lengthy time frame is

necessary since the capital requirements for a national system of Service Centers are not insubstantial, although they are much below the level to equip schools on an individual basis.

5. Impact on Women

This project has potential for having a positive impact on the status of women, which has and continuous to receive emphasis and support within the MOE. Women played a significant role in designing and carrying out the feasibility studies; they were also included among the students, teachers and community members who responded to field data collection instruments.

All services being proposed at the four Service Centers will be equally open to males and females and women will be encouraged by MOE officials to use all of the facilities. Female school enrollment in the four towns where Centers will be located is nearly the same as male enrollment, and in somewhat higher than national averages; thus, it is likely that a large number of female students will be among the project's immediate beneficiaries. Additionally, over 50% of the teachers in each of the four NECs are women, so that females will have a good chance at being selected for Service Center Staff. They will actively be encouraged by project personnel to do so.

In order to evaluate the impact of the project on women, records will be kept of the number of female and male student hours at each of the four Centers, and the specific facilities used by students of each sex. Training records will also be maintained to determine whether or not a significant number of women had access to participant training.

C. Engineering Analysis

1. General Description

The engineering phase of the Project comprises the planning, design, construction and supervision of four Education Service Centers, of which two will include the remodeling of existing structures. All four Centers will be located in the department of La Libertad, which is located north of Lima.

The proposed Education Service Centers, utilizing modern design concepts, will provide ample space for laboratories, workshops, classrooms and administrative offices including storage and warehousing facilities. The construction of the new structures in Cachicadán, Huamachuco and Pacasmayo will be performed through the use of locally available materials. The remodeling of existing structures in Trujillo and Cachicadán will involve the reinforcement of existing adobe walls, based on the recommendations of a structural engineer.

The architectural design will result in functional buildings reflecting the Peruvian ambience and local tradition. In structural terms, in the highlands, these buildings will be designed utilizing adobe walls, concrete floor slabs and light weight roofing materials of local manufacture. On the coast (Pacasmayo), the new structures will have reinforced concrete frames, concrete floor slabs, brick walls and asbestos-cement corrugated sheets for the roof. All new construction and remodeling will include an antiseismic design analysis.

The exact size of each of the four centers will vary in accordance with the services provided and the number of people it will house. Based upon the current student population of each area, and taking into consideration projected growth trends, the floor space requirements will be as follows:

a. Cachicadán: The proposed Center is intended to be located at the site of an existing structure which was once used as a school and now is being used by the Ministry of Education for administrative offices. The total area of the lot is 1,550 m^2. The covered area, which will be remodeled, has 420 m^2. In addition, new construction will be necessary on the order of 1,215 m^2, of which 150 m^2 will be on the second floor.

b. Huamachuco: An empty lot of approximately 12,000 m^2 is proposed to be made available for the construction of this Center. The estimated area needed for the Center is 1,800 m^2.

c. Pacasmayo: This Center will be located in an empty lot adjacent to an existing school. The area available is of 12,000 m^2 and the estimated area needed for the Center is 2,800 m^2.

d. Trujillo: The proposed Center will be located in an old adobe building with an area of approximately 8,000 m^2, and the estimated floor space requirement is 7,460 m^2.

Grant funds will finance the cost of all architectural/ engineering services, site preparation, remodeling of existing structures, construction of new buildings, including public utilities and engineering supervision for the four Centers. Counterpart funds will be used to partially cover the cost of the remodeling of existing structures and new construction.

2. Engineering Implementation Plan

a. Site Selection

In Cachicadán the proposed site is privately owned and is being rented to the Ministry of Education. In this case, expropriation will be necessary. The Huamachuco site belongs to the Municipality which has agreed to donate the lot for the construction of the Center. The sites selected for the Trujillo and Pacasmayo Education Service Centers belong to the Ministry of Education.

Satisfactory evidence that the Ministry of Education has a free and clear title to the project sites will be a condition precedent to disbursement for construction in each case.

b. Availability of Public Utilities and Environmental Aspects of the Proposed Sites

In Cachicadán, the proposed site for the Education Service Center is located 250 meters west of the plaza. The lot is presently occupied by the administrative offices of the Ministry of Education. The village has an ample water supply, although the distribution system is incomplete. Sewage disposal is through the use of septic tanks. Sufficient electricity is available, but the distribution system will have to be extended to the site area. Future expansion of the Center is possible because there is an empty lot adjacent to the site. No environmental problems are foreseen.

The proposed site for the Huamachuco Education Service Center is located in an empty lot, adjacent to an existing school, 400 meters north east of the main square. The land is flat and will not require any preparation. The presence of water in different spots shows that the water table is very high and thus a proper drainage system will have to be installed prior to construction. The town of Huamachuco has water and sewerage systems, but the main trunk lines will have to be extended to the site. The town has an ample supply of electricity from a hydro-electric plant, but the distribution system will have to be extended to the site. The lot is bordered by a river at one end and a fence will have to be built as a safety precaution. No major environmental problems are foreseen.

In Pacasmayo, the proposed site will be located in the upper part of the town where an existing school is presently functioning. Although the location is at some distance from the center of town, nearly all schools are nearby. An empty lot (adjacent to the school) presently is not being used, and will be adequate for the construction of the Educational Service Center. Potable water is available although the pressure frequently is low. The sewerage and the electrical distribution systems for the town of Pacasmayo are quite old and not adequate. However, the GOP with IDB funding will improve the water and sewerage systems within this year and ElectroPeru has completed a study to remodel the electrical distribution system. No environmental problems with the proposed site are anticipated.

The Trujillo site for the proposed Education Service Center is located in the center of the city, two blocks away from the main square. The existing structure is being used as a school and was built more than 100 years ago. It has been declared by the Government of Peru an historical monument, which means that it cannot be destroyed, but can be remodeled without changing its colonial architectural style. All public utilities are available and no environmental hazards are foreseen. Prior to initiating the remodeling, the Ministry of Education will have to relocate the students now attending the school. This is already in process and scheduled to completion by December 1977.

c. Design and Preparation of Contract Drawings

Based on the feasibility study and USAID and MOE discussions, preliminary drawings for the four Centers have been prepared. The preparation of final plans and specifications will be contracted from the private sector. Such services will be solicited in accordance with AID procedures, from eligible firms, previously pre-qualified for the job and subject to the written approval of AID.

The consultant(s) selected will undertake site development and subsurface investigation, and will design the Centers and develop contract drawings suitable for bidding. Conceptual drawings and preliminary layouts will be subject to the approval of the Ministry of Education and AID prior to the final preparation of the contract drawings. Final approval of the contract documents will be subject to the written approval of AID.

d. Public Bidding

Public bids will be solicited for construction of each of the Centers individually, for all work in one package or in several packages, as may be recommended by the consultants. The small number of sites, their isolation, and the relatively low monetary value of the contracts are unlikely to attract U.S. or other 941 AID Area Code contractors.

Bids received will be publicly opened and will be analyzed and evaluated by a committee of the Ministry of Education who will make a recommendation as to the award. AID will participate as an observer and will approve the award.

e. Construction

Construction services will be contracted by the Ministry of Education. It is anticipated that bidding will be limited to a list of pre-qualified contractors.

f. Inspection

Independent engineering services will be required to supervise the construction and remodeling of the four centers. An experienced and qualified local civil engineer, one secretary and one driver, financed with grant funds, will reside in the city of Trujillo in order to have easy access to all four sites.

The resident civil engineer will supervise all remodeling and construction activities, and review cost accounting and voucher preparation. From Trujillo he will conduct periodic site inspections to the other three centers, preparing weekly and monthly summary reports. He will also prepare a financial report every three months, and a final financial report at the end of the job, showing all expenditures made for construction and supervision. The summary reports and the financial reports will be forwarded to the Ministry of Education and to the Mission. In order to conduct these field trips inspections the resident engineer will be supplied with a four wheel drive vehicle for his use, financed by the grant funds. This same vehicle will later be used by the long term technical assistance technician.

Project monitoring will be performed by a USAID Engineer, who will conduct periodic site inspections, review all construction work, and prepare separate reports. Based upon reports from the field and knowledge gained from site inspections, the USAID engineer will recommend to the USAID Project Manager approval or rejection of the vouchers for payment against the grant funds. This system of verification for purposes of reimbursement of work performed will be established to USAID's satisfaction prior to initial disbursement.

g. Maintenance

Maintenance of all GOP Educational facilities are now the responsibility of the Ministry of Education, although it consists entirely of corrective maintenance, instead of preventive.

A maintenance plan will be developed for each building which will include a maintenance shop with a suitable stock of electrical and plumbing materials for routine repairs.

Long term preventive maintenance such as painting will also be performed at each center.

h. Time Provisions

Following is an estimated time schedule of the planning and construction components of the project:

- Select and contract consultant(s)	3 months
- Preliminary sketches and conceptual drawings	1.5 months
- Final design and bidding documents	2.5 months
- Receipt of bids, evaluation and award of construction contracts	3 months
- Construction	12 months
TOTAL	22 months

3. Technical Feasibility

The remodeling of existing structures and construction of new buildings is technically feasible in all respects. No specially manufactured elements are required, and all construction materials are available in Peru. Engineering and construction firms are available in Peru with considerable experience in construction of this nature and an adequate competitive response is anticipated in

both the engineering and construction areas. No structural, foundation or architectural problems are anticipated which could not be readily resolved utilizing conventional design methods. No major environ - mental problems are foreseen.

4. Construction Cost Estimates

The estimates of cost of the remodeling and of the new constructions were carefully developed using the latest available prices of materials and labor. USAID's engineering experience in construction under recent loans and grants was also used to refine the estimates to the maximum extent possible and the square meter costs are comparable to those used for education facilities in Peru.

The estimates include an escalation allowance of 10% to compensate for the anticipated rise in the cost of materials and labor over the next 10 months, at which time it is anticipated that construction will commence. Also included in the construction cost estimates is a contingency item of 5% to cover unforeseen problems.

Following is a summary of the cost in U.S. dollars of the remodeling and construction of the four proposed Education Service Centers:

a. Cachicadán:

- Preparation of final plans and specifications	$ 10,000.
- Remodeling of existing structure (420 m^2) and new building constructions (1,215 m^2)	135,000.
- Supervision	5,000.
TOTAL	$ 150,000.

b. Huamachuco:

- Preparation of final plans and specifications	$ 10,000.
- Perimetrical adobe fence	5,000.
- Drainage system (including the study)	10,000.
- Building construction (1,800 m^2)	180,000.
- Supervision	5,000.
TOTAL	$ 210,000.

c. Pacasmayo:

- Preparation of final plans and specifications	$ 15,000.
- Building construction (2,800 m^2)	420,000.
- Supervision	10,000.
TOTAL	$ 445,000.

d. Trujillo:

- Preparation of final plans and specifications	$ 15,000.
- Remodeling of the existing structure (7,460 m^2)	280,000.
- Supervision	10,000.
TOTAL	$ 305,000.

The total amount needed for the engineering, remodeling and construction of the four Education Service Centers is thus US$1,110,000. It should be pointed out, however, that this estimate was developed for construction to commerce in early 1978. Minor deviations from this target date should not materially affect these cost estimates. A drastic change in this schedule, changes in the Peruvian labor code, or any unforeseen changes in the predicted Peruvian inflation rate could, however, render these estimates obsolete.

The value of land was not computed in the engineering analysis but will be considered in the Financial and Economic Analysis.

5. Supervision Cost Estimate

Funds from the grant will be used for the purpose of covering all expenses that this supervision will require. It is anticipated that the remodeling and construction will take at least 10 months to be completed, thus the estimated duration of the engineering supervision period is 12 months. Personal services contracts with a civil engineer, a secretary and one driver will be executed. The contracting and hiring of this staff will be the responsibility of the Ministry of Education with the prior approval of the USAID.

Following is the estimated cost in U.S. dollars for the twelve month period:

- One Resident Engineer	$11,000.
- One Secretary	2,000.
- One driver	1,500.
- Vehicle	8,500.
- Travel expenses (gasoline)	2,000.
- General expenses	1,500.
- Per diem and others	1,000.
- Office space	2,000.
- Office supplies	500.
TOTAL	$30,000.

6. Engineering Conclusions

From an engineering standpoint, this appears to be a feasible and sound project. The estimated cost of remodeling the existing structures, construction of new buildings, preparation of plans and specifications and the cost for supervising the job has been realistically developed based upon reasonably reliable data. All material components are to be procured locally and pose no special problems. Local laborers, engineers and contractors thoroughly experienced in this type of construction are available. No environmental problems are foreseen. It is the judgement of the Project Development Committee that the requirements set forth in Section 611(a) (1) of the Foreign Assistance Act of 1961, as amended, have been met.

D. Financial Analysis

The estimated total project costs of $3,200,000 are summarized in Tables III-1, 2 and 3. The total costs are allocated to the following project inputs:

Project Input	Amount (in thousands)	Per Cent
Technical Assistance	320	10
Training	165	5
Commodities	425	13
Capital Costs	1,990	62
Operational Costs	300	10
	3,200	100

Table III-1 shows the breakdown of total project costs between AID ($1,590,000 - 50%) and the GOP ($1,610,000 - 50%). The costs which AID will fund are further broken down to reflect dollar and local currency costs. An estimated $740,000 will be spent in dollars (primarily for technical assistance, training and commodities) and $850,000 will be used to cover local currency costs (principally construction costs). The GOP costs include $735,000 which will cover local currency costs (commodities, construction costs and operational costs) and $875,000 of in-kind costs. The in-kind costs are substantially land and existing buildings ($800,000); however, they also include $75,000 in construction costs which will be contributed by the local communities. In regard to community contributions, it is very difficult to anticipate the degree of enthusiasm and the consequent support with which the local communities will greet a pilot project. The community contributions are estimates based upon community support for similar projects in Peru and we believe that the figure of $75,000 is conservative. We look to this pilot project to provide more accurate data regarding the degree of community support attainable for future project replicability.

Table III-2, using the same project input distribution, details the budgeted costs by the individual Service Centers which are summarized below.

TABLE III-1

SUMMARY COST ESTIMATE BY TYPE OF FUNDS
(U.S. $ 000)

Project Inputs	AID FX	AID LC	GOP LC	GOP In Kind	Total
1) TECHNICAL ASSISTANCE (US or Third Country)					
-Ed. Specification Specialist	5				5
-LRC Specialist	180				180
-A/E Specialist	5				5
-Vocational Edu. Specialist	60				60
-Education Economist	30				30
-Research Ev. Specialist	40				40
Sub-Total	320				320
2) TRAINING					
Participants					
-Ed. Administration	25				25
-Research/Evaluation	15				15
-Science Education	20				20
-Vocational Educator	20				20
-Costs Analysis	10				10
-Education Testing	10				10
In Country Training	-	65			65
Sub-Total	100	65			165
(3) COMMODITIES					
-Laboratory, Shop Equip. and Books	300	45	20		365
-Furniture and Office Equipment	-	-	60		60
Sub-Total	300	45	80		425
(4) CAPITAL COSTS					
-Land and Existing Infrastructure	-	-		800	800
-Construction	-	620	335	75	1,030
-Supervision	-	30	-		30
-A/E Designs	-	50	-		50
-Teaching Materials & Publications	10	20	-		30
-Eighth Region & MOE Admin./Sup. Salaries	-	-	20		20
-Evaluation	10	20	-		30
Sub-Total	20	740	355	875	1,990
(5) OPERATIONAL COSTS					
-Administrative/Support Salaries for 2 years			100		100
-Teachers Salaries, for two years			75		75
-Materials, Mainte.Util. & General, two years	-	-	125	-	125
Sub-Total	-	-	300	-	300
TOTAL	740	850	735	875	3,200

TABLE III-2

SUMMARY COST ESTIMATE BY SERVICE CENTER
(U.S. $ 000)

Project Inputs	Education Service Centers				MOE &	Total
	Trujillo	Pacasmayo	Huamachuco	Cachicadan	VIII Region	
(1) TECHNICAL ASSISTANCE (U.S. or Third Country)						
-Ed. Specification Specialist						
-LRC Specialist						
-A/E Specialist						
-Vocational Edu. Specialist						
-Education Economist						
-Research/Eval. Specialist						
Sub-Total	130	80	40	35	35	320
(2) TRAINING						
Participants						
-Ed. Administration	10	5	5	5		25
-Research/Evaluation	5	5			5	15
-Science Education	5	5	5		5	20
-Vocational Education	5	5	5	5		20
-Cost Analysis	5				5	10
-Education Testing	5				5	10
In Country Training	30	15	10	10		65
Sub-Total	65	35	25	20	20	165
(3) COMMODITIES						
-Laboratory, Shop Equip. and Books	180	80	60	45		365
-Furniture and Office Equipment	20	20	10	10		60
Sub-Total	200	100	70	55		425
(4) CAPITAL COSTS						
-Land and Existing Infrastructure	710	40	30	20		800
-Construction	280	420	195	135		1,030
-Supervision	10	10	5	5		30
-A/E Designs	15	15	10	10		50
-Teaching Materials and Publications	10	10	5	5		30
-Eighth Region & MOE Admin./Support Salaries					20	20
-Evaluation	15	5	5	5		30
Sub-Total	1,040	500	250	180	20	1,990
(5) OPERATIONAL COSTS						
-Administrative/Support Salaries, for two years	60 1/	20 2/	15 3/	5 4/		100
-Teachers Salaries, for two years						75
-Materials, Mainten., Utilities & General, two years	80	25	15	5		125
Sub-Total	140	65	70	25		300
TOTAL	1,575	780	455	315	75	3,200

1/ Assumes 50 teachers released from other schools as a result of reduction in teaching load and no new ones required.
2/ Assumes 15 teachers released from other schools as a result of reduction in teaching load and 5 new teaches.
3/ Assumes 5 teachers released from other schools as a result of reduction in teaching load and 10 new teachers.
4/ Assumes 2 teachers released from other schools as a result of reduction in teaching load and 3 new teachers.

	Amount (In thousands)	Per Cent	Students (In thousands)	Per Cent
Cachicadan	$ 315	10	.9	3
Huamachuco	455	14	2.9	9
Pacasmayo	780	24	6.2	18
Trujillo	1,575	49	22.7	70
MOE & VIII Region	75	3	-	-
	$3,200	100	32.7	100

From the above figures, it is apparent that only in Trujillo is the relative percentage of students greater than the percentage of total costs. The significance of this relationship is that the high concentration of students in an urban area such as Trujillo, will result in lower costs per student. On the other hand as the size of the student population decreases, the Service Center costs do not decrease proportionately and the average costs per students rise progressively. This is discussed in greater detail in the Economic Analysis Section.

In Table III-3, the budgeted figures are broken down by year of contribution and shown separately for both AID and the GOP. An analysis of this Table reveals that the entire GOP in-kind contribution of $875,000 (Table III-1) will be required in 1978. Thus, as mentioned elsewhere in the Project Paper, a condition precedent to disbursement of funds for construction under this proposed grant will be the converting of the title of the properties involved to the Ministry of Education. Another condition precedent to disbursement will be receipt of satisfactory evidence that the GOP will provide in the Ministry of Education's budget $35,000 in FY 1978, $440,000 in FY 1979, $165,000 in FY 1980 and $95,000 in FY 1981 to support the project. In addition, the GOP will provide a covenant that they will continue to make available adequate funds to these Service Centers to cover operational costs, subsequent to the project's termination.

Although we are looking to the GOP to cover the operational costs of the pilot service centers, an important consideration for replication would be community financing of a portion of these costs, thus providing some relief to the Ministry's budget. It is an area that has been given serious thought and the conclusion is that at this time, it is unreasonable to anticipate that the Service Centers will be able to generate sufficient funds to cover a major portion annual operational costs. On the other hand, if the various vocational education facilities are enthusiastically received, they could be subsequently expanded to provide slightly more sophisticated equipment which would allow the shops to produce items such as furniture which could be sold. PROMAE[1/], the recipient of an AID

1/ Produccion de Material Educativo, a program of the MOE, which is charged with helping to produce educational material in order to meet deman.

TABLE III-3

SUMMARY COST ESTIMATE BY YEAR OF CONTRIBUTION
(US$ 000)

	Project Inputs	AID Contribution 1978	1979	1980	1981	Total	GOP Contribution 1978	1979	1980	1981	Total	Grand Total
(1)	TECHNICAL ASSISTANCE											
	(US or Third Country)											
	-Ed. Specification Specialist	5				5						5
	-LRC Specialist	60	60	60		180						180
	-A/E Specialist	5				5						5
	-Vocational Edu. Specialist	30	15	15		60						60
	-Education Economist	5	15	10		30						30
	-Research Eval. Specialist	15	10	15		40						40
	Sub-Total	120	100	100		320						320
(2)	TRAINING											
	Participants											
	-Ed. Administration	10	10	5		25						25
	-Research/Evaluation	5	5	5		15						15
	-Science Education	10	5	5		20						20
	-Vocational Education	10	10			20						20
	-Cost Analysis		5	5		10						10
	-Education Testing	5	5			10						10
	In Country Training	15	25	25		65						65
	Sub-Total	55	65	45		165						165
(3)	COMMODITIES											
	-Laboratory, Shop Equip. and Books	250	95			345				20	20	365
	-Furniture and Office Equipment						10	50		-	60	60
	Sub-Total	250	95			345	10	50		20	80	425
(4)	CAPITAL COSTS											
	-Land and Existing Infrastructure						800				800	800
	-Construction	435	185			620	100	310			410	1,030
	-Supervision	20	10			30						30
	-A/E Designs	50				50						50
	-Teaching Materials and Publications	5	10	15		30						30
	-Eighth Region & MOE Admin./Sup. Salaries							10	10		20	20
	-Evaluation	5	5	20		30						30
	Sub-Total	515	210	35		760	900	320	10		1,230	1,990
(5)	OPERATIONAL COSTS											
	-Administrative Support Salaries							25	50	25	100	100
	-Teachers Salaries							15	40	20	75	75
	-Materials, Mainten.Utilities & General							30	65	30	125	125
	Sub-Total							70	155	75	300	300
	TOTAL	940	470	180		1,590	910	440	165	95	1,610	3,200

grant of $5,000 in 1974, is presently operating in this manner in Lima. The proceeds from the furniture they are producing and selling to the Ministry of Education are adequate to cover their operational costs plus cover a portion of the costs needed to expand their existing facilities. This area will be further considered in project evaluations.

In requiring the GOP to commit itself to provide its portion of the budget, it is recognize that the local economy is going through a difficult period and budget cuts have been imposed in FY 1977 on all Ministries. However, it must be remembered that the GOP contribution includes $875,000 of in-kind contributions and of the balance of $735,000 approximately $100,000 represents salaries that are currently being funded in the budget so the net additional cash outlay to the GOP is approximately $635,000. In addition, this will be funded over four years. This represents a small percentage of the Ministry budget and should impose no financial hardship. Moreover, the Ministry is eager to implement this pilot project and has assured the Mission that it will provide the necessary funds.

Based on the estimates of student costs contained in the economic analysis, a preliminary calculation was made of the amount of the amount of resources which would be required for an eventual national program. This calculation is based on the assumptions that Service Centers could eventually reach up to approximately 60% of the primary and secondary school population 1/ and that school enrollment (primary and secondary) will continue to grow at a similar or slightly lower rate than previously.

If a national system of Service Centers were in place today it would reach approximately 2.5 million students at a cost of approximately $50,000,000.2/ This would represent about 10% of the yearly MOE budget. This level appears to be reasonable and acceptable given that the MOE budget for the past has grown in real terms and is likely to continue to do so over the foreseeable future. The MOE's willingness to allocate such funds for a National Service Center system is, of course, contingent upon Service Centers providing significant qualitative improvements in educational output.

Should the project prove successful, A.I.D. and the MOE have tentatively estimated that a follow on loan could be developed for FY 1981. The loan would build on the pilot results and establish a significant number of Service Centers in one or more education regions of Peru.

1/ The remaining 40% live in areas where Service Centers could not reach dispursed, isolated schools.

2/ Assumes an average annual captial and recurrent cost per student of $20.00.

E. Economic Analysis

1. Methodology

The nature of the proposed project is such that a conventional economic analysis, which attempts to quantify both costs and benefits, is not an appropriate method for demonstrating the economic viability of the planned interventions. This is because, in a country such as Peru, one cannot with any degree of demonstrated accuracy, place a monetary value on the end product --in this case, an improved education system.

Any analysis of the present educational system in Peru variably leads to one major conclusion: the end product of Peruvian education is simply not sufficiently well prepared to allow Peru to be able to fully realize either its economic or social development potential. There are a variety of ways in which the deficiencies in the system could be corrected, and the GOP is prepared --within its financial constraints-- to experiment with alternative systems in order to come up with those which best meet Peru's particular needs.

Any system, to be generally applicable to Peru's overall educational needs, must be circumscribed by certain parameters, including (i) financial limitations; (ii) program flexibility to allow the government to adapt instructional needs to widely varying geographic and cultural conditions; (iii) optimal use of scarce resources, such as teaching materials and equipment, laboratories workshops, etc.; and (iv) simultaneous with other interventions, a program of in-service teacher training to gradually upgrade the general level of instruction prevalent in the education system.

The most rigorous constraint of the above, from a practical point of view, is the first --the GOP's financial limitations. While the other parameters are important from a qualitative point of view, the quantitative restrictions, or the GOP's ability to pay for services, must of necessity be the over-riding consideration.

The problem then becomes one of determining the most cost effective way of providing education within the qualitative parameters posited.

2. The "Least Cost" Solution: No Intervention/Maintenance of the Status Quo

Despite Peru's commitment to education, and the assignment of a comparatively high percentage of its national budget to education, education is still a cheap commodity. The overwhelming part of the MOE's budget (nearly 95%) is subsumed by operating costs, primarily

teacher salaries. Outside of the major cities, few schools have access to even such basic teaching materials as textbooks.

If "least cost" were the only consideration, there is little doubt that maintenance of the present system, and its gradual expansion over time, as the national budget grows, would be the obvious solution. If, however, we add to "least cost" the qualitative parameters outlined above, the present system must be rejected on qualitative grounds. Both USAID and the MOE, as well as other international donors and lending institutions, agree that educational upgrading is vital to Peru's economic and social future, and as such is a priority area within the overall framework of national development.

The "least cost" solution must, then, be rejected on qualitative grounds.

3. The "First Best" Solution: Minimal Upgrading of All Schools

The obvious "first best" solution is one which would upgrade all schools to a minimally acceptable level. In order to test the economic implications of such minimal upgrading, a cost analysis was performed for each of the four areas where Service Centers have been proposed (Cachicadan, Huamachuco, Pacasmayo and Trujillo), to compare costs if similar educational services were offered on an individual schools basis. Space requirements, construction costs, and equipment needs were all calculated on the same basis as the Service Centers. Due to lack of information, only construction costs and equipment were considered, and the comparative per student costs reflect only these expenditures. Table III-4 shows the results of the comparison. The overall cost per student in the case of individual school upgrading is three times that of providing Service Centers.

While this provides a reasonable comparison for the purpose of economic analysis, it does not take into account some elements that a Service Center can provide which are far too expensive and difficult to provide to schools on an individual basis, such as audio visual equipment, materials reproduction equipment, health services, etc. Additionally, in the very small schools, it would not be economically feasible to provide any type of service. Consequently it is estimated that approximately one-third of the students in the overall area would not have access to any facilities.

Under this "first best" solution, general qualitative considerations could be met (at least in two-thirds of the schools) but the first, and major, constraint --financial limitations on the part of the GOP-- would preclude its replication on any nationwide basis.

COMPARATIVE COST ESTIMATES: UPGRADING INDIVIDUAL SCHOOLS AND SERVICE CENTERS

(In thousands of U.S. Dollars)

	Cachicadan		Huamachuco		Pacasmayo		Trujillo		Total	
	S.C. [1]	I.S. [1]	S.C.	I.S.	S.C.	I.S.	S.C.	I.S.	S.C.	I.S.
Construction	155	167	225	340	461	837	990	3,082	1,830	4,426
Equipment	55	86	70	176	101	299	200	1,121	425	1,682
N°Students [2]	980		3,023		8,893		25,057		35,953	
Cost/Student [3]	$11.93	$15.60	$5.30	$10.32	$4.10	$9.20	$2.40	$9.40	$320	$9.60

1/ S.C.= Service Center; I.S.= Individual School

2/ Number of students was calculated as of projections for 1982.

3/ In order to arrive at a cost per student, construction costs were amortized over 25 years and equipment costs over 10 years.

The "first best" solution, then has been rejected on financial grounds.

4. The Service Center Concept: A "Second Best" Solution Meeting Qualitative and Quantitative Considerations.

If our "least cost" alternative is unacceptable on qualitative grounds and the "first best" alternative not feasible on financial grounds, a "second best" solution which takes into consideration both qualitative and quatitative constraints must be found. It is the opinion of USAID and the MOE that the proposed Service Center concept is an alternative which, within the bounds of Peru's financial resource base, meets minimally qualitative requirements.

Table III-5 presents a summary of cost estimates for each of the proposed four service centers, as well as the overall costs of the program (including costs incurred at the MOE/VIII Region Office). The cash flows upon which this table was constructed are found in Annex V-B, (Tables I through V). Basically, capital costs, training and the overall technical assistance components of the project were assumed to have an effective life of 25 years (on-going in-service training after the four year project life are considered as recurrent costs); equipment costs were considered to have an effective life of ten years (again, replacement costs of approximately 5% a year of the original cost, are built into the recurrent costs after the four years of the project). Recurrent costs were taken at their actual value for each year. To arrive at yearly costs per pupil, the following formula was used:

$$\frac{x/25 + y/10 + z}{p} = CPP$$

where: x is the sum of capital costs, training and technical assistance; y is the sum of equipment costs; z is the recurrent costs for the tenth year of operation; p is the number of pupils expected to be affected during the tenth year of operation, and CPP is the cost per pupil.

To arrive at cost per pupil hour, the following formula was used:

$$\frac{CPP}{x} \div n = HCP$$

where: x is the number of hours per week which the service center will operate; n is the number of school weeks expected per year (generally 36); and HCP is the hourly cost per pupil.

Looking at the results in Table III-5, we see that there is a direct correlation between the size of the center and costs per student year and per student hour, with the lowest costs associated with the largest

SUMMARY COST ESTIMATES FOR SERVICE CENTER PILOT PROJECT (1989[1/])

(In U.S. Dollars)

	Cachicadan	Huamachuco	Pacasmayo	Trujillo	Total (Incl.MOE/VIII Region)
Capital Costs, Training and T. A.[2/]	235,000	315,000	615,000	1,225,000	2,475,000
Equipment Costs[3/]	55,000	70,000	98,000	200,000	425,000
Recurrent Costs	22,000	49,700	85,900	212,000	384,384
Yearly Cost Per Pupil	$32.22	$19.57	$12.40	$10.68	$12.92
Cost Per Pupil Hour	$0.206	$0.109	$0.075	$0.058	$0.073

1/ The year 1989 was selected, since at that time the Centers will have been in operation ten years and operating at near capacity.

2/ Capital costs, training and Technical Assistance have been amortized over a 25-year period.

3/ Equipment costs have been amortized over a 10-year period.

centers and vice versa. This is due to the economies of scale inherent in a larger facility. Table III-6 presents a breakdown, also by center as well as the total overall program, of costs according to major categories. In terms of capital costs, including training and technical assistance, the per pupil cost at Cachicadan is 4.4 times that of Trujillo; in the case of equipment costs per pupil, Cachicadan costs are 6.3 times greater; recurrent costs are 2.4 times as high; and the overall costs are three times higher.

During project implementation, the technical assistance advisors together with MOE counterparts will be searching for various means of lowering per pupil costs in the lesser developed sierra areas such as Cachicadan and Huamachuco. While it is doubtful that they could ever be lowered to make them truly competitive with urban area costs, it may be possible to make some suggestions for substitutions of equipment, teaching materials, etc. so that future rural area experiments would result in lowered costs.

ANNUAL PER PUPIL COST BREAKDOWN PER SERVICE CENTER (AND TOTAL)
(In U.S. Dollars)

	Capital Costs/ Student	Equipment Costs/ Student	Recurrent Costs/ Student	Total Costs/ Student
Cachicadan	8.21	4.80	19.21	32.22
Huamachuco	3.56	1.98	14.03	19.57
Pacasmayo	2.53	1.01	8.86	12.40
Trujillo	1.86	.76	8.06	10.68
Total (incl. MOE/VIII Region Costs)	2.43	1.04	9.45	12.92

IV. Implementation Arrangements

A. Executing Agency: Ministry of Education

1. Description and Structure

The Agency responsible for Project Implementation will be the Ministry of Education (MOE). In accordance with the Peruvian education reform goal of making education more responsive to local needs, the MOE in the last 5 years has undertaken an administrative reform which seeks to redistribute functions and decentralize operations. The structure of the administrative reform is briefly discussed below.

a. National Level

The responsibilities of the central office of the MOE at the national level are of a global nature, being normative in character and acting in an advisory capacity to the lower administrative levels. Exceptions are educational television, education research, and teacher training, which are centralized functions of an operational nature. Several councils have been established which act as advisory bodies to the Minister on questions of policy, as well as on the coordination of all educational activities within the country.

b. Regional and Zonal Levels

The country is divided into nine educational regions corresponding to specific geo-political areas, grouping several departments and provinces. Each region has been sub-divided into a varying number of zones, amounting to a national total of 33 zones at present. The essential function of the Regional Directorate is to operate the schools in the region, not including universities, adapting the norms established at the national level to the specific features of the area, through planning, direction, coordination and supervision of the educational activities as well as through administration of the personnel, physical and financial resources required for the operation. Zonal authorities constitute the subordinate level needed to operate the school system. The Project will be carried out in the Eighth Education Region (which includes the department of La Libertad, and portions of Ancash and Cajamarca). Education Service Centers will be established in one of the Eighth Region's five zones.

c. Local Level

The local level administrative unit is the Nucleo

Educativo Comunal (NEC) and operates in approximately 800 locations throughout Peru. Each of the NECs consists of a centro base (central school) offering at least all three cycles of basic regular education (grades 1-9), and the remaining schools in the NEC which offer pre-primary education and one or more of the first three cycles of basic regular education and other programs. The director administers and services all schools in the district. Each NEC has a Community Education Council which is responsible for organizing programs to meet the educational requirements of the NEC inhabitants, including the promotion and support of all formal and non-formal education activities. The council is headed by an educator selected among the members. Under this project, Education Service Centers will be established in four of the 117 NECs within the Eighth Region.

2. Administrative Organization and Responsibilities

a. National Level

The national level governmental structure which administers the education system is directed by the Minister of Education and a Vice Minister, both chosen and/or approved by the President. The Minister has a standing Consultative Committee comprised of high level MOE officials, usually at the Director General level. Both the Minister and Vice Minister have expressed great interest in the pilot program, and their continued interest and support will be important to resolve problems which may develop during implementation and to formulate policy decisions as to the replicability of the Service Center concept once operational experience is attained.

The "Junta Permanente de Coordinación Educativa" (JUPCE) is another of the more active consultive groups available to high level administrators in the MOE. The JUPCE committee is made up of representatives of all government ministries and has been established to assure the coordination of educational activities among the ministries and to provide the MOE with an up-to-date understanding of manpower trends and education requirements for various economic and social development programs. Through the JUPCE, other concerned Ministries (Agriculture, Health, etc.) will be kept informed and views exchanged on the Service Center experiment.

The Central Ministry is divided into five General Directorates (Pre-School, Basic Education, Basic Labor and Professional Training, Higher Education, (excluding universities) and Extension Education), which provide operational guidance to all MOE

formal and non-formal education activities. These directorates are not expected to participate directly in project implementation. The two central level ministerial divisions which will be most involved with project implementation are the "Instituto Nacional de Investigación y Desarrollo de la Educación" (INIDE) and the Sectoral Planning Office (OSPE).

INIDE is a decentralized unit of the MOE under the supervision of the Vice Minister and is generally responsible for research, curriculum and materials development, and in-service teacher training programs within the education system. INIDE's involvement in the project will be in the areas of research and teacher training. INIDE is considered a capable and committed division of the MOE.

OSPE is the central authority of the MOE for coordinating education planning with national planning and supervising the decentralization of the educational planning functions. Its role under the project will be largely related to project evaluations and the planning of the introduction of Service Centers to other regions of Peru. It will also participate in the selection of MOE personnel for training programs. OSPE has shown increasing interest in U.S. assistance and has made good use of past A.I.D. support. The Mission's relationship with OSPE in carrying out other educational activities has been excellent. All central MOE divisions which will participate under the project are considered to be capable of fulfilling their responsibilities. Figure IV-1 indicates the central organization of the MOE.

b. Regional Level

The Eighth Education Region will manage day to day operations of the project from its headquarters in Trujillo. The four participating NEC's have been chosen from one region in order to facilitate project administration and control. The Eighth Region, with its coastal and sierra mix and varying socio-economic conditions, offers the diversity needed for the pilot, experiment program.

Principal organizational divisions of the regional offices are the following: Directorate; Inspection; Planning; Legal; Administration; Personnel and Records; Public Relations; and Pedagogical Norms. The following table shows the distribution of staff within the Eighth Region.

Eighth Education Region Staffing

	Total	Directorate	Inspection	Planning	Legal	Administration	Personnel & Records	Public Relations	Pedagogical Norms	Other 1/
Trujillo Office	216	8	24	10	4	56	42	5	45	22
Zone No. 82	94	3	9	5	2	27	24	3	21	0
Zone No. 83	70	2	6	5	2	18	19	3	11	4
Zone No. 84	94	3	8	5	2	29	23	3	17	4
Zone No. 85	83	3	10	5	2	19	22	3	15	4
Total Region	557	19	57	30	12	149	130	17	109	34

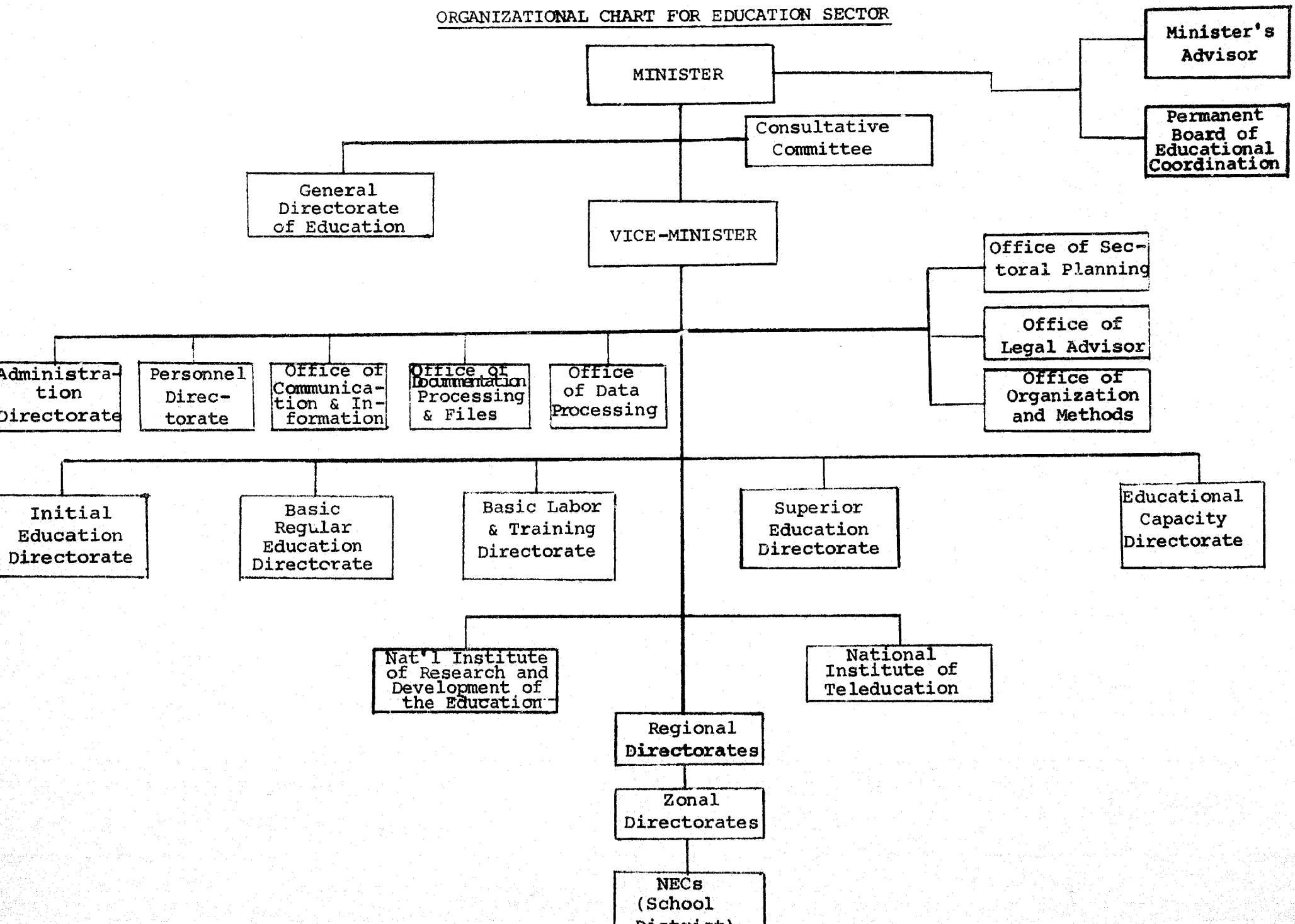
1/ Includes literacy program and library personnel.

The responsibilities of the Eighth Region in the project will include: (i) maintaining contact with the four selected NECs under the project; (ii) establishing training programs for the personnel to be assigned to each center; (iii) monitoring the construction and equipping of the Service Centers; and (iv) working with the technical assistance team in the design of operational procedures for the Service Centers and in the evaluation of Service Center operations. Regional officials will coordinate activities with OSPE and INIDE personnel participating in the project.

The structure of the regional office, its staffing, and resources are considered adequate to fulfill these functions. The technical assistance component of the project is intended to augment the Regional Offices' capacities, particularly in the areas of educational research/evaluation; cost analysis, science and prevocational education, school administration and teacher training.

FIGURE IV.1

ORGANIZATIONAL CHART FOR EDUCATION SECTOR



c. Local Level

The four Education Service Centers to be established under the project will operate within the existing NEC structure (see Figure IV-2). Each Service Center will be directed by a Center director who shall be responsible to the NEC director and the centro base director. The NEC director is responsible for overall NEC management and is selected by the Ministry of Education. Each NEC director is responsible for ensuring active community participation in the NEC process as well as the general management functions of planning, coordinating, controlling, and evaluating programs for the NEC. In this process each NEC director receives technical and administrative support from the Regional and Zonal Offices and as result of this coordinates actions with other NECs in the zone and region. The present directors of the four participating NEC's actively support the Service Center concept as a potential solution to the problem of limited availability of educational materials and equipment.

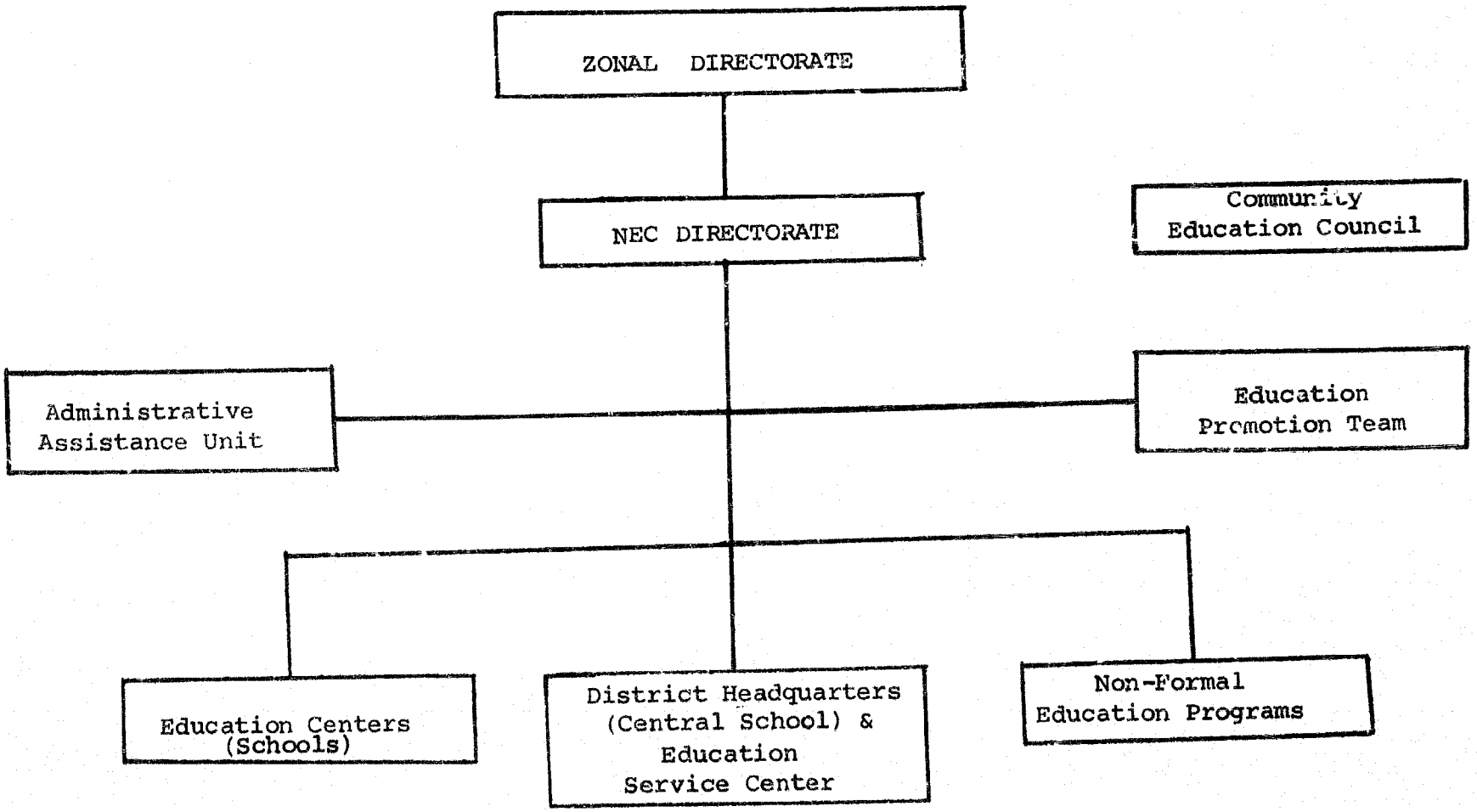
The Community Education Council functions as an advisory group to the NEC director and helps institutionalize community participation in the NEC operation. It helps advise the NEC director on program standards, criteria, and policy and assumes responsibility for promoting community involvement in NEC operations. Members of the Council serve for three year terms with approximately one-third of the Council rotating every year. The views of participating communities in the design and operation of Service Centers will be articulated through the Council.

The NEC Education Promotion Team is the unit in charge of technical program design, execution, and evaluation. It is responsible directly to the NEC director for ensuring that educational policies are adapted to local conditions, and that school programs benefit the community. Each team is made up of four professional educators; a supervisor and three subordinates in curriculum education extension and orientation and guidance. Under the project these teams will be responsible for helping: (i) to organize and carry out contemplated training programs for Service Center personnel; (ii) to determine the curriculum content; (iii) to assure that the educational materials produced at the Centers are distributed to the schools in the NEC; and (iv) to collect evaluation data.

The final staff office, the Administrative Assistance Unit, is in charge of providing administrative planning support to the NEC and management of material and financial resources. Under the project the team will be responsible to the NEC director for planning resource allocation, budgetting and

FIGURE IV-2

ORGANIZATIONAL STRUCTURE OF NUCLEO EDUCATIVO COMUNAL (NEC) SCHOOL DISTRICT



maintenance of NEC facilities. It is generally staffed by an Administrative Planning Officer, Secretary, and Maintenance Supervisor.

3. Managerial/Administrative Considerations and Conclusions

The MOE as the implementing agency has the authority for proper implementation of the project. As a result of the education reforms undertaken by the GOP in the early 1970's, the MOE to date has successfully implemented the nuclearization process in over 800 school districts throught the country. The objective of this process has been to decentralize the Peruvian educational system for purposes of rendering more relevant educational services to the communities. While administrative decentralization is a slow and difficult process, it is clear that the GOP intends to continue in its stated direction of decentralizing the educational process, providing more services to both urban and rural communities, and allowing for greater community input into the planning process.

Since the inception of the nuclearization process the MOE has given full support and commitment to the program. The proposed pilot Service Center Project represents an extension of this program which may be replicated in other areas should the project demonstrate success. While the project entails some risk due to its innovative nature, it is clear that the problem which the project addresses needs to be resolved. The means to provide better educational materials and facilities will have to be found if the reform goals are to be achieved. The Service Center concept is thought to be a partial solution to the problem of financing such costs while keeping management of the process at the community level. In addition to Ministry level support, the project is expected to help answer the demands by NEC level personnel for greater resource control, more support for teacher training programs, and more services to the community in non-formal educational areas. The provision of these elements will help achieve MOE decentralization efforts and provide greater authority and responsibility at the NEC level. The MOE's commitment to decentralization greatly enhances the administrative feasibility of the program.

In the Mission's view, the MOE has the capacity to carry out the proposed Project. The MOE has considerable experience in administering external assistance, including previous grant projects from USAID, West Germany, and Holland and loans from such sources as the World Bank and Hungarian government. Liason between the central MOE, the Eighth Region, and the selected NEC's appears adequate. While the MOE will require assistance in certain areas, it is anticipated that technical assistance and training provided

by the project will be able to strengthen the MOE and its subordinate offices in administrative and technical areas in which their present capability is weak. The present grass roots structure to reach the target population is already in place in the form of the NEC. Managerial considerations at the local level dictate that the NEC director, centro base director and Service Center director will be the key persons in the establishment and operation of Education Service Center. As noted in the Social Analysis, a clear delineation of respective roles and reponsibilities of each will be necessary in the early project phases in order to minimize rivalries. Long term technical assistance advisor will thus be expected to assist MOE personnel in defining and drafting administrative guidelines for Service Center Operations.

Finally, it is expected that the critical element of community support for the facilities will be achieved through the NEC structure. If the educational reform is to achieve true participation, community members must be motivated and given channels for input into the educational process. Such participation will not be easy in many rural communities where the ability to participate in making decisions has not previously existed or where members have felt that such input was ignored in the past. However, the participation of the community in the educational process is necessary if the project is to obtain a long-term viability and develop community skills. The degree of community support attainable will be a key element to be evaluated in the course of project implementation.

B. Implementation Plan

1. Schedule of Actions and Targets

The following table indicates the principal activities to take place under the project and their timing. The schedule begins with the signature of the Project Agreement which should occur within two months of project approval. As can be seen, the project has an estimated 48 month life. All of the capital aspects of the Project (construction and equipping of the four pilot service centers) should be completed by the second year. Two full operating years of the service centers will be necessary to fully evaluate service center operations. Evaluations will be scheduled annually during the first 24 months of the Project (principally to review implementation progress) and semi-annually thereafter.

2. USAID Monitoring Arrangements

Mission monitoring for the project will reside in the Human Resources Development Division of the Office of Sectorial

TABLE IV-1

IMPLEMENTATION SCHEDULE AND EDUCATION SERVICE CENTER

Activity	0	6	12	18	24	30	36	42	48
1. Sign Project Agreement	X								
2. Fulfill Condition Precedent	——								
3. Construction/Remodelling									
a. Contract Engineering Consultants	—								
b. Preliminary Sketches		—							
c. Final Design and Bid Documents			—						
d. Receipt of Bids and Contract Award			—						
e. Construction			——	——	——				
4. Technical Assistance (by Specialty)									
a. Learning Resource Center			——	——	——	——	——	——	——
b. Vocational Education			——		—		—	—	
c. Research and Evaluation					—	—	—		—
d. Education Economist			—		—	—	—		—
e. Educ. Specifications		—							
f. Architectural/Engineering		—							
5. Equipping of Service Centers (including bidding, placing of orders, and delivery)			——	——	——				
6. In-Country Training					——	——	——	——	
7. U.S. and Third-Country Training				——	——				
8. Service Center Operations					——	——	——	——	——
9. Evaluation			X		X	X	X	X	X

and Technical Services. The Human Resources Development Officer will be designated as the Project Manager. He will draw upon other Mission offices for assistance as appropriate. For example, a local-hire engineer will assist in the monitoring of the construction component of the project, the Executive Office will participate in project contracting, the Controller's Office will review vouchers for disbursement, and the Program Office will coordinate project evaluations.

3. Contracting and Procurement Procedures

Procurement of technical services and commodities and arrangements for participant training will be administered directly by A.I.D. utilizing standard A.I.D. procurement procedures. Direct procurement is indicated in this instance in view of the variety of commodity imports required. While the counterpart entity has extensive experience with local procurement, it has little capacity to carry-out off-shore procurement. Moreover, the GOP procedures for obtaining approval for foreign exchange transactions, even when financed externally, are cumbersome and time consuming. GOP contracting for foreign technical assistance is further constrained by present GOP austerity measures which require complicated procedures to waive GOP imposed salary limitations. In view of these factors, direct procurement will be undertaken in the interest of time and costs.

Construction services (including new construction and remodelling) will be contracted directly by the MOE. The magnitude and logistics of the local construction indicate that only local firms will be interested in the work, and international bidding is not anticipated. The MOE has sufficient experience in the contracting of local construction services and, accordingly, will carry out this activity.

C. Evaluation Plan

Many aspects of the project are highly quantifiable and allow for effective utilization of the Agency's Project Evaluation Summary (PES) format. Annual evaluations, beginning twelve months after the first Project Agreement is signed, are scheduled for the first two years; the evaluations for the following two years, while the Service Centers are in operation, will occur semi-annually. The first three evaluations will measure progress toward the achievement of the planned outputs, as per the logical framework. When the outputs are not being met, the evaluations will serve to identify causal factors and address their implications. The fourth evaluation, scheduled during October-December 1980, after the four Service

Centers have been in operation for one year, will represent the first formal attempt at measuring progress toward the end of project status (EOPS), indicated as necessary for successful achievement of the project purpose. This in depth evaluation will also examine and assess the continuing validity of project assumptions, and if some are no longer valid, discuss the implications for the project's contribution and ultimate replicability.

The evaluations will be undertaken jointly by USAID and MOE project personnel, with the participation of National Planning Institute (INP) officials at their discretion. Eighth Region personnel, including Service Center staff, as well as technical assistance personnel will help collect baseline and evaluation data and prepare reports and other material to be used for the evaluations. Provisions for the evaluations, including GOP participation, will be included in the annual Project Agreements. The project evaluation reports prepared by technical assistance personnel and the AID/MOE formal evaluations will be combined in a series of documents to be circulated within the GOP in order to diseminate project results.

Once the Service Centers are in operation, two kinds of evaluation strategies will be employed, given the experimental and pilot nature of the project. First, formative evaluations will gather data and help supply feedback to Service Center staff which should help in carrying out necessary changes and modifications. The data for the formative evaluations will be obtained from surveys measuring receptivity to and impact of the program, number of users, and utilization of the facilities. The feedback could include: (i) recommendations about job responsibilities for Service Center administrators and teachers and about governing policies for NEC and Center staff; and (ii) logistic advice on the determination of course schedules and shop, lab, and library usage, and ways to establish courses designed to appeal to significant numbers of potential Service Center users.

The more formal or summative evaluations will seek to determine the actual accomplishment and social benefits derived from the four Service Centers. These evaluations will seek to assess: (i) the extent to which the existence of the Service Center results in improved education, particularly in those areas with a clear orientation toward work and productive skills; (ii) the extent to which students and adults become proficient in basic skills; and, (iii) the degree to which community members use and perceive the Service Center not only as an additional school but as a center for community related activities.

Evaluations of the performance of the Service Centers will be made through the use of matched comparisons. Under this

research design, the four NEC's with Service Centers will be compared with four NEC's in similar circumstances and geographical locations but which do not have a Service Center. These comparisons will permit AID and the MOE to assess community benefits, and school outcomes. Data for the summative evaluations will be gathered from participant observation and structured interviews. Throughout the project accurate cost data records will be kept in order to carefully document student costs.

D. Conditions, Covenants and Negotiation Status

The proposed project has been jointly developed by the USAID and GOP personnel of the Ministry of Education, based on the feasibility studies which have been studied and evaluated by both parties. Policy contact has been maintained with the Minister and the Vice Minister of the MOE, both of whom actively support the experimental program. There are no outstanding negotiation issues. In the judgment of the Mission, the project is ready for formal approval and implementation. The Project Agreement should be executed within two months of project approval by AID/W.

Prior to initial disbursement of funds, the grantee shall be required to submit to USAID satisfactory evidence that the GOP counterpart funds will be provided in a timely manner. Prior to disbursement of funds to finance the construction of each Service Center, satisfactory evidence will be required that the MOE has obtained free and clear title to the Service Center site and that an adequate maintenance plan has been prepared for each Center.

The grantee shall covenant to provide as its cash contribution to the project the equivalent of $735,000. The GOP will also covenant to provide adequate funding for the Service Centers' operations and maintenance (including equipment replacement expenses) beyond the project's final completion date. Finally, the grantee shall covenant to establish job responsibilities for each Service Center Director which will permit him to carry out his functions effectively. These responsibilities will clearly delineate his relationship with both the NEC and centro base directors.

Plans of Operations to be prepared in conjunction with each of the three Project Agreements will, at the appropriate stages, detail and contain the evaluation and implementation plans, and the research design.

Ministerio de Educación

Lima, 05 MAYO 1977

OF. N° 1161 ME-OSPE-77.

Señor.
LEONARD YAEGER.
Director a.i. de la Agencia
para el Desarrollo Internacional.
CIUDAD.

Estimado Sr. Yaeger:

Por el presente, me es muy grato referirme al proyecto de "Centrales de Servicios Educacionales", preparado por las oficinas técnicas de este Ministerio con la ayuda de la Agencia para el Desarrollo Internacional (A.I.D.). Este proyecto está directamente apoyando los objetivos de la Ley de Reforma Educativa, especialmente al Título IV, Nuclearización; al Título XXIV, sobre Construcciones y Equipamiento Educativos; y al Título XXIX, sobre Racionalización del Gasto y Utilización Optima del Equipo Instalado. Por esta razón, el proyecto satisface una alta prioridad del Ministerio y tiene también la prioridad necesaria dentro del Plan Nacional de Desarrollo. En vista de la importancia que conlleva este proyecto, el Ministerio de Educación solicita a la Agencia para el Desarrollo Internacional de los Estados Unidos de Norteamérica su participación, ofreciendo su asistencia financiera al Gobierno del Perú.

Los resultados del Estudio de Factibilidad, recientemente realizado, han demostrado claramente que el tipo de proyecto más razonable en este momento es un esfuerzo piloto y experimental que involucre a un número relativamente pequeño de Núcleos Educativos Comunales (NEC). Este esfuerzo piloto tiene como propósito de comprobar con los mínimos recursos necesarios la contribución potencial de las Centrales de Servicio a la solución de la falta de cobertura adecuada de servicios en algunas áreas del país.

Basados en los resultados de este estudio, el Ministerio de Educación está interesado en implementar el esfuerzo piloto en la VIII Región de Educación, con sede en la ciudad de Trujillo, y considera que el número apropiado de NEC para este esfuerzo piloto es 6, con 4 en la Libertad, 1 en Ancash y 1 en Cajamarca. De los 6, 4 estarían en la serranía rural y 2 en la costa urbana. Este número nos daría una muestra representativa de la Octava Región Educativa y, en cierto modo, también representa las variaciones que se encontrarían a nivel nacional.

Ministerio de Educación

III.

La naturaleza altamente experimental y piloto del proyecto, en nuestro juicio, nos sugiere que una donación antes que un préstamo -idea original-, sería lo más apropiado para el proyecto. Consecuentemente, el Ministerio de Educación solicita a la A.I.D. se sirva dar especial consideración a la posibilidad de una donación financiera. Los compromisos actuales del Ministerio de Educación, para atender otros préstamos internacionales vigentes, nos harían difícil obtener la aprobación del Gobierno Peruano, porque esto significaría asumir deudas externas adicionales. Sin embargo, en el caso de que el proyecto tuviera resultados positivos, el Ministerio de Educación tendría mucho interés de conseguir un préstamo de la AID posterior a la donación para la expansión de Centrales de Servicio.

El personal de las oficinas técnicas de este Ministerio, involucrados en el proyecto, coordinadas por la Oficina Sectorial de Planificación, están preparados para trabajar en estrecha colaboración con personal de sus oficinas en el desarrollo del mismo.

Me complece de veras el desarrollo e implementación de este proyecto y creo que él conlleva un potencial capaz de hacer una contribución significativa a los esfuerzos de la Reforma Educativa Peruana.

Aprovecho de esta oportunidad para reiterar a usted las seguridades de mi consideración más distinguida.

Atentamente,

MINISTRO DE EDUCACION

OTTO ELESPURU REVOREDO
General de Brigada EP.
Ministro de Educación

HDD/Lmp.

AGENCY FOR INTERNATIONAL DEVELOPMENT
UNITED STATES AID MISSION TO PERU
C/O AMERICAN EMBASSY
LIMA, 1 PERU

TELEPHONE: 286200 CABLE: USAID/LIMA

CERTIFICATION PURSUANT TO SECTION 611 (e) OF

THE FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, Gerald Gower, the principal officer of the Agency for International Development in Peru, having taken into account among other factors the maintenance and utilization of projects in Peru previously financed or assisted by the United States, do hereby certify that in my judgment Peru has both the financial capability and the human resources capability to effectively maintain and utilize the project: EDUCATION SERVICE CENTERS.

Gerald F. Gower
Acting Director
USAID/Peru

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The Country Checklist has already been prepared and submitted with the On-Farm/Water Management Project.

6C(2) - PROJECT CHECKLIST

Listed below are, first, statutory criteria applicable generally to projects with FAA funds, and then project criteria applicable to individual fund sources: Development Assistance (with a sub-category for criteria applicable only to loans); and Security Supporting Assistance funds.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? IDENTIFY. HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT.

1. App. Unnumbered; FAA Sec. 653(b)

   (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure plus 10%)?

   (a) Through AID's yearly Congressional Presentation. This Project was included in the FY 1978 Congressional Presentation.

   (b) Yes.

2. FAA Sec. 611(a)(1). **Prior to obligation in excess of $100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?**

   (a) Yes.

   (b) Yes.

3. FAA Sec. 611(a)(2). **If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?**

   No such legislative action expected to be necessary.

4. FAA Sec. 611(b); App. Sec. 101. **If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 5, 1973 (replaces Memorandum of May 15, 1962; see Fed. Register, Vol 38, No. 174, Part III, Sept. 10, 1973)?**

   Not applicable.

5. FAA Sec. 611(e). **If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?**

   Yes. (see Annex III)

6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate?	Regional and multilateral institutions have declined interest in the project.
7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	The Project will have no direct effect on these areas.
8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	AID funds will be used to finance technical assistance and commodities from U.S. universities and private enterprises.
9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.	No excess U.S. owned foreign currencies are available in Peru. A large portion of Project costs will be borne by the GOP (see Financial Plan).
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?	No excess U.S. owned foreign currencies are available.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(c); Sec. 111; Sec. 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?	The Project proposes to make educational services more accessible to students and adults in school districts containing predominantly disadvantaged populations.

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b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: [include only applicable paragraph -- e.g., a, b, etc. -- which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.]

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;

(2) [104] for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

(a) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;

(b) to help alleviate energy problem;

(c) research into, and evaluation of, economic development processes and techniques;

(d) reconstruction after natural or manmade disaster;

(e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(f) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

The project is designed to improve the quality of non-formal educatio programs and at the same time make Peruvian formal education more rel especially for the disadvantaged.

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(8) [107] by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.

c. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

The GOP's direct project contribution is well in excess of 25% of project costs. Fund's for the GOP's contribution will be requested by the Ministry of Education for inclusion in the GOP's national budget.

d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing?

No, Capital assistance component of the Project will be disbursed within 3 years. Technical assistance and evaluating expenditu will continue in the fourth year.

e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained worker-power in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.

The project encourages development of democratic social institutions to the extent that it requires active local community participation. The outputs of the project will includ the training given to present and future workers in the country.

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.

The project directly supports the GOP's education reform efforts by providing greate access to better educational facilities for students and adults within Peruvian communiti By encouraging active community participatior in the education process the project directly contributes to civic education and training in skills required for effective participatic in governmental and political processes.

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g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(e); Sec. 211(a)(1)-(3) and -(8). Does the activity give reasonable promise of contributing to the development: of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?

The project paper provides information on the economic and technical soundness of the project. The project is specifically designed to contribute to the development of educational institutions thereby enhancing social progress.

h. FAA Sec. 201(b)(6); Sec. 211(a)(5), (6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position.

The total amount of local costs under the project is so small as to have negligible effect on the U.S. economy and insignificant adverse effect on the U.S. balance of payment

2. Development Assistance Project Criteria (Loans only)

a. FAA Sec. 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within U.S.

(This is a grant project.)

b. FAA Sec. 201(b)(2); 201(d). Information and conclusion on (1) capacity of the country to repay the loan, including reasonableness of repayment prospects, and (2) reasonableness and legality (under laws of country and U.S.) of lending and relending terms of the loan.

c. FAA Sec. 201(e). If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds $100,000, has country submitted to AID an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner?

d. FAA Sec. 201(f). Does project paper describe how project will promote the country's economic development taking into account the country's human and material resources requirements and relationship between ultimate objectives of the project and overall economic development?

e. FAA Sec. 202(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources?

f. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

3. Project Criteria Solely for Security Supporting Assistance

FAA Sec. 531. How will this assistance support promote economic or political stability?

This is not a Security Supporting Assistance project.

4. Additional Criteria for Alliance for Progress

[Note: Alliance for Progress projects should add the following two items to a project checklist.]

a. FAA Sec. 251(b)(1), -(8). Does assistance take into account principles of the Act of Bogota and the Charter of Punta del Este; and to what extent will the activity contribute to the economic or political integration of Latin America?

(a) Sound monetary and fiscal policies coupled with significant economic and social reforms designed to restructure Peruvian society along more equitable lines, indicate Peru's compliance with Alliance for Progress goals. The relatively small assistance to this project is not expected to have a significant impact on the economic and political integration of Latin America.

b. FAA Sec. 251(b)(8); 251(h). For loans, has there been taken into account the effort made by recipient nation to repatriate capital invested in other countries by their own citizens? Is loan consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress (now "CIPCIES," the Permanent Executive Committee of the OAS) in its annual review of national development activities?

(b) This is a development grant project.

LOGICAL FRAMEWORK MATRIX

ANNEX IV

GOAL	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS LINKING PROJECT PURPOSE TO GOAL
To make the education system more responsive to the needs of the poor majority of Peruvians.	1. Level of school enrollment nationally increases from 68.5% to 75% of school age population (5-19). 2. Student repeater rate nationally decreases from 8.7% to 5.0% for student population in basic regular (cycles I & II) and primary education. 3. Number of years to complete EBR (grades 1-9) nationally decreases from 20.4 (1962-70) to 16. 4. Level of urban unemployment and underemployment nationally for population 14-19 decreased from 27% (1973) to 20% and from 29% (1973) to 22%. 5. Program content being developed at local levels and reflecting local needs. 6. Increased community participation and support of activities in education.	1. MOE education data. 2. MOE education data. 3. MOE education data. 4. Ministry of Labor data. 5. On site observations. 6. On site observations and records of School Board (CONSEJOM) meetings.	1. The GOP is committed to the concept of developing relevant education programs for disadvantaged Peruvians. 2. Sufficient resources will be forthcoming from the GOP and other donors to implement educational programs in areas where disadvantaged populations reside. 3. Costs of operating Service Centers manageable for GOP. 4. National level planning office committed to decentralization educational process and responsive to local level education demands. 5. Planning and budgeting of education programs at local levels will result in meeting local community education needs.
PURPOSE To test on a pilot and experimental basis the ability of Education Service Centers to increase the quality, availability and use of education services for students and adults in selected school districts containing predominantly disadvantaged populations.	1. 3 types of Education Service Centers in operation in 4 school districts serving a student and adult population of approximately 27,000. 2. Following services being used by students and adults in 4 school districts: a. libraries b. job skill training workshops c. natural and physical science labs d. school gardens/agriculture plots e. primary classrooms/art/science/workshop f. health care (nurse) g. audio visual support h. production & distribution teaching material i. in service teacher training j. physical education k. community development 3. 20% improvement in test scores for subjects offered at Service Centers. 4. 10% decrease in unemployment rates for school graduates attenting Service Centers 5. 10% increase in number of students attending Service Centers aspiring to or chosing technical careers at completion grades 1-9 (EBR). 6. 6 Peruvians with specialties in vocational education, basic regular education and school administration in carrying out additional training of Service Center staff with minimal outside assistance. 7. 116 Service Center personnel (90 teachers and 26 administrative/support) operating 4 Service Centers with minimal outside assistance. 8. Evaluation of 4 Service Centers and their impact on Education Services	1. On site observation. 2. MOE on site records. 3. MOE records. 4. Evaluation and follow up data. 5. Evaluation and MOE data. 6. On site observation. 7. On site observation. 8. Evaluation report.	ASSUMPTIONS LINKING OUTPUTS TO PROJECT PURPOSE 1. NEC administrative staff will cooperate to improve educational services offered at Centers. 2. The private costs of transportation and student opportunity costs will not be a deterrent to using Service Centers. 3. A commitment exists to maintain Centers and replace equipment as needed. 4. Sufficient resources will be forthcoming to pay salaries of Center staff. 5. Communities will participate in the development and operation of Service Centers. 6. Individual schools will make their facilities available to students from other schools in exchange for use of Service Center facilities.

OUTPUTS	1979	1980	1981	MEANS OF VERIFICATION
1. 4 Education Service Centers constructed and equipped.	4	-	-	1. On site observation.
2. Following services and facilities provided:				2. On site observation a-k.
a. libraries	4	-	-	
b. job skill training workshops	29	-	-	
c. natural & physical science labs	8	-	-	
d. school gardens/agric. plots	2	-	-	
e. primary classroom/art/science/workshop	12	-	-	
f. health care (nurse)	4	-	-	
g. audio visual support	4	-	-	
h. production & distribution teaching material	4	-	-	
i. in service teacher training	4	-	-	
j. physical education	4	-	-	
k. community development	4	-	-	
3. Trained Service Center personnel				3.
a. instructional	90	-	-	a. MOE records & on site observation.
b. administrative/support	26	-	-	b. " "
4. MOE personnel in VIII Education Region & in Lima capable of upgrading training for Service Center personnel.	6	-	-	4. MOE records & on site observation.
5. Evaluation and Research reports dealing with:				5. Evaluation & reporting documentation.
a. effectiveness of services	1*	2	2	
b. student costs	1*	2	2	
c. coverage/usage	1*	2	2	
d. community support	1*	2	2	
e. self financing/revenue generation	1	2	2	
f. replicability	-	-	1	

ASSUMPTIONS LINKING INPUTS TO OUTPUTS

1. Sufficient number of qualified candidates are available for training.
2. A construction capability exists within Peru to ensure completion of the Service Centers within the stated time period.
3. Construction materials continue to be available at reasonable prices.
4. Prices for school equipment remain reasonable.
5. Foreign expertise is available to assist with the adaptation of the Service Center concept to Peruvian conditions.
6. AID and MOE staff take active part in evaluation of pilot project.

INPUTS		
A.I.D.	For detailed breakdown and year of contributions see Financial Analysis.	
1. Technical Assistance personnel long term - 36 months short term - 27 months		1. Signed Contracts.
2. International Training short term - 46 months		2. Training records.
3. Commodities		3. Purchase orders.
4. Other Costs -Construction (includes designs & supervision) -In country training -Teaching materials & publications -Evaluation Total		4. Voucher reports.
GOP		
1. Personnel -Service Center instructional (new) 2 yrs. -Service Center administrative/support 2 yrs. (new) -MOE & Eighth Region for participant training		1. MOE project records.
2. Commodities		2. MOE vouchers.
3. Other Costs -Construction -Land & existing infrastructure -Materials 2 yrs. -Utility, supplies, general expenses 2 yrs. -Maintenance 2 yrs. Total		3. MOE vouchers, title papers, project records

EQUIPMENT LISTS AND COSTS

Following are sample lists of equipment for several of the workshops and laboratories to be located within the Service Centers. These lists are for illustrative purposes and do not include all of the equipment for each facility. Technical assistance personnel working with MOE officials will be responsible for final selection of the equipment and will be performed in the early stages of project implementation. Furniture requirements have not been included.

Equipment List

AUTOMOTIVE AND GENERAL MECHANICS

5 oil cans
5 welding masks
10 pair pliers
2 sets boxed end wrenches 10-32
2 sets open end wrenches
1 pair round pincher
1 set boxed end wrench 6-17
2 sets of double end wrenches
1 tool and die set
1 set drills
2 sets of screw drivers
5 metal vises
5 pairs plumber pliers
5 pairs tinman's scissors
2 pair lateral tin nippers
2 pair round nose pliers
2 pair plain nose pliers
2 pair tongs
5 sets cross cut files
2 sets files
2 hack saws
5 saw arches
1 18 teeth saw blades (set of 20)
1 24 " " " (set of 100)
1 32 " " " (set of 20)
1 locksmith hammer 2000 gr.
1 " " 800 gr.
2 " " 500 gr.
5 " " 200 gr.
20 metric rulers 600 mm.
10 metric tapes
5 carpenter's square 200 mm
1 " " 500 mm
2 " " 300 mm
10 combination carpenter's square
2 pairs of point compasses
2 set of letters A - Z
1 set of numbers
2 curve cut tinman's scissors
2 french wrenches
10 triangular files
10 file handles

20 kg. electrodes ϕ 2 mm
20 kg. " ϕ 2.5 mm
2 sets screw-drivers
1 base to sharpen drills
1 emery wheel support
1 tube bender
2 hand drill, 2 speeds 0-13 mm
2 tube cutter
3 oxygen bottles 10 m^3
4 acetylene bottles 200 Lt^3
1 oxyacetylene welding equipment
1 soldering set
1 soldering torch
1 metal lathe
1 drill press
2 three phased motor 0.9 hp. 220 V 1800 RPM
1 set arc welding equipment 250 amp.
120 jacks and receptacles
1 set of drills
10 sets of pliers
5 sets of files
1 set of open end wrenches
1 set of boxed end wrenches 10-32
15 sets of screw drivers
500 m. electric cord 2x22.
100 m. electric cord 2x18
500 m. electric wire No. 22
100 " " " No. 18
100 " " " No. 14
10 tinman's scissors
5 diagonal cutters
10 kg. tin welding
2 pliers 220 mm
2 plain nose pliers
5 round nose pliers
5 parrot nose pliers
5 linemans pliers 145 mm
2 " " 180 mm
15 cutting pliers 145 mm
5 file (knife type) 200 mm
2 sets of files
10 locksmith hammers

5 metric rulers 60 cm
5 soldering iron tips
1 set hammer and brush

PHYSICS

5 hand saws
2 kg. electrodes ϕ 2 mm
2 kg. electrodes ϕ 2.5 mm
5 folding tables
50 receptacles
20 electric bell switches 710
20 light sockets
50 plugs for sockets 2x6 A
60 fuses
40 bakelite push-buttons
20 electric bells
30 switches with fuses (26A)
100 pins or nogs
100 commutator
10 cutting pliers 160 mm
2 hand grinders
3 ohmmeters
5 soldering iron, pistol type (90-150)
2 sets screw drivers
5 sets of files
5 sets of wrenches
1 boxed end wrench set
1 set open end and closed end wrench
5 C-clamps 150 mm
5 C-clamps 200 mm
5 C-clamps 300 mm
120 coloned pins or nogs
20 thermometers 0-100°C
20 " 5-200°C
5 electric bell
1 hypodermic needle 10 cc
10 thermos bottle
5 C-clamps 500 mm
500 m.electric cord 2X22
300 m.electric cord 2X18
500 m.electric wire No. 22
300 m.electric wire No. 18
200 m.electric wise No. 14
1 vise
2 hand grinder
1 electric heater
5 rheostat 3000
20 ohmmeters
5 analytic scale

CHEMISTRY

10 microscopes
1 sterilizer
1 oxygen bottle 10 m^3
1 extinguisher 6 kg
1 manual centrifugal machine
25 mohr nippers
40 hoffman nippers
100 petri capsules 60X15
40 thermometers 20 to 110°C
20 graduated bylinders
10 graduated pipettes 2ml in 0.1
20 " " 10ml in 0.1
5 boxes filter paper 10 cm
5 boxes filter paper 15 cm
15 covers
50 squares metalic cloth with asbestos
10 gas spatulos
10 thermos
20 flat botton flash 500 ml.
10 flat botton flash 1000 ml.
20 destilation flash 250 ml.
20 evaporation capsules 125 ml.
20 evaporation capsules 250 ml.
200 test tubes 10X100 mm.
100 test tubes 15X160 mm.
100 funnels (60)
40 funnels (120)
5 hoffman condensors
20 graduated cylinder of 50 ml.
20 " " 250 ml.
10 " " 500 ml.
20 pippets of 5 ml. in 0.05
3 manual cork perforators
20 porcelain crucibles
10 kg. glass rods of ϕ 5 mm.
20 porcelain capsules 75 ml.
10 porcelain capsules 120 ml.
20 C-clamps for burette
5 glass-tubes 12 mm.
5 " " 7 mm.
5 " " 10 mm.
10 sets of 4 aerometers
20 mortars pestles
20 bunsen burner
10 test lamina stad
10 pairs of pliers for test tube
1 drier
30 Ehrlenmeyer flashs of 100 ml.
30 " " 250 ml.

20 Erlermeyer flashs 500 ml.
20 " " 1000 m.
20 separating funnels
20 test tube clamps
10 magnifying glasses 8X

CHEMICALS

aluminun sulfate
ammoniun cloride
ferrous ammonium sulfate
barium cloride
barium hydroxide
anhydrous sodium carbonate
sodium tre-sulfate
stannus cloride
[illegible]
hydrochloric acid
sulfuric acid
nitric acid

HOME ECONOMICS

2 juice squeezer
2 chopping blocks
6 frying pans with covers (various sizes)
10 pots with covers (various sizes)
2 trays
5 aluminum tray
8 sets of bowls
5 skimmers
5 kitchen ladle
3 colanders
1 tea-pot
5 aluminum large forks
24 spoons
24 forks
12 small spoons
12 knives
1 sink 18 X 35"
1 coffee-pot
5 sets cookie cutters
5 sets pastry tubes
1 scale (20 kg. capacity)
1 gas stove
1 refrigerator
30 drawing tables
30 stools
6 drawing sets
30 sets of triangles
10 sets of patters for (sewing and dress making)
12 multiple use scissors
12 embroidering scissors
20 graduated wooden rulers 60 cm.
6 tables
4 puppets
5 metric tapes
5 sets of needles
5 boxes of pins
2 model markers
4 wooden ironning boards
4 manual sewing machines
2 semi-industrial sewing machines
2 weaving machines 200 needles, Model 810
[illegible] machines for [illegible] weaving
1 hand loom machine
4 hand looms 24"
4 hand looms 4 way 24
1 hand loom 8 way 140 cm
1 iron

BUSINESS EDUCATION CLASSROOM

27 typewriters (33 cm.)
3 typewriters (63 cm.)
30 typing tables
15 calculators (four basic operations - manual and/or electric)

AGRICULTURE

1 set wrenches (multiple use)
100 m. hose 1/2 kg.
12 shovels (plane shovels)
4 pitch forks
4 scissors
4 pruning knives
4 sickles
4 saws 20"
2 axes
1 set of files
4 cane-knives
4 pick-axes
1 scale 20 kg. with accesories
12 hoes
12 rakes
1 complete set of wood working tools
1 sledge hammer

GENERAL SHOP

6	16 oz. ball pein hammers
6	12 oz. ball pain hammers
6	tin snips straight
4	tin snips, curved
4	hand drills 3/8" capacity
4	hand braces 10"
2	cabinet scraper
4	T bevel squares, 1 each 6" and 8"
6	10 point hand saws 24"
4	5 1/2 point rip saws 26"
8	coping saw frames
6	hack saw frames
6	pipe wrenches, 1 each 10", 14", 18"
2	handy seamer
8	C-clamps, 4"
12	C-clamps, 6"
4	black smith tongs, 1 each 1/2"
2	compass saw 12"
12	file cards and brushes
2	24" level
4	planes 9"
4	planes 11 1/2"
4	planes 14"
4	block planes
10	assorted cold chisels 3/8" to 1"
6	hand groovers, 1 ea. No. 0,2,4
8	rivet sets, 1 ea. No. 3,4,5,6
8	pocket snips
6	crescent wrenches 8"
4	crescent wrenches, 1 ea. 10" and 12"
12	6" steel scales
24	12" steel rules
8	ring scratch awls
4	assorted prick punches
4	assorted center punches
6	brad awls
2	nail set, 12 assorted sizes
2	8" outside caliper
2	8" inside caliper
4	6" outside calipers
4	6" inside calipers
4	6" dividers
2	6" wing divider
8	6" try squares
4	8" try squares
2	10" try square
8	common pliers
8	common pliers
2	24 x 16 rafter square
2	24 x 16 steel square
6	4" screw drivers
6	6" screw drivers
4	8" screw drivers
4	12" screw drivers
2	36" circumference rule
2	36" steel scale
2	24" steel scales
2	12" combination square set
2	6 x 2 x 1 combination india oil stone
4	india oilslips, medium
2	brace counter sink 3/4"
2	sets - auger bits, sizes 4 to 16
2	No. 1 expansion bit
2	No. 2 expansion bit
6	screw driver bits assorted for brace
20	hand chisels, 2 ea. 1/4",3/8", 1/2"
42	assorted files, 10" with handles
12	assorted wood rasps, 10" with handles
6	16 oz. nail hammers
8	13 oz. nail hammers
4	32 oz. engineers hammers
4	40 oz. blacksmith hammers

ELECTRICITY

16	electric soldering frons
16	electric soldering guns
2	sets - allen wrenches
2	24" level
2	cable cutter
6	assorted cold chisels
4	sets - needle files
4	offset screw drivers
2	pexto rivet set
8	sanding blocks
2	block plane
2	plane 9"
4	solderless terminal kits
2	tap and die set
2	sets - drills in metal box 1/16" to 1/2"
2	screw extractor set
2	combination india oil stone
2	sets - 1/4" letter stamps

2 sets - 1/8" letter stamps
2 sets - 1/4" number stamps
2 sets - 1/8" number stamps
6 tweezer sets
6 hex and spline key wrench sets
16 assorted metal & wood files with handles
4 files cards and brushes
2 sets - spade type wood bits
8 round chassis punches 1 each 3/4", 1", 1 1/16", 1 1/8"
2 square chassis punch 3/4"
16 No. 11 sloyd knives
8 4" crescent wrenches
4 6" crescent wrenches
4 8" crescent wrenches
2 lock plier
2 combination square
2 8" x 12" steel square
12 12" steel rules
2 T bevel square 8"
6 continuity testers
6 electrical testers
4 6" try squares
2 marking guage
56 assorted screw drivers various sizes and points
16 alignment screw drivers
16 screw holding screw drivers
4 tin snips straight
4 tin snips curved
2 8" compound lever snips
2 circular snips 7"
2 aviation snips
2 bolt cutters 3/16"
6 scissors 1 each 6",7",8"
4 16 oz nail hammers
2 No. 2 rubber mallet
2 2.1/2" x 6" wood mallet
6 ball pien hammers 1 each 8 oz., 12 oz., 16 oz.
4 plastic face hammers
4 hammers magnetic
4 hand drills
2 10 point hand saw
2 5.1/2 point hand saw
24 2" C-clamps
24 C-clamps, 6 each 4" and 3"
4 hacksaw frames
4 jewelers saws
8 wood chisels, 1 each 1/4", 1/2", 3/4", 1"
2 7 piece combination wrench set
4 nut driver sets
2 pairs - wing dividers 8"
16 6" diagonal cutting pliers
16 6" needle nose pliers
16 6 1/2" electrician side cutting pliers
2 nail set, 12 assorted sizes
16 assorted center, pin, and prick punches
8 ring scratch awls
2 No. 1 expansive bit
2 bit gauge
4 countersinks
2 sets - auger bits 4 to 16
4 braces 10"
2 compass saw
2 key hole saw
8 portable vises
2 small portable anvil

METALWORKING

6 blacksmith hammers 40 oz.
9 ball pein hammers 12 oz.
9 ball pein hammers 16 oz.
40 assorted 10" files with handles
30 assorted 8" files with handles
9 file cards
9 C-clamps 4"
9 C-clamps 6"
5 assorted blacksmith tongs
5 assorted pipe wrenches 10",15",18"
6 crescent wrenches 8"
3 crescent wrenches 10"
3 crescent wrenches 12"
5 steel rules 3 ft.
2 square 24" x 16"
2 combination set 12
5 dividers 6"
6 outside calipers 6"
3 outside calipers 8"
6 inside calipers 6"
3 inside calipers 8"
10 ring scratch awls
12 assorted center prick punches
15 assorted cold chisels
5 screwdrivers 4" blade
5 screwdrivers 6" blade

3 screwdrivers 8" blade
3 screwdrivers 12" blade
6 pr. pliers 6"
6 pr. pliers 8"
9 hack saw frames
18 steel rules 6"
18 steel rules 1 ft.
9 steel rules 2 ft.
12 pr. 7" circular tin snips
9 pr. 11 1/2" tin snips straight
5 pr. 12 1/2" tin snips circular
3 handy seamers
2 ea. - allen wrenches
5 ea. - wiss aviation snips
2 ea. - trammel points
2 ea. - hi-duty tube cutter
5 ea. - phillips screwdriver
5 ea. - powerlock steel tape
3 ea. - double square # 13-6" w/o bevel blade
2 ea. - electrician side cutting pliers
2 ea. - tongue & groove pliers
2 ea. - long chain nose pliers
2 ea. - handy saw

WELDING

12 scribers
1 10" half round file
2 file card and brushes
1 12" half round file
1 10" flat file
1 12" flat file
1 10" hand file
1 12" hand file
12 12" steel rules
2 10" bevels
2 10" try squares
1 V-block, clamp & aligning Rod
1 10" adjustable wrench
1 12" adjustable wrench
3 pr. - vise grips
1 proto tool panel complete with 20 assorted punches, 14 assorted chisels, 8 assorted screw extractors

6 pr. - gloves
3 vise grip welding clamps
3 double bit cleaning tools
3 two in one tools
6 hand shields
6 helmets
1 200 amp electrode
1 300 amp electrode
1 arc. torch
6 flint lighters
6 renewal flints
6 tip cleaner kits
6 silver solder kits
1 brazing flux
1 aluminum brazing flux
1 aluminum welding flux
5 cast iron flux
1 stainless steel flux
1 200 amp. ground clamp
1 300 amp. ground clamp
24 pr. - goggles
2 cutting assemblies
2 cutting tips
2 torch handles
2 size 1 welding tips
2 size 2 welding tips
2 size 3 welding tips
2 size 5 welding tips
3 combination wrench
1 set - allen wrenches
2 ball pein hammers 8 oz.
2 ball pein hammers 10 oz.
2 ball pein hammers 12 oz.
2 ball pein hammers (Stanley) 24 oz.
1 ball pein hammers (Stanley) 32 oz.
2 hack saws
1 welders C-clamps 5 3/4"
1 welders C-clamps 7 5/8"
2 regular C-clamps 6"
2 regular C-clamps 8"
6 welders aprons
10 assorted screw driver (6 Stand., 4 Phillips)
6 welders marking stones

AUDIO-VISUAL

In varying quantities:
movie projectors
overhead projector
reel to reel recorders
cassette recorders
slide projectors
movie screens
tapes
cassettes
film strip viewer

CARPENTRY

10 sets of 4 firmer-chisels
10 sets of 10-12 files
5 sets of pliers
10 sets of screw drivers
1 set of opened end wrenches
5 sets of drill bits
10 graduated tapes (2 m.)
10 iron planes No. 5
10 fluting planes
10 block planes 18x4
10 key hole saws
10 blades for saws
10 measuring gauges
10 folding ruters (2 m.)
10 belly braces
5 sets of belly brace bits
10 handsaws
10 compass saws
10 hammers 28 mm
5 graduated tapes (4 m.)
5 graduated rulers 600 mm
5 set squares 300 mm
5 combination carpenter squares
5 wood rasps
5 handles for files
5 coarse files
5 combination squares
2 point compasses
2 sets of spatula 30, 60 and 100 mm.
10 C-clamps 500 mm.
10 C-clamps 250 mm.
5 screwdrivers
3 countersinking bits
5 safety masks
5 plastic parts for safety masks
extension drill 15-40 mm.
10 gouge 16 mm
10 gouge 26 mm
2 electric drills 1/2"
screws and nails
1 box of chalk
2 hand grinders
5 levels
2 hand drills 3/8" 2 speeds
5 bench stones

Following is an exemplery list of science items that would be supplied to the general science laboratory:

A. Electrical devices:

1. Battery chargers
2. Coils
3. Incubators
4. Meters
5. Motors
5. Power supply units
6. Rectifiers
7. Rheostats
8. Switches
9. Transformers

B. Glass and porcelain ware:

1. Battery jars
2. Beakers
3. Bottles
4. Burettes
5. Capillary tubes
6. Crucibles
7. Flasks
8. Funnels
9. Microscope slides and cover slips
10. Mortars and pestles
11. Petri dishes
12. Pipettes
13. Stoppers
14. Vials
15. Watch glasses

C. Kits:

1. Electrical circuit
2. Electronic
3. Embedding
4. Meter sticks
5. Meters and gauges
6. Scalers
7. Thermometers

D. Models and display materials:

1. Anatomical models
2. Biological models
3. Collections (insect, rock, plant, etc.)
4. Embedded bilogicals
5. Skeletal mounts
6. Specimen mounts

E. Optical devices:

1. Binoculars
2. Lenses
3. Light filters
4. Magnifiers
5. Microsopes
6. Mirrcs
7. Prisms

F. Other laboratory equipment:

1. Cages
2. Cathode ray tubes
3. Clamps
4. Cloud chambers
5. Color apparatuses
7. Demonstration radio transmitters and receivers
8. Desiccators
9. Fire extinguishers (demonstration)
10. Germinating beds
11. Growing frames
12. Gyroscopes
13. Heat sources
14. Horsepower apparatuses
15. Insect mounting boards
16. Laboratory carts
17. Laboratory tables
18. Laser and Holographic equipment
19. Linear expansion apparatuses
20. Liter blocks
21. Magnets
22. Microtomes
23. Mock-ups
24. Nets
25. Optical benches
26. Photoelectric cells
27. Photometers
28. Planetaria
30. Pulleys

31. Pumps
32. Simple machine apparatuses
33. Spectrosopes
34. Steam generators
35. Sterilizers
36. Stethoscopes
37. Stoppers (rubber)
38. Tongs
39. Tubing (rubber or plastic)
40. Tuning forks
42. Van de Graaff generators
43. Vasculums

In establishing equipment costs for each of the basic types of facilities offered at the four Service Centers, the following average estimates were made:

Facility	Average Cost of Equipment
agriculture	$10,000
general shop	10,000
automotive and general mechanics shop	15,000
electricity shop	4,000
electronics shop	5,000
soldering, welding and sheet metal shop	6,000
carpentry shop	8,000
building trades shop	3,000
drafting classroom	3,000
business education classroom	6,000
printing shop	10,000
handicrafts shop	4,000
home economics shop	5,000
children's classroom/art/science/shop	3,000
general science lab	6,000
physics lab	6,000
chemistry lab	5,000
biology lab	5,000
health unit	1,000
audio visual unit	2,500
material reproduction unit	3,000
library	4,000
general classroom	1,500
cafeteria	4,500

These costs estimates will naturally be somewhat higher in Trujillo and Pacasmayo, and somewhat lower in Cachicadan and Huamachuco.

PROJECT TECHNICAL DETAILS: CASH FLOWS

ANNEX V-B,1

SUMMARY COST TABLE (4 SERVICE CENTERS AND MOE/VIII REGION)

	Category	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	TOTAL
I.	CAPITAL COSTS	1,399,750	545,350	44,900										1,990,000
	1. 4 Service Centers	1,399,750	535,350	34,900										
	2. MOE/VIII Region		10,000	10,000										
II.	TRAINING	53,500	61,200	50,300										165,000
	1. 4 Service Centers	43,500	49,200	42,300										
	2. MOE/VIII Region	10,000	12,000	8,000										
III.	TECHNICAL ASSISTANCE	120,250	96,625	103,125										320,000
	1. 4 Service Centers	105,250	86,625	93,125										
	2. MOE/VIII Region	15,000	10,000	10,000										
	Sub-Total (I-III)	1,573,500	703,175	198,325										2,475,000
IV.	COMMODITIES	258,350	128,650		38,000									425,000
	1. 4 Service Centers	258,350	128,650		38,000									
	2. MOE/VIII Region	-	-	-	-									
	Sub-Total (I-IV)	1,831,850	831,825	198,325	38,000									2,900,000
V.	RECURRENT COSTS		185,640	304,200	317,200	351,104	368,784	370,864	372,944	375,544	375,544	381,784	384,384	
	1. 4 Service Centers		178,500	292,500	305,000	337,600	354,600	356,600	358,600	361,100	363,100	367,100	369,600	
	2. MOE/VIII Region		7,140	11,700	12,200	13,504	14,184	14,264	14,344	14,444	14,444	14,684	14,784	
	No. Students			32,807	34,342	35,953	37,641	38,097	38,646	39,069	39,589	40,131	40,695	
	No. Student Hrs/Wk.			163,047	170,699	178,719	187,132	191,101	191,458	193,766	196,183	198,703	201,412	

Cost at Year Ten (1989)

$2,475,000 ÷ 25 = $99,000
425,000 ÷ 10 = 42,500
Recurrent Costs = 384,384
$525,884

Yearly Cost Per Pupil = $12.92
Cost Per Pupil Hour = $0.073

PROJECT TECHNICAL DETAILS: CASH FLOWS

CACHICADAN

	Category	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	TOTAL
I.	CAPITAL GOODS													
	1. Land, Esisting Infra-structure	20,000												
	2. Construction, Super-vision & A/E Designs	75,000	75,000											
	3. Teaching Materials	850	1,650	2,500										
	4. Evaluation	850	850	3,300										
II.	TRAINING													
	1. Ed. Administration	2,500	1,650	850										
	2. Vocational Education	2,500	2,500											
	3. In-Country Training	2,000	4,000	4,000										
III.	TECHNICAL ASSISTANCE	12,500	10,000	12,500										
	Sub-Total (I-II-III)	116,200	95,650	23,150										235,000
IV.	COMMODITIES													
	1. Lab. Shop Equip., Books	30,000	10,000		5,000									
	2. Furniture & Office Eq.	1,650	8,350											
	Sub-Total (IV)	31,650	18,350	-	5,000									55,000
	Sub-Total (I-IV)	147,850	114,000	23,150	5,000									290,000
V.	RECURRENT COSTS													
	1. Admin. Support		5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	
	2. Teachers (No.)		(3) 6,000	(5) 10,000	(5) 10,000	(5) 10,000	(5) 10,000	(5) 10,000	(5) 10,000	(5) 10,000	(5) 10,000	(5) 10,000	(5) 10,000	
	3. Materials, Maintenance		1,500	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	
	4. Replacement Equip.					2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	
	5. Training					2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	
	Sub-Total (V)		12,000	18,000	18,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	
	No. Students 1/			937	958	980	1,002	1,025	1,048	1,072	1,097	1,122	1,145	
	No. Student Hrs/Wk.			4,070	4,163	4,257	4,355	4,452	4,555	4,657	4,764	4,875	4,969	

At Year Ten (1989)

$235,000 ÷ 25 = $9,400
55,000 ÷ 10 = 5,500
Recurrent Costs = 22,000
$36,900

Yearly Cost Per Pupil = $32.22
Cost Per Pupil Hour = $ 0.206

1/ Assumes 2.1% growth rate per year.

PROJECT TECHNICAL DETAILS: CASH FLOWS

HUAMACHUCO

	Category	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	TOTAL
I.	CAPITAL GOODS													
	1. Land, Existing Infrastructure	30,000												
	2. Construction, Supervision & A/E Designs	115,000	95,000											
	3. Teaching Materials	850	1,650	2,500										
	4. Evaluation	850	850	3,300										
II.	TRAINING													
	1. Ed. Administration	2,500	1,650	850										
	2. Research/Evaluation	-	-											
	3. Science Education	1,500	1,500	2,000										
	4. Vocational Education	2,500	1,250	1,250										
	5. In-Country Training	2,000	4,000	4,000										
III.	TECHNICAL ASSISTANCE	14,000	12,000	14,000										
	Sub-Total (I-III)	169,200	117,900	27,900										315,000
IV.	COMMODITIES													
	1. Lab., Shop Equip., Books	40,000	14,000		6,000									
	2. Furniture & Of.Equip.	1,700	8,300											
	Sub-Total (IV)	41,700	22,300											70,000
	Sub-Total (I-IV)	210,900	140,200	27,900	6,000									385,000
V.	RECURRENT COSTS													
	1. Admin. Support		4,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	
	2. Teachers (No.)		(8) 16,000	(15) 30,000	(15) 30,000	(15) 30,000	(15) 30,000	(15) 30,000	(15) 30,000	(15) 30,000	(15) 30,000	(15) 30,000	(15) 30,000	
	3. Materials, Maintenance		6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	
	4. Replacement Equipment					2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	
	5. Training				2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	
	Sub-Total (V)		26,500	44,500	47,000	49,700	49,700	49,700	49,700	49,700	49,700	49,700	49,700	
	No. Students 1/			2,889	2,955	3,023	3,092	3,163	3,235	3,309	3,385	3,462	3,541	
	No. Students Hrs/Wk.			14,329	14,656	14,994	15,336	15,688	16,045	16,412	16,790	17,172	17,560	

Costs at Year Ten (1989)	
$315,000 ÷ 25 =	$12,600
70,000 ÷ 10 =	7,000
Recurrent Costs =	49,700
	$69,300
Yearly Cost Per Student =	$19.57
Cost Per Pupil Hour =	$ 0.109

1/ Assume annual growth rate of 2.3%.

PROJECT TECHNICAL DETAILS: CASH FLOWS

PACASMAYO

	Category	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	TOTAL
I.	CAPITAL GOODS													
	1. Land, Existing Infrastructure	40,000												
	2. Construction, Supervision & A/E Designs	245,000	200,000											
	3. Teaching Materials	1,500	3,500	5,000										
	4. Evaluation	850	850	3,300										
II.	TRAINING													
	1. Ed. Administration	2,500	1,650	850										
	2. Research/Evaluation	1,500	1,500	2,000										
	3. Science Education	1,500	1,500	2,000										
	4. Vocational Training	2,500	1,250	1,250										
	5. In-Country Training	3,000	6,000	6,000										
III.	TECHNICAL ASSISTANCE	30,000	24,000	26,000										615,000
	Sub-Total (I-III)	328,350	240,250	46,400										
IV.	COMMODITIES													
	1. Lab., Shop Equip., Books	52,000	16,000		12,000									
	2. Furniture & Of. Equip.	3,000	15,000											
	Sub-Total (IV)	55,000	31,000		12,000									
	Sub-Total (I-IV)	383,350	271,250	46,400	12,000									713,000
V.	RECURRENT COSTS													
	1. Admin. Support		10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	
	2. Teachers (No.)	(10)	20,000	(20) 40,000	(20) 40,000	(20) 40,000	(21) 42,000	(22) 44,000	(23) 46,000	(24) 48,000	(25) 50,000	(27) 54,000	(28) 56,000	
	3. Materials, Maintenance		6,000	12,000	12,000	12,000	12,000	12,000	12,000	12,500	12,500	12,500	13,000	
	4. Replacement Equipment					3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400	
	5. Training					3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	
	Sub-Total (V)		36,000	62,000	62,000	68,900	70,900	72,900	74,900	77,400	79,400	83,400	85,900	
	No. Students 1/			6,253	6,565	6,893	7,237	7,599	7,979	8,378	8,797	9,237	9,699	
	No. Student Hrs/Wk.			28,825	30,267	31,778	33,366	35,030	36,783	38,622	40,554	42,581	44,808	

At Year Ten (1989)	
$615,000 ÷ 25 =	$24,600
98,000 ÷ 10 =	9,800
Recurrent Costs =	85,900
	$120,300
Yearly Cost Per Pupil =	$12.40
Cost Per Pupil Hour =	$ 0.075

1/ 5% annual growth rate.

PROJECT TECHNICAL DETAILS: CASH FLOWS

TRUJILLO

	Category	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	TOTAL
I.	CAPITAL GOODS													
	1. Land, Existing Infrastructure	710,000												
	2. Construction, Supervision & A/E Designs	155,000	150,000											
	3. Teaching Materials	1,500	3,500	5,000										
	4. Evaluation	2,500	2,500	10,000										
II.	TRAINING													
	1. Ed.Administration	5,000	3,500	1,500										
	2. Research, Evaluation	1,500	1,500	2,000										
	3. Science Education	1,500	1,500	2,000										
	4. Vocational Training	2,500	1,250	1,250										
	5. Cost Analysis		2,500	2,500										
	6. Education Testing	2,500	2,500											
	7. In Country-Training	4,000	8,000	8,000										
III.	TECHNICAL ASSISTANCE	48,750	40,625	40,625										
	Sub-Total (I-III)	934,750	217,375	72,875										1,225,000
IV.	COMMODITIES													
	1. Labs, Shop Equip., Books	125,000	40,000		15,000									
	2. Furniture & Office Equipment	3,000	17,000											
	Sub-Total (IV)	128,000	57,000		15,000									200,000
	Sub-Total (I-IV)	1,062,750	274,375	72,875	15,000									1,425,000
V.	RECURRENT COSTS													
	1. Admin. Support		14,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	
	2. Teachers (No.)		(25) 50,000	(50) 100,000	(55) 110,000	(55) 110,000	(60) 120,000	(60) 120,000	(60) 120,000	(60) 120,000	(60) 120,000	(60) 120,000	(60) 120,000	
	3. Materials, Maintenance		40,000	40,000	40,000	45,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	
	4. Replacement equip.					8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	
	5. Training					5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	
	Sub-Total		104,000	168,000	178,000	197,000	212,000	212,000	212,000	212,000	212,000	212,000	212,000	
	No. Students 1/			22,728	23,864	25,057	26,310	26,310	26,310	26,310	26,310	26,310	26,310	
	No. Student Hrs/Wk.			115,823	121,613	127,690	134,075	134,075	134,075	134,075	134,075	134,075	134,075	

At Year Ten (1989)	
$1,225,000 ÷ 25 =	$49,000
200,000 ÷ 10 =	20,000
Recurrent Costs =	212,000
	$281,000
Yearly Cost Per Pupil =	$10.68
Cost Per Pupil Hour =	$ 0.058

1/ Assumes 5% growth rate.

Service Center Operations

In order to more concretely illustrate how the four Service Centers will operate, a hypothetical weekly schedule of activities was programmed for the Center in Cachicadan. (Real schedules for all four Centers will be prepared during project implementation.) Each grade in the three Cachicadan schools has a specific number of sections, or groups of students, which were assigned a number in order to be programmed into the scheudle. The hypothetical one week schedule which appears below is based on existing enrollment, and partly accounts for the Center's not being fully utilized. Additionally, the faculity was designed so as to permit growth in the student population for at least 10 years without having to build additional classrooms, shops or labs. Those weekly hours which are not assigned to a specific section of students in Cachicadan, would be available for community residents and students from other schools within the NEC who could use the Center on an intermittent basis.

Section Assignment by School and Cycle

		Cycle I				Cycle II		Cycle III & High School				
	Grade	1	2	3	4	5	6	7	8	9	10	11
School	1	1,2	3,4	5,6	7,8	9,10	11,12					
	2	13	14	15	16	17	18					
	3							19	20	21	22	23

Facility: Children's Classroom/Lab/Art/Music/Shop

Time	M	T	W	T	F	S
8 - 9	1	2	3	4	5	
9 - 10	1	2	3	4	5	
10 - 11	1	2	3	4	5	
11 - 12	6	7	8	13	14	
12 - 1						
1 - 2	6	7	8	13	14	
2 - 3	6	7	8	13	14	
3 - 4	15	15	16			
4 - 5	15	16	16			
5 - 6						
6 - 7						
7 - 8						

Facility: General Shop

Time	M	T	W	T	F	S
8 - 9	9	10	11	12	17	
9 - 10	9	10	11	12	17	
10 - 11	18	19	20	21	22	
11 - 12	18	19	20	21	22	
12 - 1						
1 - 2	23	5	6	7	8	
2 - 3	23	5	6	7	8	
3 - 4	16	9	15	10	11	
4 - 5	16	9	15	10	11	
5 - 6						
6 - 7						
7 - 8						

Facility: Home Economics

Time	M	T	W	T	F	S
8 - 9						
9 - 10	6	7	8			
10 - 11	23					
11 - 12	23	5				
12 - 1						
1 - 2	9	10	11	12	17	
2 - 3	9	10	11	12	17	
3 - 4	18	19	20	21	22	
4 - 5	18	19	20	21	22	
5 - 6						
6 - 7						
7 - 8						

Facility: Agricultural/Shop

Time	M	T	W	T	F	
8 - 9	18	19	20	21	22	
9 - 10	18	19	20	21	22	
10 - 11	9	10	11	12	17	
11 - 12	9	10	11	12	17	
12 - 1						
1 - 2					5	
2 - 3	6	7	8			
3 - 4	23					
4 - 5	23					
5 - 6						
6 - 7						
7 - 8						

Facility: General Science

Time	M	T	W	T	F	S
8 - 9	23					
9 - 10	23	15	16			
10 - 11	6	7	8			
11 - 12					5	
12 - 1						
1 - 2	18	19	20	21	22	
2 - 3	18	19	20	21	22	
3 - 4	9	10	11	12	17	
4 - 5	9	10	11	12	17	
5 - 6						
6 - 7						
7 - 8						