No.

[illegible]

[illegible] TO

SECONDARY [illegible] INSTRUCTIONAL [illegible] PROGRAM

BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR ASSISTANCE TO
SECONDARY EDUCATION INSTRUCTIONAL EQUIPMENT PROGRAM
IN
THE REPUBLIC OF THE PHILIPPINES

MAY 1990

JAPAN INTERNATIONAL COOPERATION AGENCY

PREFACE

In response to the request of the Government of the Republic of the Philippines, the Government of Japan has decided to conduct a Basic Design Study on the Project for Assistance to Secondary Education Instructional Equipment Program and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Philippines a survey team headed by Mr. Shizuo Matsubara, Chief, Chemistry Education Division, Research Centre for Science Education, National Institute for Educational Research from February 26 to March 11, 1990.

The team exchanged views with the officials concerned of the Government of the Philippines and conducted a field survey in Region V. After the team returned to Japan, further studies were made and the present report has been prepared.

I hope that this report will serve for the development of the Project and contribute to the promotion of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of the Philippines for their close cooperation extended to the team.

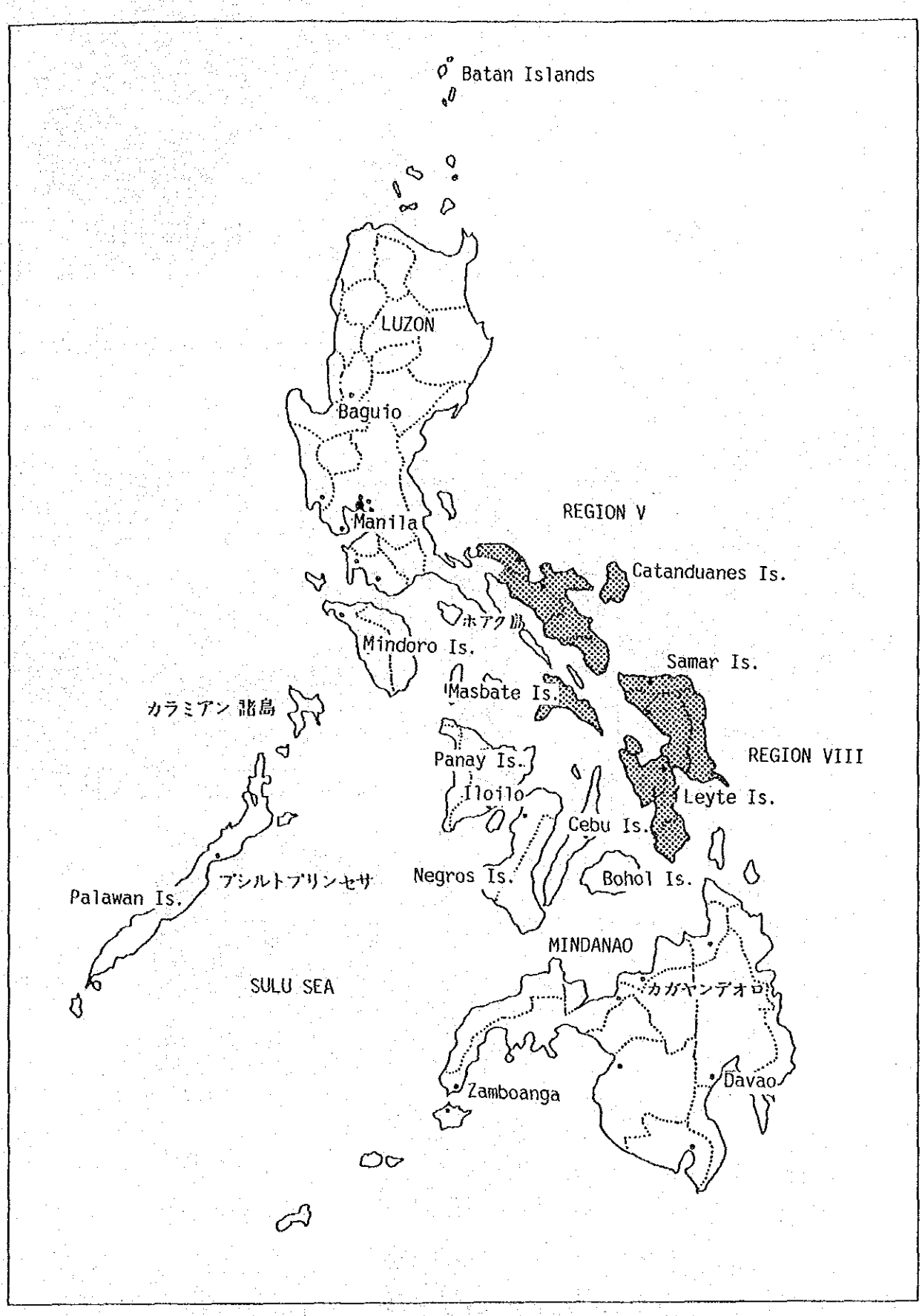
May 1990

Kensuke Yanagiya

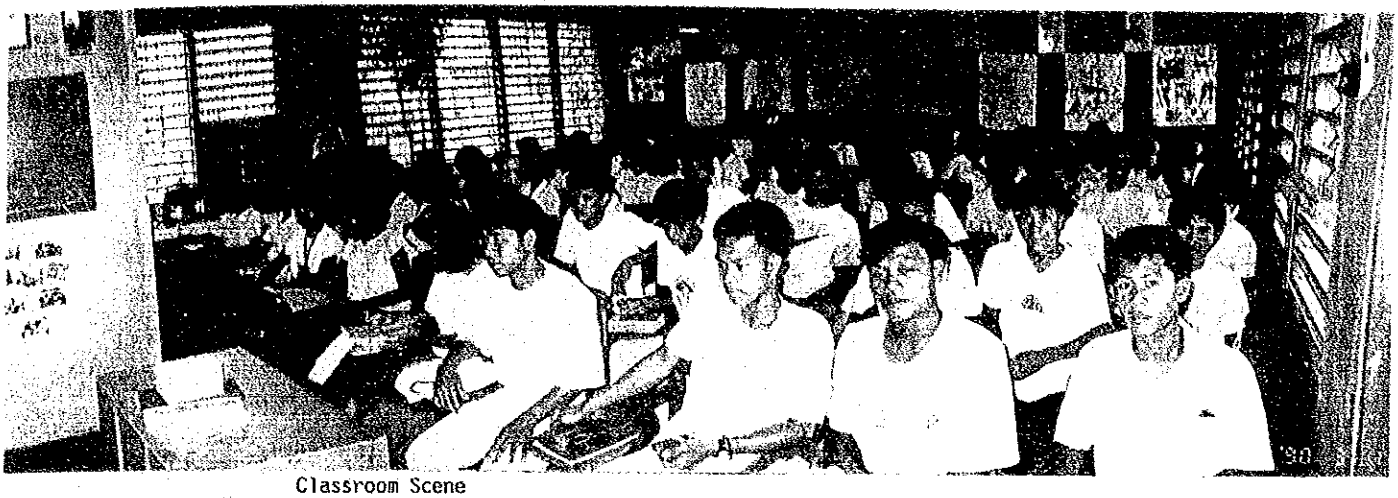
Kensuke Yanagiya

President

Japan International Cooperation Agency



LOCATION OF PROJECT AREAS

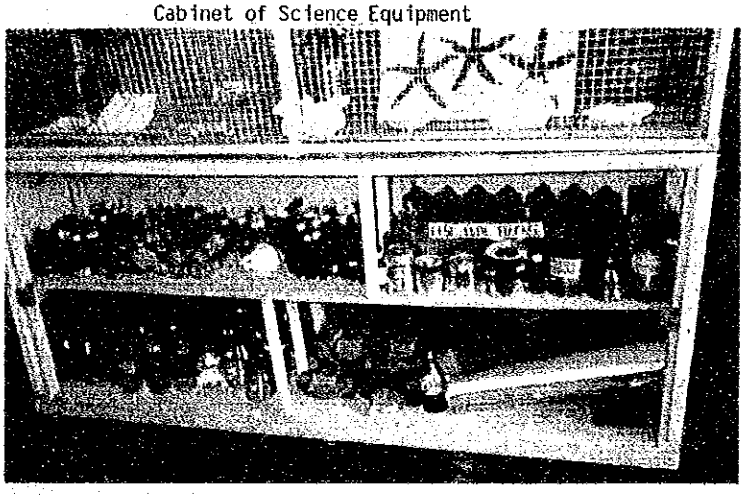


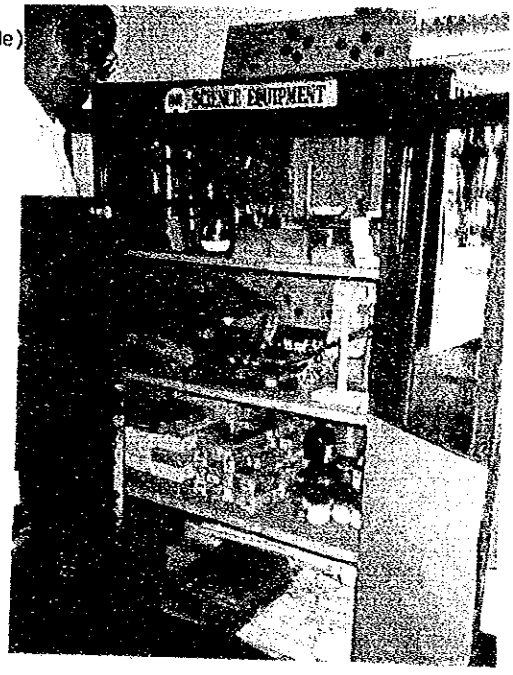
Classroom Scene

Sto.Domingo Muncipal High School ——→ Cabinet (inside)

San.Rorenzo Barangay High School

Cabinet of Science Equipment

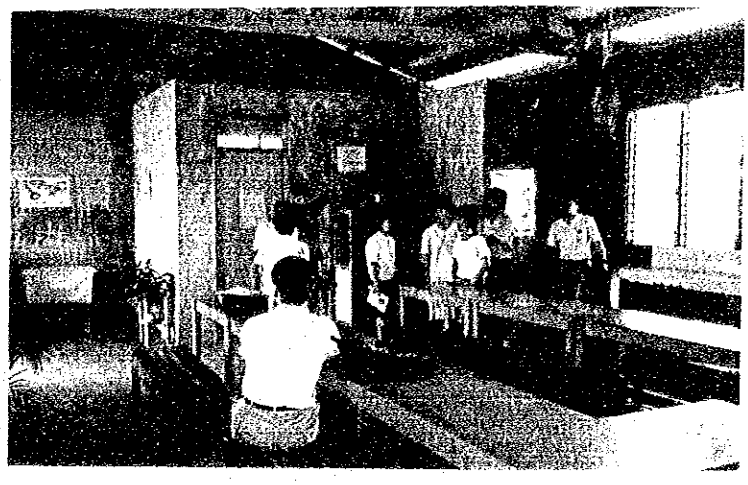


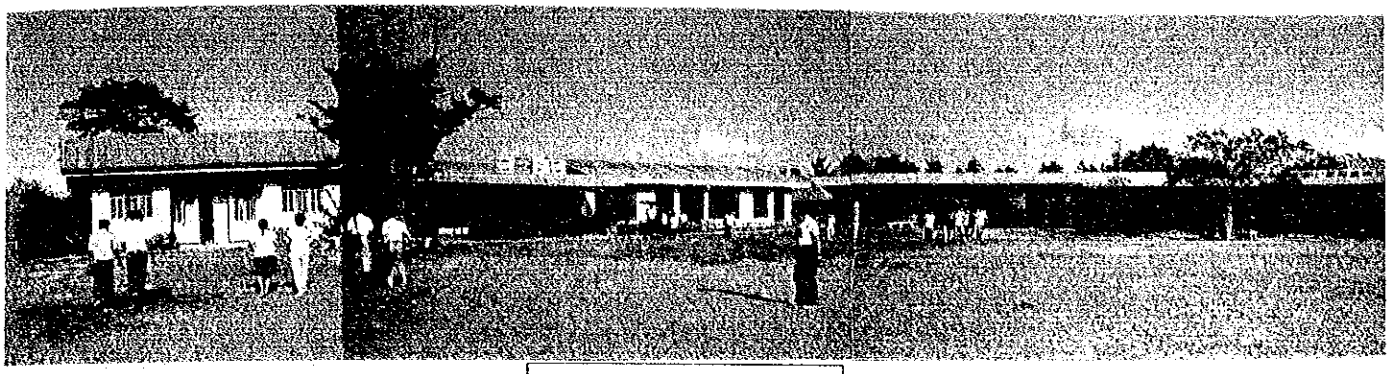


Science Room (outside view)

Cumadcad High School

Science Room (inside)

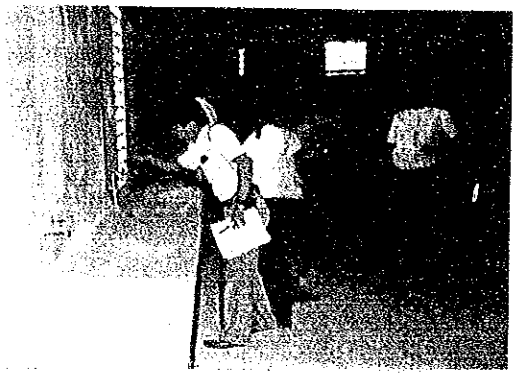




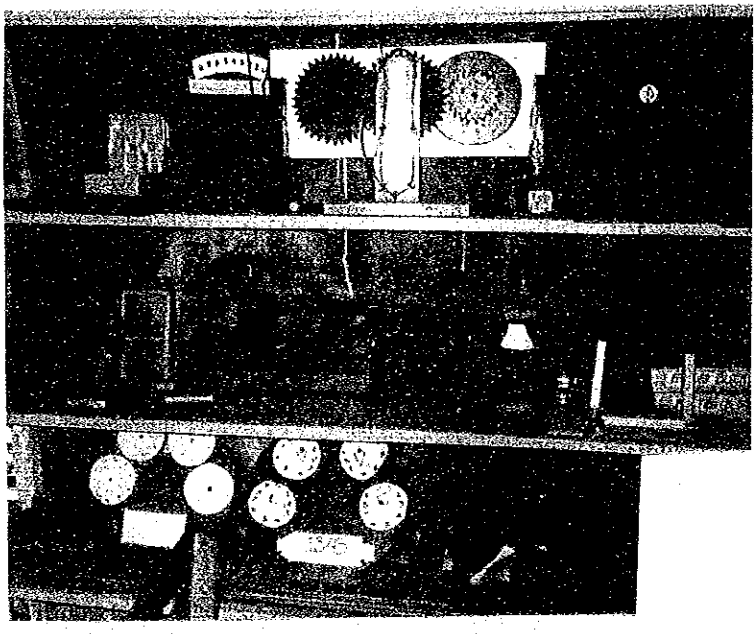
Science Room (outside view)

Pili National High School

Science Room (inside)



Science Room (under construction)

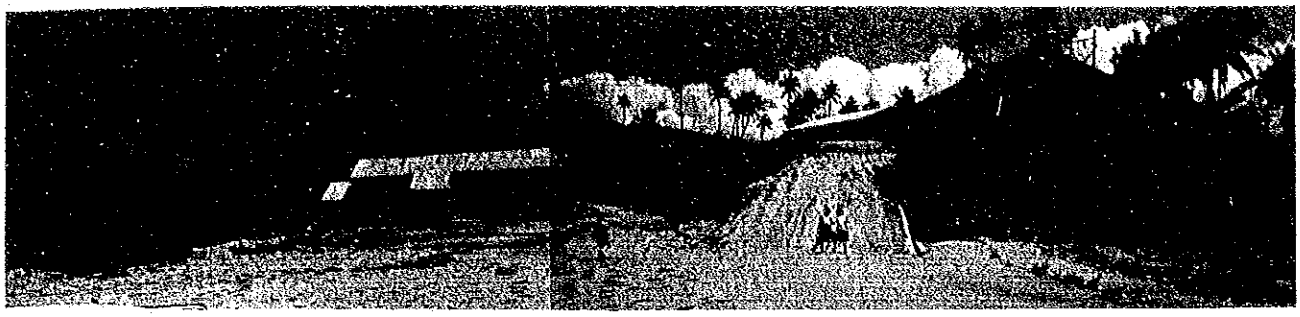


Science Room (equipment rack)

Science Room (outside view)

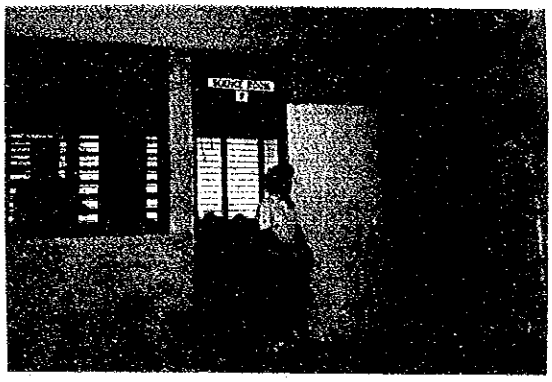
Carabanga High School

Science Room (inside)



Science Room (outside view)

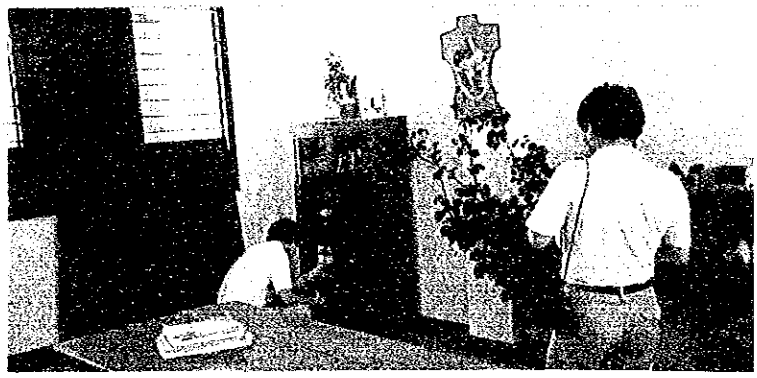
Anislag High School



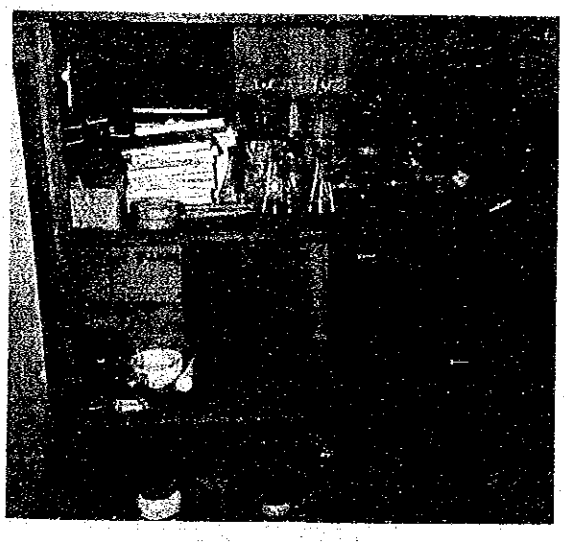
Science Room (entrance)

Science Room (inside)

Cabinet (inside)



Cabinet of Science Equipment



Cabinet (inside)

Signing of Minutes of Discussions

SUMMARY

SUMMARY

The world wide economic depression which was triggered by the second oil crisis beginning at the end of 1979 affected seriously the economy of the Philippines which had been constructed on a fragile socio-economic foundation. The Aquino Government, emerged in February 1986, formulated the Medium-Term Philippine Development Plan (1987-1992), and has been trying to correct social inequalities with her slogans of recovering democracy, developing rural areas, and reducing regional differentials. Based on the recognition that the "development of education and human resource" is essential for achieving the goals, the government has taken a policy to provide equal opportunity and improve the quality of education from the standpoint of the socially weak. Especially for the secondary education, Secondary Education Development Program (SEDP) was formulated aiming at improving the quality of secondary education and increasing of equal opportunities in education. The strategies for achieving the goals of SEDP are as follows.

i) Improvement of the quality of education
- Curriculum reform
- Provision and distribution of quality textbooks and teacher's manuals
- Provision of science and work education equipment
- Staff development
- Assistance to private secondary education
- Research studies on the improvement of the National College Entrance Examination
- Research studies on the improvement of previous barangay high schools

ii) Improvement of internal efficiency of the educational system
- Research studies on school location and distribution, financial scheme, teachers salaries and benefits, etc.
- Educational training of school administrators
- Strengthening of school management and evaluation system

iii) Expansion of access to the secondary education
- Construction of school buildings
- Education contracting scheme for private schools
- Introduction of other possible educational system

iv) Establishment of equity in education
- School building program for local high schools
- Equipment provision and technical assistance to disadvantaged areas

SEDP has been implemented since 1988 as follows.

- The government took budgetary measures to cover the operation and maintenance expenses for all the public high schools (3,414) including 2,681 schools newly nationalized in June, 1988.

- The teachers' salaries were raised by 20 percent on three occasions in 1987 and 1988. The government plans to continue raising at least up to ₱3,000/month by 1990 and standardize the basic salary.

- New curriculum textbooks are planned to be distributed in June 1990 all over the country. The new curriculum includes the following nine fields : English, Pilipino, Science (General Science, Biology, Chemistry, Physics), Mathematics, Social Studies, Values Education, Work Experience, Technology & Home Management, Physical Education/Health/Music.

- The teacher's manual of the new curriculum was prepared for the teacher's training program, and the selected teachers were given training for two weeks.

- Seminar Workshop for Equipment Preparation was established to standardize the minimum required instructional equipment that coordinate well with the new curriculum, and the list of standard instructional equipment and specifications for SEDP were prepared.

- The financial aids for the implementation of SEDP have started by Japan as well as such institutions as ADB, USAID, AIDAB, etc.

In the present state, the inadequacy of basic instructional equipment among secondary schools (hereinafter referred to as "high schools"), especially in the fields of Science and Technology & Home Management, is a constraint of upgrading the quality of education. The government has

recognized the provision of the instructional equipment in the said fields is an essential factor for the achievement of SEDP's goals, but the implementation of the program requires foreign aids due to the financial difficulties in the Philippines.

Under such circumstances, the government formulated the project for assistance to secondary education instructional equipment program for the purpose of requiring extensive use of experimental/training equipment in the said fields, increasing access to qualified education and developing students' curiosity on natural science and technology, and requested the Government of Japan for the grant aid for provisions of required instructional equipment. The content of the request is as follows.

1) Objective schools : Among national high schools, 105 schools each in Region V and Region VIII, totaling 210 schools selected by the selection criteria.

2) Objective fields : 8 subjects in 4 fields, including Science (General Science, Biology, Chemistry, Physics), Technology & Home Management (Industrial Arts, Home Economics), Mathematics and Music.

3) Objective equipment : Standard instructional equipment for SEDP selected by the said Seminar Workshop for Equipment Preparation in each objective field.

4) Delivery system of equipment : Delivery to each objective school undertaken by Japan side.

In response to the request, the Government of Japan decided to conducted a basic design study concerning the Project for Assistance to Secondary Education Instructional Equipment Program (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA). JICA dispatched a field survey team from February 26 to March 11, 1990. The survey team studied present conditions of the instructional equipment, facilities, levels of teachers, etc. in the high schools in the objective areas. Then after the analysis of the significance and appropriateness of the Project, the basic design of the Project was formulated.

Region V and Region VIII where the objective schools are located, are the regions where the performance of secondary education has been far

behind other Regions. Therefore, it is appropriate to take them as objective areas in the Project. As for objective schools, it is expected that taking a maximum number of 210 high schools selected by the selection criteria in the Project, will increase the effect of the project implementation, considering that one of the basic ideologies of SEDP is to provide equal opportunities of the secondary education.

At first the requested fields of the equipment were Science, Technology & Home Management, Mathematics and Music. It was confirmed, however, during the field survey that a priority should be placed on the equal distribution of the same equipment to the maximum number of schools rather than the distribution of more equipment to fewer schools, if the scale of the project is limited. The officials in the Philippines explained that the order of priority in the field should be Science, Technology & Home Management, Music and Mathematics. In this Project it was decided to include only the fields of Science and Technology & Home Management for which the needs of equipment provision are assumed to be highest, focusing on the equality in providing the equipment to the maximum number of schools.

The requested equipment are selected based on the standard list which coordinates with the new curriculum of SEDP. Therefore, in the Project, this standard list and specifications should basically be followed, but the equipment commonly used among the subjects to be shared.

As for the quantity of equipment, the request was at first given to provide the quantity necessary for experiments and training for 8 groups (five students in one group) in a class of average number of 40 students. However, according to the policy of providing the equipment to a maximum number of schools, the quantity for one school was reduced. The four groups (10 students in one group) per one class were planned, and thereby the required quantity of equipment was determined.

As for the delivery of the equipment, it was requested to deliver them to each school. But due to the large number of recipient schools, it seemed difficult to complete the delivery to all the schools within the period specified by the grant aid system of Japanese government. As the equipment provided in the Project require no installation work, it was determined that Japan side should be responsible for the delivery to the key stations and the delivery from the key stations to each school should be undertaken by the Philippine side. The transit warehouses located in 21 spots in the objective Regions which are used for the distribution of the textbook should be used for key stations.

The outline of the basic design of the Project is as follows.

1) Objective schools : 210 national high schools in Region V and Region VIII.

2) Objective fields : 6 subjects in 2 fields, including Science (General Science, Biology, Chemistry, Physics), Technology & Home Management (Industrial Arts, Home Economics).

3) Project equipment : Quantity of equipment are determined on the basis of a basic group of four (10 students per group) in one class. The content of the equipment is as follows.

Project Field	Equipment	Number of Items
General Science	Platform balance, Terrestial Globe, Aneroid Barometer, Magnetic Compass, etc.	14
Biology	Magnifier, Dissecting Set, Microscope and Human Anatomical Chart	4
Chemistry	Triple Beam Balance, Electrolysis Apparatus, pH Meter, Atomic Molecular Model Kit, etc.	20
Physics	Convex and Concave Mirror, Acceleration Recording Timer, Prism Set, Tuning Fork Set, etc.	25
Glass tool/ Consumables	Mercurial Thermometer,Graduated Cylinder, Beaker, Funnel, Pipette, Litmus Paper, Nichrome wire, etc.	33
Chemicals	Ethanol, Phenol, Yeast, Sodium Chloride, etc.	42
Industrial Arts	Hack Saw, Hammer, Tape Rule, Hand Plane, etc.	32
Home Economics	Sewing Machine, Casserole Set, Kitchen Knife Set, Measuring Spoons, etc.	19
TOTAL		189

4) Delivery system : Delivery to 21 key stations in the recipient Regions to be undertaken by Japan side and transportation from key stations to each school

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4) Delivery system : Delivery to 21 key stations in the recipient Regions to be undertaken by Japan side and transportation from key stations to each school to be undertaken by the Philippine side.

The project cost undertaken by the Philippine government to cover the transportation from key stations to each school and electricity work is estimated to be approximately ₱6.55 million.

The execution period of the Project is planned to be 7.5 months. The executive agency of the Project is Department of Education, Culture and Sports (DECS). The operation and maintenance of the equipment will be performed by each school. As all the public high schools were nationalized in 1988, the annual budget of each school including operation and maintenance expenses are financed by DECS.

The average amount of the budget for the annual cost of operation and maintenance per one national high school (including a previously local public high school) in Region V and Region VIII in 1988 was ₱59,000 and ₱66,000, respectively. As this budget will cover lighting and heating, equipment, and other operation and maintenance expenses, the amount to be allotted to the replacement of equipment and chemicals is extremely small. When the Project is implemented, annual cost increase of at least ₱4,550 per school is estimated. DECS is now trying to seek for a way to prepare a special budgetary measure for the recipient schools of SEDP including the Project. The estimated amount of increase is 10 to 20 percent of the average operation and maintenance cost per school at present. As the amount is not so large, it is very likely that the budgetary measure will be taken for this cost.

The purpose of the Project is to provide standard instructional equipment in the urgently required fields of Science and Technology and Home Management to many national high schools in Region V and Region VIII, where the development of secondary education has been far behind other Regions, and thereby realize efficient experiments and training, and improve the quality of education. The number of the objective schools in this Project is 210, which is 36.7 percent of the whole. The number of the recipient students is about 147,000, which is 49.8 percent. Thus, the effects of the improvement of the secondary education produced by the Project will be great.

It is convinced that the Project, playing a part of the comprehensive SEDP, will greatly contribute to the improvement of the secondary education of the Philippines by providing instructional equipment.

It is recommended that the Government of the Philippines should prepare a careful plan of the implementation and take the necessary budgetary measure in order to proceed smoothly and effectively the execution of the Project as well as the operation and maintenance thereafter.

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Appendix 1

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1. INTRODUCTION

1. INTRODUCTION

The confusion and stagnation of the international economy triggered by the second oil crisis beginning at the end of 1979 affected seriously on the economy of the Philippines whose socio-economic foundation had been fragile.

The Aquino government, emerged in February 1986 with her basic policy of the Medium-Term Philippine Development Plan for 1987 to 1992 and her slogans of recovering democracy, developing rural areas, and reducing regional differentials, has been trying to correct social inequalities. Based on the recognition that the "development of education and human resource" is essential for achieving the goals, the government has taken a policy tc provide equal opportunity and improve the quality of education from the standpoint of the socially weak. Specifically in secondary education, the Secondary Education Development Program (SEDP) was formulated aiming at improvement in the quality, access and equity in the secondary education system.

However in the present state, inadequacy of basic instructional equipment among secondary schools (hereinafter referred to as "high schools"), specifically significant inadequacy in the fields of science, technology & home economics is a constraint of upgrading the equality of education. The government has recognized the provision of instructional equipment in the said fields is an essential factor for the achievement of SEDP's goals, but the implementation of the program requires foreign aid due to the financial difficulties in the Philippines.

Under such circumstances, the government formulated the project for assistance to secondary education instructional equipment program for the purpose of requiring extensive use of experimental/training equipment in the said fields, increasing access to qualified education and developing students' curiosity on natural science and technology, and requested the Government of Japan for the grant aid for provision of required educational equipment. In response to this request, the Government of Japan decided to conduct a basic design study on the Project for Assistance to Secondary Education Instructional Equipment Program (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Philippines a basic design study team headed by Mr. Shizuo Matsubara, Chief, Chemistry Education Division, Research Centre for Science Education, National Institute for Educational Research, from February 26

to March 11, 1990.

The team confirmed the background of the request and objectives of the Project, explained the Japanese grand aid system to the government officials concerned of the Philippines, and confirmed the undertakings by both governments. After the field survey on the present state of instructional equipment, facilities, level of teachers etc. of high schools in the objective area was conducted, and the significance and appropriateness of the Project were evaluated, the basic design of the Project was formulated.

This report is the summation of the results of the above described study. Members of the study team, the survey itinerary, lists of members contacted and Minutes of Discussions are attached in the APPENDIX 1.1 - 1.4.

2. BACKGROUND OF THE PROJECT

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2.1 Outline

2.1.1 *Socio-economic Conditions*

The core of the industry structure in the Philippines had been a primary industry based on the traditional agriculture. But following the tendency of the times in 1950's, the promotion of industrialization was taken as one of the policies by the government. Then, as the protective tariff system was introduced, and the industrialization policy for import substitution in which the stress was placed on light industries was promoted successfully, the annual industrial production rate increased to 6 percent in the 1960's. Furthermore, in the 1970's, as a result of the more positive policies such as the introduction of foreign funds and import promotion, the average growth rate of GDP during this period reached 5.1 percent in the 1960's, and 6.2 percent in the 1970's.

The world wide depression, however, which was triggered by the second oil crisis beginning at the end of 1979, affected seriously the economy of the Philippines. The stagnation of the world economy caused a considerable jump in the prices of the imported goods including oil products and a drop in the international market prices of main export commodities of the country such as sugar, coconut oil, etc., increased the trade imbalance drastically. As the decreased foreign currency reserves reduced the amount of the imported materials and industrial parts, the industry of the Philippines, which is mainly composed of packing and assembly industries, was seriously damaged.

These conditions overshadowed for a long time the socio-economic activities in the Philippines which had been constructed on a fragile foundation, and the recovery of GDP which turned minus in 1984 has become an urgent matter to be solved. The Aquino government started in February, 1986 has introduced new policies protecting the economically weak, including correcting social inequalities, developing rural areas, fostering minor enterprises, etc. Specifically, it has formulated the Medium-Term Philippine Development Plan (1987-1992) starting in 1987, and is now in it's implementation stage. But the socio-economic conditions of the Philippines are still unstable with such difficulties as the accumulation of a huge external debt, and the stagnation of industrial activities in the country.

Although the country is under such conditions, the labor power in the

Philippines, which is of good quality and low-cost, is being highly evaluated by NIES countries with active economy. With these foreign capital flowing in, the industrialization based mainly on the assembly and processing industries is proceeding gradually, and providing new energy to the economy of the Philippines.

2.1.2 Medium-Term Philippine Development Plan (MTPDP)

The Philippines has carried out a series of six national development plans since 1967, unfolding positive economic development. But as a result of the above described international situations, it was forced to change and revise the goals to be achieved in the latter half of the period. MTPDP formulated by the Aquino government declares the following four policies emphasizing the relief to the socially weak.

(1) Alleviation of poverty
(2) Generation of more productive employment
(3) Promotion of equality and social justice
(4) Attainment of sustainable economic growth

Specifically attainment of sustainable economic growth is recognized as a necessary condition to pursue other three policies. From the recognition that human resources are the most important assets of any society, the effective harnessing of the country's tremendous human potential is therefore expected to steer the economy back to the path of recovery and sustainable growth.

2.2 Present State of the Education of the Philippines

2.2.1 Outline

The Philippines is an archipelago consisting of more than 7,000 islands, extending about 1,850 km from north to south and about 1,100 km from east to west. Its land area is around 300,000 square km with a population, in 1986, of about 56 million people. Eight major local languages and about 80 dialects are spoken in the Philippines. Pilipino is the national language. English, however, is extensively used as an official language in government and business correspondence, mass media and schools.

A bilingual education policy was adopted in 1974, under which English became the medium of instruction for all science, mathematics and technical courses and Pilipino the medium for all other subjects for all

grades in the elementary and secondary levels. The objective of the language policy is to unite the nation through the development of a national language, while maintaining the widely spoken English language.

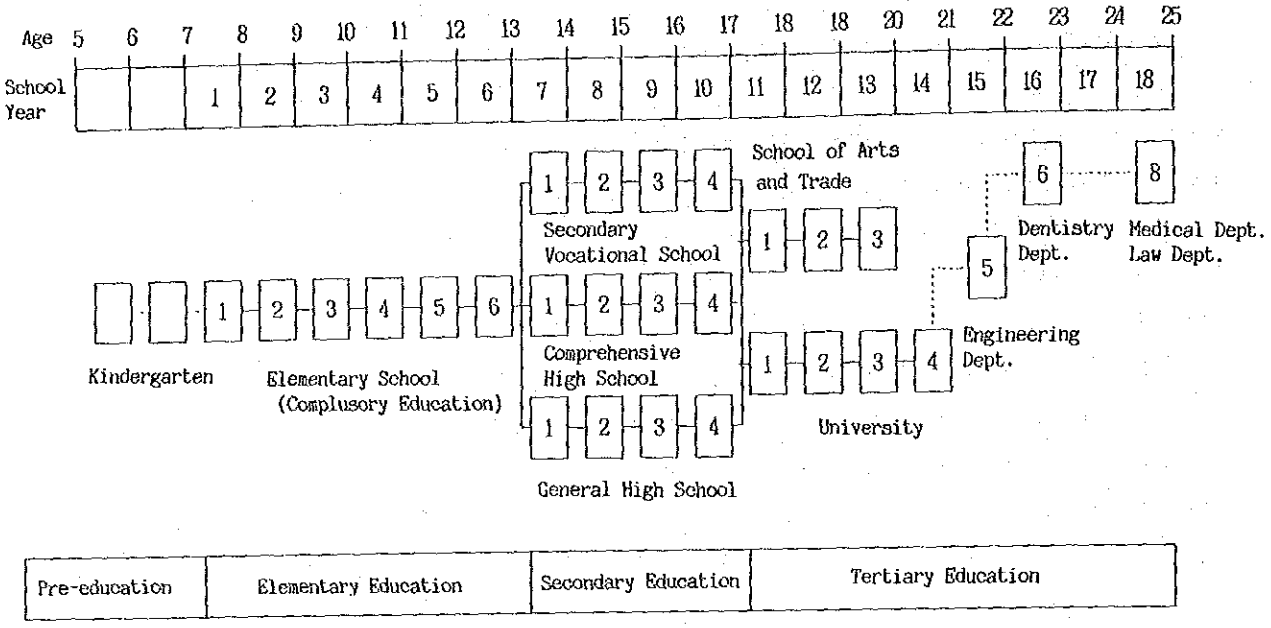
Free secondary education in the public sector was made mandatory under the 1987 Constitution, which stipulates that the Government will establish and maintain and support an adequate and integrated system of education relevant to the needs of the people and that free elementary and secondary education will be established and maintained.

2.2.2 Educational System and Administration

(1) Education System

The educational system in the Philippines is divided largely into two categories of Formal Education, and Non-formal and Specialized Education. Formal education is a system in which students proceed from the compulsory elementary education to the secondary education and then to the tertiary education. The preschool education equivalent to the kindergarten is also established prior to the elementary education. Non-formal education is intended for children and youth who have not received the formal school education, providing language and technical training. Specialized education is a special school for the handicapped. The outline of the educational system in the Philippines is shown in the following table and chart.

Type of Education	Level of School	Term of School
Formal education		
Pre-school	Kindergarten	Before 6 years old: 1 to 2 years
Elementary	Elementary School	7 to 12 years old: 6 years
Secondary	High School	13 to 16 years old: 4 years
Tertiary	College & University	More than 17 years old:
	Medical Dept.	8 years
	Law Dept.	8 years
	Dept. of Engineering	5 years
	Others	4 years
Non-formal & Specialized education		
Non-formal	Non-formal school	As occasion demands
Specialized	Specialized school	As occasion demands



(2) Number of students and schools

The number of students of the elementary, secondary and tertiary education in the Philippines in 1985/86 was about 8.9 million, about 3.3 million and 1.8 million, respectively. In the elementary education 95 percent, and in the secondary education 59 percent belong to the state and public schools.

The total number of the state, public and private schools in 1985/86 is as follows: 2.254 kindergartens, 33,156 elementary schools, 5,375 high schools and 1,078 universities and colleges. The percentage of the private schools is low in 4 percent for the elementary schools, though nearly 73 percent for the universities. The details are shown in the table below.

Type of of School	State & Public (%)	Private (%)	Total (%)
Pre-school	1,275 (56)	997 (44)	2,254 (100)
Elementary school	31,817 (96)	1,339 (4)	33,156 (100)
High school	3,357 (62)	2,018 (38)	5,375 (100)
University & college	293 (27)	785 (73)	1,078 (100)

Source: Philippine Statistical Yearbook 1987

(3) Teacher Training

Teachers for elementary and high schools are trained in 430 colleges and universities in the country, of which 365 (85 percent) are private. In SY 1984/85 about 150,000 students were enrolled in the teacher training institutions. The total number of graduates in that year was 28,280.

The minimum qualification for a teacher in a public school is a bachelor degree in education or its equivalent or a bachelor degree with at least 18 professional credits in education. In the absence of applicants with the minimum educational qualifications, school superintendents may appoint applicants who do not meet the minimum qualifications, as temporary teachers. Almost all elementary and high school teachers hold four-year post-secondary degrees.

(4) Vocational Education

Vocational education at the secondary level is offered in public vocational schools and in the Schools of Arts and Trades at the post secondary level. There are wide differences in staff, equipment, accommodation and a lack of uniformity in testing skills in the vocational schools. Students are required to take the National Technical Vocational Examination to assess and identify their own potential and aptitude for particular skills prior to choosing their career.

(5) Non-formal Education

Non-formal education is provided by a number of government departments. The Office of Non-formal Education of the erstwhile Ministry of Education was created in 1977 to provide programs combining functional literacy, community training and skills training for out-of-school youth aged 12-18 years. These activities have since been given further importance by the creation, within DECS, of the Bureau of Non-formal Education. The National Manpower and Youth Council, established in 1969 under the Ministry of Labor, and transferred in 1978 to the Office of the President, also provides non-formal vocational training for out-of-school youth. Although skill standards have been developed by the National Youth Manpower and Council, the regulation of trade tests is weak and therefore, its certification has yet to achieve acceptability and recognition throughout the country.

(6) Private Education

Private education plays a significant role in the Philippines. It accounts for about 78 percent of student enrollment at the tertiary level

and about 40 percent at the secondary level. Its influence at the primary level, however, is less with only about 4 percent of the students enrolled in private elementary schools.

Private schools are financed, administered and maintained by private persons, corporations, foundations or other groups. They are organized as nonprofit corporations. The nonprofit school are normally organized and operated by religious groups or foundations. The educational courses offered in the private schools vary widely from kindergarten to college level.

The promotion and development of private education is the responsibility of the Fund for Assistance to Private Education which was established by the government in 1968 through an initial capital of ₱24.0 million provided by the United States and supplemented through annual grants from the government and donations.

(7) Educational Administration and Organization

Department of Education, Culture and Sports(DECS)

DECS is responsible for the development and administration of education in the country. DECS is responsible for operating public elementary and high schools and public colleges and for licensing and supervising private schools within the national policy framework mandated by the 1987 Constitution and the Education Act of 1982. State universities and colleges are independent of DECS but conform to the policies set by the Board of Higher Education.

The organization of DECS is composed of a central office with five service units, six Bureaus, and various committees, councils, task forces and other related agencies, and 14 Regional and 152 Divisional offices (see Appendix 2.1).

Bureau of Secondary Education(BSE)

BSE is responsible for the formulation and evaluation of the programs and standards of secondary education. The functions of BSE are:

(i) formulation of programs and standards in curriculum and teacher training and physical facilities through the provision of working guidelines for national high schools ;

(ii) evaluation of policies,plans,programs and standards through studies at regional and divisional levels to determine implementation of approved policies, plans, programs and standards, and assistance to regions and divisions where deficiencies are noted; and

(iii) provision of advice and assistance to the Secretary of Education on all matters relating to secondary education.

BSE is headed by a Director who is assisted by an Assistant Director and other staff. There are following four Divisions in BSE (see Appendix 2.2):

- Curriculum Development Division

Responsible for the development and implementation of curriculum, coordination of research studies on curriculum, provision of assistance in the use of instructional materials and provision of advice and assistance to regional and divisional offices on curriculum matters,

- Staff Development Division

Responsible for formulation of plans and programs to upgrade staff competencies, carrying out studies on staff development and supervising all staff development matters,

- Physical Facilities Division

Responsible for the development of plans, programs and projects to improve school buildings and equipment, and

- Administrative Staff Division

Responsible for personnel affairs, recording, property management, etc.

Instructional Materials Corporation(IMC)

IMC was established in 1982 to be responsible for the development, production and distribution of textbooks and other instructional materials to meet adequately the needs of public elementary and high schools. IMC's funds are derived from the government budget, payment from DECS for textbooks, royalties from materials reprinted by private publishers, etc. IMC is governed by a Board of Directors chaired by the Secretary of Education.

Under Program for Decentralized Education Development(PRODED) and IBRD'S Textbook Project, IMC was reorganized and strengthened to improve its capacity to produce and distribute textbooks and instructional materials on a large scale to the schools. IMC successfully developed textbooks and supplied about 70 million of them to all elementary schools during the project period. The total output in 1987 was 23 million textbooks.

Educational Development Projects Implementing Task Force(EDPITAF)

EDPITAF is responsible for providing expertise in educational development and executing all externally assisted education projects. EDPITAF is headed by an Executive Director who is concurrently an Undersecretary of DECS. EDPITAF has one administrative and following three technical sections with 228 staff.

- Project Supervision and Coordination Section
- Research and Project Development Section
- Technical Support Services Section

Regional and Divisional Education Offices

DECS has a regional education office in each of the 14 Regions (including CAR), and at the divisional and city levels are 152 divisional education offices.

The regional offices facilitate routine administration, planning, budgeting, monitoring and evaluation at the Region level, and the divisional offices are responsible for the development and administration of education in the Divisions and for reporting to the Regional Directors.

Educational Finance

i) Funding Sources

In the actual figures of the year 1988, teacher salaries and allowances represent about 72 percent of total expenditure in public high schools; about 6 percent is spent on operation and maintenance expenses and about 22 percent on capital outlay. Funds for the operation and maintenance of public educational institutions mainly come from following two sources:

- The General Fund

It is drawn from the national government through the National Appropriations Act and Public Works Appropriations Act. It is used to finance the establishment and maintenance of national schools, and to provide assistance to local government units through the National Aid for the support of local schools. The National Aid is distributed to each Region on the basis of the number of teachers, students and the financial means of each province, city and municipality. The distribution of the National Aid varies from 70 to 75 percent of the total salaries of staff.

- The Special Education Fund

It is deprived from a 1 percent additional tax levied on Real Property, and is released to the provincial, city and municipal school boards through the provincial, municipal or city treasurer. Till recently, 50 percent of the revenues collected was retained by the municipality, 20 percent remitted to the provincial government, and 30 percent remitted to the national government. In the case of cities, 60 percent of the revenues collected were retained by the city and 40 percent sent to the national government. In June 1987, the provision of expenditure for schools was altered by an Executive Order whereby the operational expenditures of all public high schools as well as the salaries of all public school teachers are borne by the national government through the Special Education Fund. To offset the increased burden accruing to the national government estimated at $9.7 million annually, 80 percent of all revenues collected by cities and provinces for the Special Education Fund was be remitted to the National Treasury, from 1 July 1988.

ii) Education Budget

The annual education budget rose steadily during 1984 to 1987. For 1988, the education budget represented an increase of 28.9 percent over that of the previous year. The 1988 national budget allotted about 14 percent to education which emerged as the single largest item outside the debt service. The education budget recognized the constitutional mandate stipulating priority support for education, the government's decision to provide free secondary education from June 1988 and increase of the salary of teachers. The educational budget

in the National Budget during 1984/88 is shown in the following table.

	1984	1985	1986	1987	1988
National Budget (₱ billion)	66.0	80.1	118.8	130.2	136.4
Education Budget (₱ billion)	7.9	8.8	11.4	14.9	19.1
Percentage of Education Budget (%)	11.8	10.9	9.6	11.4	14.0

Source: Department of Budget and Management.

(8) Government Education Policies

The objective of the MTPDP (1987-1992) in the education sector is to enable every citizen of the country to develop his/her potential for self-fulfillment and productivity. More specifically, the educational objectives are as follows:

i) To improve the quality and relevance of education and training at all levels;
ii) To increase access of disadvantaged groups to education;
iii) To accelerate the development of middle and high-level manpower toward economic recovery and sustainable growth, and enhancing the employability, productivity and self-reliance of those trained;
iv) To include values needed for social transformation and renewal; and
v) To preserve enrich and propagate the nation's cultural heritage and legacy.

By the end of the MTPDP elementary and high school enrollments are targeted to reach 10.3 million and 4.4 million students, respectively, while about 2.1 million students are expected to pursue post-secondary technical and vocational education. Further, about 2.8 million out-of-school youths will receive non-formal education and skills training. With these measures to increase access, the literacy rate is expected to increase from 85 percent in 1987 to 90 percent in 1992.

2.2.3 Secondary Education and Its Issues

(1) Development of Public High Schools

In the 1940's, most high schools were provincial high schools. Only a few vocational schools were supported by the national government. In the 1950's with burgeoning high school enrollments, the government authorized the opening of junior high schools in some municipalities. These later became the municipal high schools.

In SY1964/65, experimental barrio high schools were allowed to operate, primarily on a self-help basis. The barrio high schools, later called barangay high schools, were designed to meet the need for further education of barrio youths who could not afford to study in provincial or municipal schools. It was originally intended that barangay high schools would offer terminal vocational courses relevant to the economic activity of the barangay or community. This policy was later amended to allow barangay high schools to offer the general secondary curriculum which was basically college-preparatory.

(2) Types of High Schools

High schools may be classified on the basis of the courses offered as follows:

i) General High School
It offers general secondary education program which is college preparatory and which is essentially a continuation of the basic education provided at the elementary level;

ii) Comprehensive High School
It offers a wide range of educational and vocational courses; and

iii) Secondary Vocational School
It offers vocational and academic courses designed to train students for gainful employment in trades, industries or agriculture.

Public high schools funded by the national government are called national high schools. These were

i) high schools attached to State Universities and Colleges;
ii) comprehensive schools; and
iii) vocational schools.

Those funded till recently by cities, provinces, municipalities and barangays were called city high schools, provincial high schools, municipal high schools and barangay high schools, respectively. In SY1985/86 there were 3,357 national and public high schools comprising 733 national and 2,624 local public schools. Number of schools and students by type of school are shown in the table below.

	No. of Schools	(%)	No. of Students (thousand)	(%)
I. Public high schools				
1) National high schools				
General	75	(1)	92.2	(3)
Comprehensive	322	(6)	499.1	(15)
Vocational	336	(6)	216.8	(7)
Subtotal	733	(13)	808.1	(25)
2) Local public high schools				
City	122	(2)	261.5	(8)
Provincial	72	(2)	98.9	(3)
Municipal	217	(4)	170.8	(5)
Barangay	2,213	(41)	610.3	(19)
Subtotal	2,624	(49)	1,141.5	(35)
Total	3,357	(62)	1,949.6	(60)
II. Private high Schools	2,018	(38)	1,319.9	(40)
Grand Total	5,375	(100)	3,269.5	(100)

Source: DECS, SY1985/86

The 1987 Constitution mandated free secondary education. As a consequence, the provision of expenditure for schools was altered in June 1987 by Executive Order No. 189 (enforced in June 1988), whereby all public schools were nationalized and placed under the supervision and administration of DECS and the salaries of all public school teachers borne by the national government.

As of June 1988, the number of national schools is 3,414, out of which 733 schools are originally national ones and 2,681 schools have been newly nationalized. The percentage of number of previous barangay high schools is 66 percent out of them.

(3) Objectives of Secondary Education

As mandated by the Education Act of 1982, the objectives of the secondary educational system are as follows:

i) to provide free and quality secondary education to all school-age children regardless of socio-economic status;
ii) to equip students with knowledge, skills and attitudes for productive endeavor and enhance their aptitudes and interests;
iii) to inculcate positive values that will develop among students a rational commitment to the national development; and
iv) to promote the physical, intellectual, emotional, and social well-being of students.

(4) Policies and Targets in Secondary Education

The MTPDP outlines the policies and targets of secondary education as follows:

i) Secondary education will be made free as an integral part of basic education;
ii) Quality education will be pursued through the implementation of SEDP;
iii) An intensive review of previous barangay high schools will be undertaken for rational operation of these institutions;
iv) Pre-vocational education will be provided in high schools and vocational education at the post-secondary level;
v) NCEE will be assessed and improved.
vi) The educational service contracting scheme will be expanded to enable private schools to accommodate more students and assist in maintaining the financial viability of private schools;
vii) Distribution of high schools will be rationalized to ensure that new schools are established only where needed;
viii) To provide appropriate fund to high schools, sound financing schemes will be designed; and
ix) Salaries of staff of all national high schools will be improved and standardized.

(5) Issues in Secondary Education

Secondary education is the most problematic and complex sector in education of the Philippines. This is due mainly to the past policies and funding practices which supported national schools at the expense of other schools and allowed the proliferation of schools especially barangay schools without adequate facilities.

Followings are issues on performance of secondary education, instructional materials and physical facilities, and teacher education.

Performance of Secondary Education

There are considerable variations in equity and levels of achievements in all national high schools among the 14 Regions(including CAR) in the country. There is a wide diversity in participation, transition and cohort survival rates between different Regions as described below:

Participation rate: the rates of 24-29 percent in CRA, Region V, VII, VIII and IX are lower compared with those of 44-47percent in NCR, Region I and VI,

Transition rate : the rates of 58-66 percent in Region II, III, IV, V, VII, VIII are lower compared with those of 86-89percent in NCR, Region VI and IX, and

Cohort survival rate : the rates of 51-69 percent in Region III, V, VIII, XI and XII are lower compared with those of 81-86 percent in NCR and Region I.

Assuming weights of these three rates are the same, average values of 51-54 in Region III, V, VII, VIII, XI and XII are lower compared with those of 67-73 in NCR, Region I and VI. The performance indicators in all national high schools (SY 1988/89) are shown in the following table.

REGION	PARTICI-PATION RATE (%)	TRANSITION RATE (%)	COHORT SURVIVAL RATE (%)
NCR	44.6	87.8	86.7
CAR	29.3	71.0	76.0
I	44.9	75.2	81.7
II	31.9	64.4	76.5
III	30.6	58.3	69.9
IV	31.2	63.9	73.9
V	29.7	65.9	59.4
VI	47.7	89.1	76.7
VII	20.5	59.5	79.3
VIII	23.9	66.7	67.4
IX	26.6	81.1	71.7
X	32.2	72.7	72.9
XI	30.5	73.0	58.5
XII	30.9	72.3	57.9
Average	33.5	72.4	73.6

SOURCE: Statistical Bulletin, DECS, 1989

There are variations in unit costs of student places which are also indicative of inequity. Estimated expenditure per student in SY1985/86 was ₱1,239 for national schools, ₱4,700 for state universities and colleges high schools, ₱1,008 for city high schools, ₱336 for provincial high schools, and ₱244 for municipal/barangay high schools. The average per student expenditure for private schools is ₱515. The nationalization of all the public high schools in 1988 is expected to put right the gap among them.

A national achievement test conducted by BSE in 1983 showed that the private sectarian schools ranked first, with a mean score of 50.0 percent. Barangay high schools were placed the lowest with 40.0 percent.

Instructional Materials and Physical Facilities

There is a wide disparity in adequacy and availability of instructional materials and equipment among the schools. The current textbook-student ratio in 1988 is about 1:10 in all national high schools. High schools in Metro Manila and city high schools in each Region are generally better equipped than the previous provincial and municipal high schools in the municipalities and provinces. Previous barangay high schools have the least equipment and instructional materials.

Physical facilities such as classrooms, teachers' rooms, science

laboratories, workshops for practical work, etc., are also inadequate in many high schools. A survey carried out by DECS in SY1985/86 showed that 60-70 percent of the physical facilities requirements of national, city, provincial and municipal high school had been met, while only 20 percent of barangay high schools had adequate physical facilities. Double shifts and even triple shifts are held in some schools to meet the heavy enrollment, and this is not conductive to effective learning.

Teacher Education

The main issues in teacher education are: poor quality and oversupply of teachers. The universities and colleges specialized in the teacher education occupy only about 20 percent out of all the institutions in which students can award degrees in education. While the majority of institutions meet only the minimum standards to qualify for awarding degrees in education. Teachers are often weak both in subject content and pedagogical skills. There is an oversupply of teachers in general although there is a shortage of science teacher.

Low level of the teacher's salary is one of serious problems in the educational system, as this affects attractiveness of the teaching profession and quality of teaching. Until recently, teacher's salary has a gap ranging ₱500-3,000 per month by type of school, and that of a barangay was the lowest salaries of teachers. Since all the public high schools were nationalized in June, 1988, the situation is expected to be improved.

2.2.4 Secondary Education Development Program (SEDP)

(1) General

The secondary education was once tried to be improved by the 1973 Revised Secondary Education Program. However the result was not fruitful. A study on the secondary education system carried out by DECS in 1983 confirmed the need for its extensive reforms. The points of the study result are as follows:

- The high school system does not have the capability to carry out its task of preparing students for employment or higher education,and
- The high school system is also not equipped to respond to the expected increase of transition to high schools as a result of PRODED having been carried out since 1981.

As a result of the 1983 study, the government proposed to improve the secondary education in comprehensive manner through a ten-year development program, called the Secondary Education Development Program(SEDP). SEDP was not started until 1988 since it took a time for preparation of its implementation, and was suspended for a while because of the change of the government administration in 1986.

(2) Contents of SEDP

The contents of SEDP is show below.

1) Main goals
   - To improve the quality of secondary graduates
   - To improve the internal efficiency of the system
   - To expand access to quality secondary education
   - To promote equity in the allocation of resources especially at the local level

2) Main components
   - Curriculum development
   - Staff development
   - Physical facilities development

3) Strategies to achieve the goals

   i) To improve the quality of education, SEDP will focus on:
      - Curriculum reform,
      - Provision of quality textbooks/teacher's manuals on a 1:1 basis,
      - Provision of science and work education equipment,
      - Staff development(short- and long-term),
      - Assistance to private secondary education
      - Research studies on NCEE, and
      - Research studies on previous barangay high schools.

   ii) To effect efficiency in the system, the SEDP will focus on:
      - Research studies on school location and distribution, financing, schemes, teachers' salaries and benefits, etc.
      - Training of administrators, and
      - Strengthening of sector management and evaluation system.

iii) To expand access to the sector, the SEDP will undertake/expand
- The school building program,
- The service contracting scheme, and
- Alternative delivery systems.

iv) To insure equity in the system, the SEDP will undertake/expand
- The school building program for local high schools, and
- The equipment provision and technical assistance for disadvantaged areas.

4) Targets and Target year

The SEDP tends to meet the following targets within the period of 1988/89-1992/93 (the figures in the table includes those of private schools).

Performance Indicators	Present<1	Target
Participation Rate	51.52%	70%
Drop-out Rate	5.8 %	2%
Achievement Scores	43 %	70%
Cohort Survival Rate	72 %	82%
Textbook/Student Ratio	1 : 7	1 : 1
Teacher/Student Ratio	1 :53	1 :40

Remarks <1:The year of present time is not clarified.

(5) Progress of Implementation

The number of high schools as of March 1990 nationalized based on the 1987 Constitution was 3,414 for which SEDP is being implemented. The nationalization cost is so high that it is impossible for the Government of the Philippines to cover the expenses with its own fund, and therefore plans to implement the project in combination with the loans from international institutions and foreign aids. The total cost of SEDP is estimated to be US$372.4 million. The following table shows the components of the project and estimated cost.

Components	Cost (US$' million)
Physical Facilities	270.0
Textbooks and Teachers' Manuals	32.0
Equipment	35.9
Staff Development	27.0
Assistance to Private Secondary Education	5.0
Sector Management	0.9
Incremental Recurrent Cost	1.6
Total	372.4

Source: DECS

During the four years from the proposal of SEDP in 1983 to the implementation, except the time when it was suspended due to the political shift, the following preparation works were mainly performed.

i) Curriculum material development
- a review of the 1973 textbooks and other instructional materials
- validation of minimum competencies for each year level

ii) Try out

Curriculum materials were tried out in 80 tryout schools representing 7 types of high schools. By this result, the new curriculum was found to be more effective than that of the 1973 Revised Secondary Education Program.

iii) Conference/Consultation in 14 Regions

Collection and analysis of various proposals relating improvement of secondary education.

Since SEDP was started in 1988, its implementation has progressed as follows:

- The cost of operating and maintaining all public high school (3,414 schools) including newly nationalized 2,681 schools in June 1988, was met by the national government(about US$ 9.7 million in 1988);
- The teachers' salaries were increased by 20 percent on three occasions in 1987 and 1988 and the government proposes to raise and standardize the basic salaries of teachers

progressively to at least ₱3,000 a month by the year 1990;

- The collection of school fees in public high schools was abolished from SY1988/89;
- Textbooks based on the new curriculum will be delivered to all the public high schools in June 1990. The new curriculum covers nine fields: English; Pilipino; Science; Mathematics; Social Studies; Values Education; Work Experience; Technology & Home Management; and Physical Education/Health/Music;
- Training manuals and materials was prepared for the teacher training programs. Selected teachers for the program have been given a two-week orientation in the nine fields;
- In 1988, Seminar Workshop for Equipment Preparation was organized by DECS to standardize the minimum required instructional equipment coordinating with the new curriculum, and provided the standard list of instructional equipment and that of specification for SEDP(Later, those were revised in March 1990); and
- To implement SEDP, financial support activities by several foreign aid agencies have been started (Refer to 2.3).

2.3 Present State of International Cooperation to SEDP

Since SEDP was proposed in 1983, the Philippine government has been receiving following foreign aid:

(1) Loan

A portion of the US$70 million soft loan from ADB has been applied for the improvement of the physical facilities of 673 recipient schools all over the country.

The standardized instructional equipment which coordinate with the new curriculum were supplied. In 1989 bidding was made for the improvements of 153 schools allotted as the first phase. It is planned that the improvements will be made in 173, 175, and 172 schools during the period from 1990 to 1992.

(2)Grant Aid

i) United States Assistance for International Development (USAID/ESF)

In 1988 US$30 million was provided for the construction of 186 school buildings and distribution of instructional

equipment.

ii) Australian International Development Assistance Bureau (AIDAB)

During five years since 1989, about $9.1 million will be provided for the re-education of 900 teachers in the fields of science and mathematics, distribution of instructional equipment and monitoring of education. In 1989, 100 teachers received re-education in Australia. In 1990 instructional equipment will be provided.

iii) Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ)

In 1990 about US$2.8 million will be provided for the construction of the Instructional Equipment Fabrication Center and the distribution of instructional equipment of science and mathematics.

iv) Cooperation of Japan

In 1989 about US$250 million was provided for the construction of school buildings of typhoon-proof structure for 22 elementary schools and 50 high schools in Bicol region (Region V). The construction of the high school building included both of a general classroom and a science laboratory room. But it did not include provision of the instructional equipment. In 1991 the similar construction program is planned for about 50 high schools in Leyte/Samar region (Region VIII).

In 1989 about ±20 million was provided for the construction of the National Learning Resource Center for Teacher Training in Science and Mathematics located adjacent to the Institute for Science and Mathematics Education Development of the University of the Philippines.

Since the purpose of the project was to upgrade the level of teachers of science and mathematics through their additional training, the equipment in this project included not only standard instructional equipment but also those of comparatively high level.

2.4 Present State of Secondary Education in Region V & VIII

2.4.1 Achievement of Secondary Education

As was described in 2.2.3(5) "Issues in Secondary Education", the evaluation of the performance of the secondary education in the Philippines by the educational rates of participation, transition and cohort survival indicates that in Region V and Region VIII all the rates are far behind the national average. In DECS these Regions are called DDU (Disadvantaged, Depressed, Unserved) Regions, which are to be developed prior to other Regions. The summary of the present situation of the secondary education in the two Regions is described in the table on the next page. According to the description, the secondary education of Region V and Region VIII has the following characteristics.

i) Both Regions have a large number of schools for the number of students compared with the national average, but many of them are small scale, and therefore they both have a small number of classrooms, teachers and students per one school.

ii) In both Regions the number of students for one teacher is a little larger than the national average. But the number of students for one classroom is smaller than the average in Region VIII, while larger in Region V.

iii) In both Regions the average monthly income of the teachers is far below the national average.

iv) In both Regions the educational rates of participation, transition and cohort survival are considerably below the national average.

Thus, except the fact that the number of students for one classroom in Region VIII is smaller than the national average, the level of the secondary education in both Regions are inferior to the national average.

Items	Nation	Region V	Region VIII
1) National high schools	3,282(100%)	292(8.9%)	280(8.5%)
Previous barangay	2,201(100%)	226(10.3%)	184(8.4%)
Percentage	67.1	77.4	65.7
2) Number of Classrooms	31,487(100%)	2,067(6.6%)	2,165(6.9%)
For Lessons	25,795(100%)	1,770(6.9%)	1,710(6.6%)
For Experiments & Handicrafts	5,692(100%)	297(5.2%)	455(8.0%)
3) Number of Students (1000)	2,235(100%)	153(6.8%)	132(5.9%)
4) Number of Teachers <1	66,004(100%)	4,476(6.8%)	3,835(5.8%)
5) Percent of classrooms to schools	9.6	7.1	7.7
6) Percent of teachers to schools	20.1	15.3	13.7
7) Percent of students to schools	681.0	523.0	471.4
8) Percent of students to teachers	33.9	34.2	34.4
9) percent of students to classrooms	71.0	74.0	61.0
10)Operation			
Salaries of teachers (₱ million)	2,418.6(100%)	86.7(3.6%)	83.4(3.4%)
Others (₱ million)	1,296.5(100%)	44.2(3.4%)	55.8(4.3%)
Average monthly salaries of teachers(peso/teacher-month)	3,056.6	1,614.2	1,812.2
11)Performance indicators			
Participation Rate(%)	33.5	29.7	28.9
Transition Rates(%)	72.4	65.9	66.7
Cohort Survival Rates(%)	73.6	59.1	67.4

Remarks<1:Number of full-time instructors
Source:Figures are quoted from Statistical Bulletin, DECS, 1988/89

2.4.2 Present State of Provision of Educational Equipment

The evaluation based on the minimum instructional equipment list standardized by DECS so as to be coordinated with the new curriculum of SEDP indicates that in both Regions the number of schools possessing instructional equipment and its quantity is extremely insufficient, with only less than 30 percent of the whole schools possessing a portion of the standard instructional equipment (See Appendix 2.3). The following table shows the summary of the standard equipment situation in the high schools in Region V and Region VIII.

Subject (Number of standard equipment items)<2	% of schools possessing standard equipment	
	Region V (292 schools)	Region VIII (280 schools)
General Science (14)		
Hand lens	4.5	12.5
Pulley	3.1	8.9
Others (12)	0.0 to 2.4	0.0 to 7.1
Biology (4)		
Microscope	4.1	11.4
Dissecting set	2.4	3.0
Others (2)	0.0 to 0.3	0.0 to 2.1
Chemistry (20)		
Test tube holder	3.4	15.0
Test tube rack	3.1	11.8
Others (18)	0.0 to 1.4	0.4 to 10.7
Physics (25)		
Meter stick	4.5	13.6
U shape magnet	2.7	7.1
Others (23)	0.0 to 2.7	0.7 to 7.1
Glass tools (14)		
Thermometer	7.9	30.0
Graduated cylinder	4.5	18.2
Others (12)	0.3 to 4.5	6.1 to 12.9
Home Economics (14)		
Grassware set	5.1	8.9
Knife set	4.8	8.2
Others (12)	0.3 to 4.5	1.1 to 9.3
Industrial Arts (32)		
Hammer (Claw)	4.1	10.7
Tape Rule	5.1	10.7
Others (30)	0.0 to 4.5	1.4 to 8.9
Chemicals <2	---	---
Consumable supplies <2	---	---

Remarks<1: Listed two items of which % of schools possessing standard equipment shows high in each subject. As for other items shows the range of %.
<2: No data available on Chemicals and Consumable supplies.
Source:EDPITAF,1990

2.4.3 Maintenance Cost of Schools

The school budget is consisted of teachers' salaries, operation and maintenance, and capital outlay. Expense for equipment comes from the budget of operation and maintenance. The total amount of national high school budget in 1988 is ₱3,715 million including ₱2,663 million (71.7%) for salaries, ₱242 million (6.5%) for operation and maintenance, and ₱810 million (21.8%) for capital outlay. The national average of operation and

maintenance is as low as 6.5 percent. The objective schools in this Project has the same tendency (See Appendix 2.4(1) and 2.4(2)). The average annual expense of operation and maintenance for one school is ₱59,000 in Region V, and ₱66,000 in Region VIII. This budget is to cover all the expenses related to school operation including transportation, lighting and heating, equipment, re-education of teachers etc. Therefore the allotment for equipment is forced to be extremely small.

2.5 Background and Contents of the Request

2.5.1 Purpose of the Request

In the Republic of the Philippines the Secondary Education Development Program (SEDP) was formulated for the establishment of the secondary educational system based on the 1987 Constitution, aiming at upgrading the quality and increasing opportunities of access and equity in the secondary education.

In the present state, however, inadequacy of basic instructional equipment among high schools, especially significant inadequacy in the fields of science, and technology & home management is a constraint of upgrading the quality of education.

Under such circumstances, the Government of the Philippines recognized the provision of instructional equipment in the said fields is an essential portion of SEDP. Then the government formulated the project for assistance to secondary education instructional equipment program for the purpose of requiring extensive use of experimental/training equipment in the said fields, increasing access to qualified education and developing students' curiosity on natural science and technology, and requested the Government of Japan for the grant aid for provisions of required instructional equipment.

2.5.2 Contents of the Request

(1) Objective schools

At first it was requested that the objective schools include 673 schools financed by Asian Development Bank (ADB) Loan and 50 high schools with typhoon-proof prefabricated structure constructed in Bicol region by Japanese grant aid for fiscal 1989. Later the alteration was made that the objective schools include 210 selected public high schools in Region V (Bicol region) and Region VIII (Leyte/Samar region) of the SEDP objective schools that are not related with those financed by ADB Loan. The names of the objective schools are described in Appendix 2.4(1) and 2.4(2).

(2) Requested fields

The requested fields of the instructional equipment were Science (General Science, Biology, Chemistry, and Physics), Technology & Home Management (Industrial Arts and Home Economics), Music and Mathematics.

(3) Requested equipment

The list of the requested equipment in each field is shown in Appendix 2.5.

(4) Delivery system of equipment

The delivery of the equipment to the objective school was requested.

3. CONTENTS OF THE PROJECT

3. CONTENTS OF THE PROJECT

3.1 Purpose of the Project

The purpose of the Project is to dissolve the shortage of instructional equipment, which is one of the constrains of improving the quality of secondary education in the Philippines, and increasing equal educational opportunities.

3.2 Evaluation of the Project

3.2.1 Evaluation of the Request

(1) Objective schools

As a result of the field survey it was confirmed that the objective schools of the Project are 105 schools in Region V and 105 schools in Region VIII, totaling 210 schools selected based on the selection criteria established by EDPITAF from among the national high schools in Region V and Region VIII (See Appendix 2.4).

Selection Criterion 1: High schools with a building of typhoon-proof structure that has been built or will be built by the Japanese grant aid.

Selection Criterion 2: High schools that are not receiving any assistance in facilities/equipment from an international aid institution such as ADB or any other foreign countries.

Selection Criterion 3: High schools with a science laboratory and/or Technology & Home Management room, or the rooms that can be used for these purposes. Those with a plan to build such rooms in 1990 are also included in this criterion.

Selection Criterion 4: High schools with enrollments of more than 200 students by the year 1992.

Appropriateness of selection criteria

The above described selection criteria established by EDPITAF are evaluated to be appropriate for the following reasons.

Selection Criterion 1: As the construction project of high school buildings with typhoon-proof structure includes a science laboratory but excludes instructional equipment, the Project should be applied to these schools.

Selection Criterion 2: The duplication of the aids from different institutions or countries to the same school is avoided.

Selection Criterion 3: It is required to secure the space for storing and using the instructional equipment before they are provided.

Selection Criterion 4: In order to establish at least one class consisting of 40 to 50 students in each grade, about 200 students are required to be enrolled.

Appropriateness of the number of objective schools

Considering one of the basic ideologies of SEDP is to provide equal opportunities in the secondary education, it is considered larger effect of the Project implementation is expected by taking the maximum number of schools in the Project from 210 high schools selected based on the previously described criteria.

Appropriateness of objective Regions

The Region V and VIII where the objective schools are located, are the areas, as was mentioned in 2.4.1, where the level of performance of the secondary education is far behind the national average. It is essential to improve the quality of the secondary education in both Regions in order to achieve the goal of SEDP. Therefore, it is considered to be appropriate to include these Regions in the Project.

(2) Equipment Field

At first the fields of the requested equipment were Science, Technology & Home Management, Mathematics and Music. It was confirmed, however, during the field survey that a priority should be placed on the equal distribution of the same equipment to the maximum number of schools rather than the distribution of better equipment to fewer schools, if the scale of the Project is limited. The officials in the Philippines explained that the order of priority in the field should be Science, Technology & Home Management, Music and Mathematics. In the Project it is considered to be appropriate to include only the fields of Science and Technology & Home Management for which the needs of equipment provision are assumed to be highest, focusing on the equality in providing the equipment to the maximum number of schools.

(3) Contents of Equipment

In 1988 DECS established Seminar Workshop for Equipment Preparation composed of educational authorities from various fields, coordinated into the new curriculum of SEDP, forming the standard instructional equipment list for the most basic equipment, and prescribing the specifications of each equipment. It is planned to provide the equipment to 3,414 national high schools in the country based on this standard list. In 1989 the equipment provision project through ADB Loan was tendered based on this standard list. The requested equipment are all based on this list, and therefore it is appropriate to basically follow this list and the equipment specifications in the Project. In 1989 the Government of Japan built the National Learning Resource Center for Teacher Training in Science and Mathematics by grant aid. The instructional equipment were provided based on the opinions oSeminar Workshop for Equipment Preparation, and are well coordinated with the request of the Project.

(4) Scale of Equipment

At first the request was given to provide the number of equipment necessary for experiments and training for 8 groups (five students in one group) in a class of average number of 40 students. In this case it is assumed that the time per one student for using an equipment becomes longer and thereby increases the understanding for the equipment. The Philippine side, however, seek for the distribution of the equipment to more schools within the limited amount of fund. Therefore it is considered the number of groups per one class can be decreased from the cost effective view point. In the SEDP project which was financed by ADB

Loan and put in a bid in 1989, four groups (10 students in one group) per one class were applied. In this scale, one student can use an equipment for individual observation, such as a microscope, for about two minutes during the period of 20 to 30 minutes. This is considered to be the rational number of groups. Therefore, it is appropriate to make four groups in one class as a basic number of groups in the Project.

(5) Delivery of Equipment

It was requested by the Philippine side to deliver the equipment to each objective school in the Project. But due to the large number of the objective schools, it seemed to be difficult to complete the delivery to all the schools within the period specified by the grant aid system of Japanese government. Consequently it was proposed key stations were to be set up in each Region, and the delivery up to key stations to be undertaken by Japan side and further delivery from key stations to each school to be undertaken by the Philippine side. A key to the successful completion of the Project within the limited time is to pack various kinds of equipment for each school without a mistake and to transport of the equipment up to the key stations by Japan side. It is most practical that the Philippine side will be responsible for the transportation of the equipment from a key station to each school because it takes long hours for each school to prepare for the acceptance and check the transported equipment, and furthermore the requested equipment do not require any installation works by a technician.

3.2.2 Project Field

Based on the results of "3.2.1 Evaluation of the Request", the Project will include six subjects of two fields: Science (General Science, Biology, Chemistry, Physics) and Technology & Home Management (Industrial Arts, Home Economics). The outline of each field in the curriculum of SEDP is as follows.

(1) Science

In order of grade, students learn General Science, Biology, Chemistry and Physics.

General Science (1st grade)

It aims at understanding fundamental phenomena in the nature. The content of learning includes the following items: What science means to mankind; Force; Work; Energy; Properties, composition and change of

matter; Living things and their interactions; Environments of the Philippines; Atmosphere; Hydrosphere; Lithosphere; Earth and solar system; Stars, Galaxy and Universe; etc.

Biology (2nd grade)

It aims at acquiring comprehensive knowledge in each field of biology. The content of learning includes the following items: Nature of biology; Bases of life; Transformation of energy; Living organ system; Reproduction; Heredity, variation and population; Evolution; Diversity of living things; Ecological system; etc.

Chemistry (3rd grade)

It aims at acquiring comprehensive knowledge in each field of chemistry. The content of learning includes the following items: Progress through chemistry; Forms and phases of matter; All about changes; Rate and extent of chemical reactions; Useful colloids; Atomic structure; Elements of substance; When atoms combine; Daily phenomenon of solution; Electrolytes; Various carbon compounds; Biological substances; etc.

Physics (4th grade)

It aims at acquiring comprehensive knowledge in each field of physics. The content of learning includes the following items: Nature and importance of physics; Motion and force; Force and energy; Electrical energy; Nuclear energy; Frontiers of physics; etc.

(2) Technology & Home Management

Industrial Arts (1-2 grade)

It aims at practical training in using various wooden, metal and electric tools as well as learning basic skills of handicraft.

Home Economics (3-4 grade)

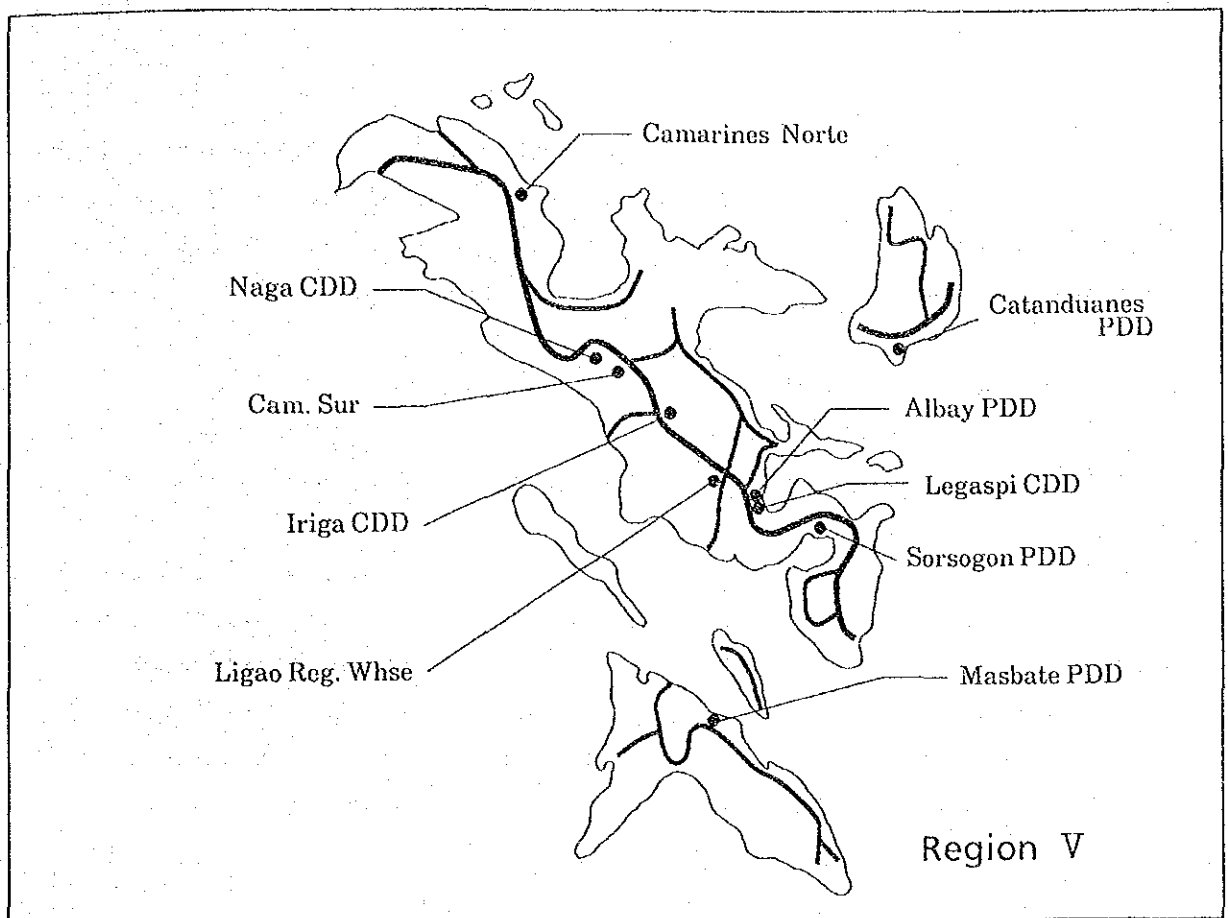
It aims at practical training in using various cooking tools as well as acquiring knowledge of nutrition.

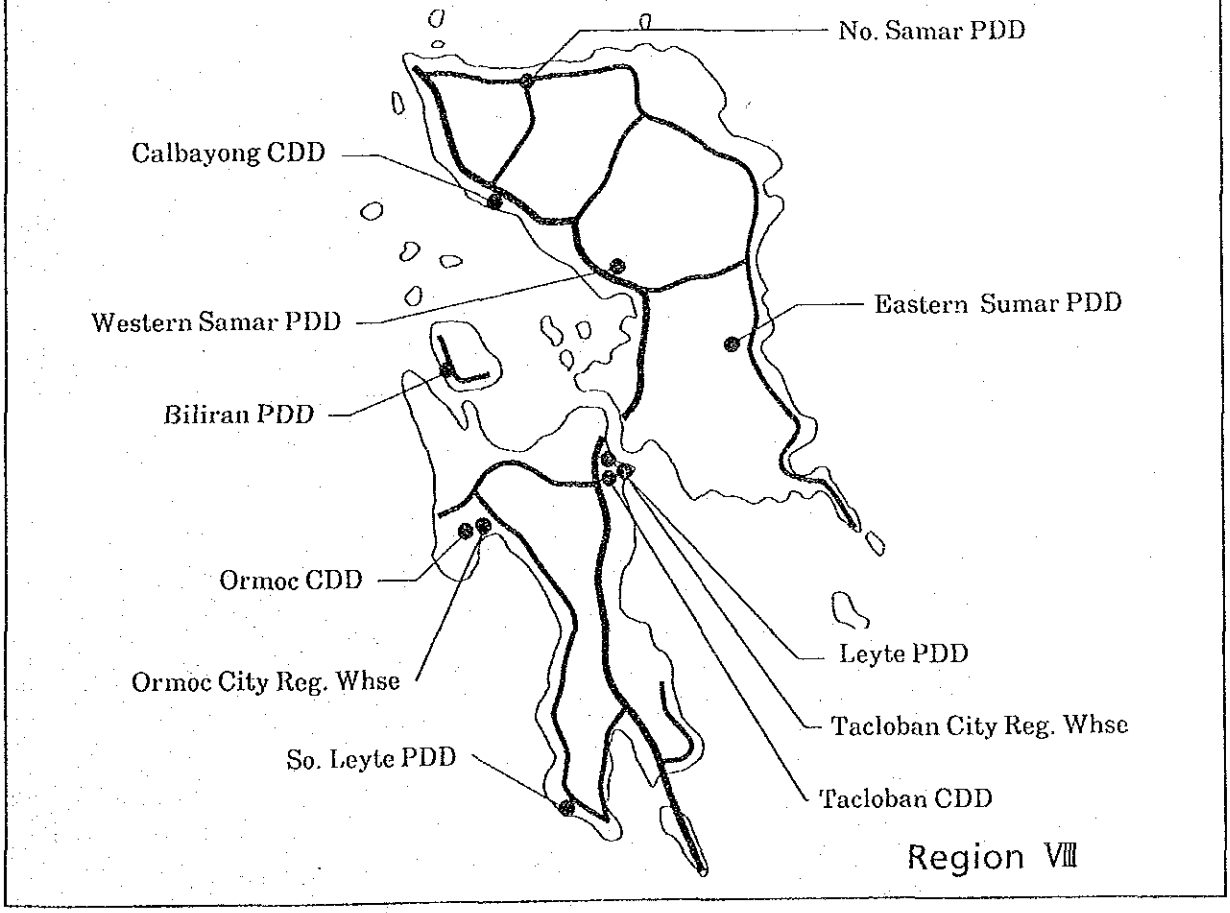
3.2.3 Contents of the Project Equipment

Based on the result of "3.2.1 Evaluation of the Request", the standard equipment for SEDP established by Seminar Workshop for Equipment Preparation are to be applied to each project field. As for the quantity of the equipment, four groups (10 students/group) in one class is to be applied as the basic number of group. And based on this, the project quantity for one class is to be estimated by reviewing the requested quantity considering the usage of every equipment.

3.2.4 Delivery System of Equipment

The objective schools are located in various parts of six provinces in Region V and 5 provinces in Region VIII. In delivering the textbooks to each school, DECS stores them for a while in a transit warehouse. Such warehouses are located in 21 spots in the objective Region. These warehouses will be key stations for each school in delivering equipment in the Project. Japan side will be responsible for packing the materials for each school in Manila and transportation to the key stations, while the Philippine side will be responsible for the transportation from the key stations to each objective school. The following figure shows the location of each key station.


Camarines Norte
Naga CDD
Catanduanes PDD
Cam. Sur
Albay PDD
Legaspi CDD
Iriga CDD
Sorsogon PDD
Ligao Reg. Whse
Masbate PDD
Region V


No. Samar PDD
Calbayong CDD
Western Samar PDD
Eastern Sumar PDD
Biliran PDD
Ormoc CDD
Leyte PDD
Ormoc City Reg. Whse
Tacloban City Reg. Whse
So. Leyte PDD
Tacloban CDD
Region VIII

3.3 Project Implementation

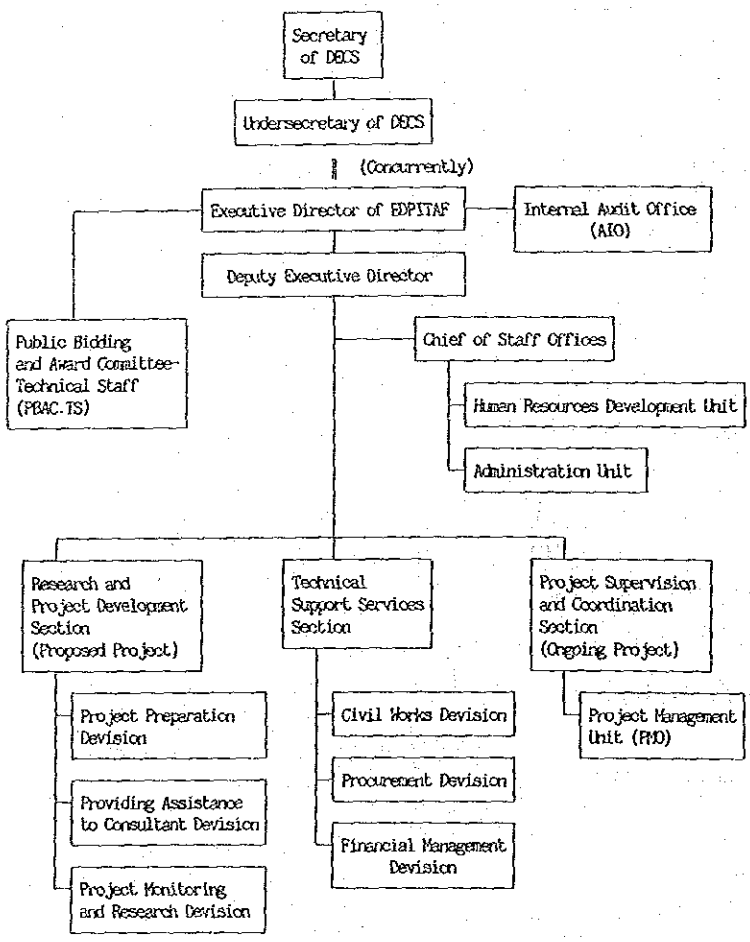
3.3.1 Executing Agency

As a result of the field survey, it was confirmed that the executing agency of the Project is Department of Education, Culture and Sports (DECS), which will be responsible for all the services relevant to the execution of the Project.

3.3.2 Implementation Organization

Educational Development Projects Implementing Task Force (EDPITAF), subordinate organization of DECS, is responsible for actual execution of the Project.

Project Supervision Division of Project Supervision and Coordination Section will be in charge of all the main tasks of foreign affairs and negotiations, budget request, formulation and execution of personnel projects, contract coordination, administrative operation. Research and Project Development Section and Technical Support Services Section will give an indirect aid. The following chart shows the organization of EDPITAF.



4. BASIC DESIGN

4. BASIC DESIGN

4.1 Basic Design Principles

Under the recognition that the Project forms a part of assistance to secondary education instructional equipment program of SEDP designed for 3,414 national high schools in the country, the basic design principle is to provide a package of standard equipment to a maximum number of schools.

4.2 Basic Design Conditions

4.2.1 Conditions of Selection of Equipment

In the Project the equipment are to be selected according to the following conditions.

(1) As a principle the standard equipment of secondary education (requested equipment) selected by Seminar Workshop for Equipment Preparation based on the new curriculum of SEDP to be adopted.

(2) The equipment commonly used among the subjects to be shared.

4.2.2 Conditions of Quantity Scale Estimation of Equipment

Considering "3.2.3 Contents of the Project Equipment" and "4.1 Basic Design Principles", the conditions of quantity scale estimation of equipment will be formulated as follows.

(1) The number of the recipient schools to be a total of 210 schools, including 105 schools in Region V and 105 schools in Region VIII.

(2) The quantity of the equipment to be one package per one school, regardless of the school scale.

(3) As a rule, the number of groups in one class to be four, and the quantity of each equipment to be determined according to the following criteria.

a) The number of the equipment which is assumed to have more educational effect by individual observation and operation to be four.

b) The number of the equipment which is assumed to have an educational effect only by the explanation and operation by a teacher to be one.

c) The number of the equipment which is assumed to produce an insufficient observation and understanding if provided according to the previous two criteria to be each eight or two in one class.

d) As a rule, the number of glass tools to be four in one class, but fragile ones to be six in one class.

e) The quantity of the chemicals to be determined according to the annual amount of consumption per one class specified by the said Seminar Workshop for Equipment Preparation.

4.3 Equipment of the Project

4.3.1 Selection of Equipment

The project field includes six subjects of two fields, including Science (General Science, Biology, Chemistry, Physics), and Technology & Home management (Industrial Arts and Home Economics). Among the secondary instructional standard equipment (requested equipment) related to these fields, some items are duplicated among the subjects only in Science, not in Technology & Home Management. These common items are shared among the subjects.

Duplicated Items	Duplicated Subjects			
	General Science,	Biology,	Chemistry,	Physics
Mercury thermometer (-10 to 110 C)	*	*	-	*
Beaker (250ml,500ml)	-	*	*	*
Stopwatch	*	-	-	*
Pulley	*	-	-	*
Mortar & Pestle	-	*	*	-
Evaporating dish	-	*	*	-
Erlenmeyer flask	-	*	*	-
Triple beam balance	-	*	*	-
Graduated cylinder (10ml)	-	-	*	*

Remarks<1: *shows the duplicated subjects.

4.3.2 Setting up of Quantity of Equipment

As for the project equipment specified in "4.3.1 Selection of Equipment", the requested quantity per class was reviewed based on the conditions of quantity scale estimation specified in "4.2.2 Conditions of Quantity Scale Estimation of Equipment". As a result, the quantity was altered as shown in the Appendix 2.5, and the quantity of project equipment per class was determined.

4.3.3 Equipment List

The equipment list of the Project is described in the following table.

No	Items	Planned Q'ty for One School	Planned Q'ty for 210 Schools
GENERAL SCIENCE			
1.	Platform Balance	4	840
2.	Terrestrial Globe	1	210
3.	Laboratory Apparatus Repair Kits	1	210
4.	Water Analysis Outfit	1	210
5.	Seismograph Model	1	210
6.	Anemometer with Vane	1	210
7.	Rain Gauge	1	210
8.	Aneroid Barometer	1	210
9.	Magnetizer	4	840
10.	Hand Lens (Biconvex)	4	840
11.	Pulley Set	4	840
12.	Magnetic Compass	4	840
13.	Stop Watch	4	840
14.	Tray, Wooden	4	840
BIOLOGY			
1.	Pocket Magnifier	4	840
2.	Dissecting Set	4	840
3.	Microscope, Compound with Lens Cleaning Set	4	840
4.	Human Anatomy Chart with Overlays	1	210
CHEMISTRY			
1.	Triple Beam Balance	1	210
2.	Iron Stand	4	840
3.	Utility Clamp	4	840
4.	Iron Ring	4	840
5.	Electrolysis Apparatus	1	210
6.	PH Meter	1	210
7.	Wire Gauge	4	840
8.	Test Tube Holder	4	840
9.	Test Tube Rack	4	840
10.	Cork Borer/Stopper Set	1	210
11.	Tripod	4	840
12.	Test Tube Brush (Small)<1	4	840
13.	Test Tube Brush (Large)<1	4	840
14.	Spatula Set (Small, Medium, Large)<1	2 each	420
15.	Cabinet for Chemicals<1	1	210
16.	Wash Bottle<1	4	840
17.	Periodic Table, Wall Chart<1	1	210
18.	Atomic Molecular Model Kit<1	1	210
19.	Alcohol Burner	4	840
20.	Pinch Cock<1	4	840

Remarks <1: Equipment added to the standard list.

No	Items	Planned Q'ty for One School	Planned Q'ty for 210 Schools
PHYSICS			
1.	Convex and Concave Mirrors	4	840
2.	Demonstration Lens Set	1	210
3.	Spring Balance, Newton	8	1680
4.	Spiral Springs Set	4	840
5.	Meter Stick	4	840
6.	Acceleration Recording Timer	4	840
7.	Dynamic Carts	4	840
8.	Electroscope	1	210
9.	Prism Set	4	840
10.	Magnet (Bar)	4	840
11.	Magnet (Ring)	4	840
12.	Magnet (U-steel)	4	840
13.	Magnet (Alcomax) <1	4	840
14.	Transistor Radio Demo Set	1	210
15.	Multi Tester, Analog	4	840
16.	Ripple Tank	2	420
17.	Logic Gates (Circuit Trainer)	4	840
18.	Set of Tuning Forks	2	420
19.	Resonance Apparatus	1	210
20.	Electric Motor/Generator	4	840
21.	Free Fall Apparatus	1	210
22.	Photometer Set	1	210
23.	Incandescent Optical Light Source for Optics Experiment	1	210
24.	Scientific Calculator	8	1680
25.	Biconvex and Biconcave Lens Set	1	210
GLASSWARE			
1.	Mercurial Thermometer (-10 to 110oC)	6	1260
2.	Mercurial Thermometer (-10 to 360oC)	4	840
3.	Petri Dish	6	1260
4.	Glass Slide	4	840
5.	Cover Glass	4	840
6.	Graduated Cylinder (Glass 10ml)	6	1260
7.	Graduated Cylinder (Glass 100ml)	6	1260
8.	Graduated Cylinder (Glass 500ml)	6	1260
9.	Graduated Cylinder (Plastic 50ml)	4	840
10.	Graduated Cylinder (Plastic 100ml)	4	840
11.	Beaker (100ml)	6	1260
12.	Beaker (250ml)	6	1260
13.	Beaker (500ml)	6	1260
14.	Beaker (1000ml)	6	1260
15.	Test Tube (15mm,20mm)	2 dozens	420
16.	Erlenmeyer Flask 250ml	6	1260
17.	Mortar and Pestle	4	840
18.	Reagent Bottle (250ml)	4	840

Remarks <1 : Equipment added to the standard equipment list.

No	Items		Planned Q'ty for One School	Planned Q'ty for 210 Schools
19.	Reagent Bottle (500ml)		4	840
20.	Reagent Bottle (1000ml)		4	840
21.	Funnel		6	1260
22.	Stirring Rod		6	1260
23.	Medicine Dropper <1		6	1260
24.	Evaporating Dish		6	1260
25.	Pipette (Plastic 1ml) <1		1	210
26.	Pipette (Plastic 10ml) <1		1	210
CONSUMABLES				
1.	Litmus Paper (Red, Blue)		4	840
2.	Filter Paper (Pack of 10 Sheets)		10	2100
3.	PH Paper		4	840
4.	Zinc Plate Set		1	210
5.	Copper Plate		1	210
6.	Nichrome Wire		1	210
7.	Copper Wire		1	210
CHEMICAL				
1.	Lead Pellets	0.5kg	1	210
2.	Sulfur Powder	0.25kg	1	210
3.	Bromothymol Blue	0.5L	1	210
4.	Ethanol	0.5L	1	210
5.	Phenolphthalein	0.5L	1	210
6.	Benedict Solution	0.5L	1	210
7.	Copper Sulfate (Crystals)	0.5L	1	210
8.	Carbon Tetrachloride	0.25kg	1	210
9.	Nitric Acid	0.5L	1	210
10.	Phenol	0.5kg	1	210
11.	Iodine	0.5L	1	210
12.	Benzoic Acid	0.25kg	1	210
13.	Naphthalene Balls	0.25kg	1	210
14.	Iron Fillings	0.5kg	1	210
15.	Sodium Hydroxide (Pellets)	0.5kg	1	210
16.	Magnesium Ribbon	25g	1	210
17.	Yeast	0.5kg	1	210
18.	Calcium Oxide	0.5kg	1	210
19.	Denatured Alcohol	0.5kg	1	210
20.	Copper Dust	0.25kg	1	210
21.	Calcium Carbide	0.25kg	1	210
22.	Lead Nitrate (Crystals)	0.25kg	1	210
23.	Potassium Iodide	0.25kg	1	210
24.	Ferric Chloride	0.25kg	1	210
25.	Potassium Ferricyanide	0.25kg	1	210
26.	Potassium Chromate	0.25kg	1	210

Remarks <1 : Equipment added to the standard equipment list.

No	Items		Planned Q'ty for One School	Planned Q'ty for 210 Schools
27.	Potassium Dichromate	0.25kg	1	210
28.	Potassium Bromide	0.25kg	1	210
29.	Boric Acid (Crystals)	0.25kg	1	210
30.	Calcium Chloride	0.25kg	1	210
31.	Ammonium Chloride	0.5kg	1	210
32.	Zinc Nitrate	0.5kg	1	210
33.	Sulfuric Acid	0.5L	1	210
34.	Manganese Dioxide	0.25kg	1	210
35.	Acetic Acid	0.5kg	1	210
36.	Sodium Bicarbonate	0.25kg	1	210
37.	Hydrogen Peroxide	0.25kg	1	210
38.	Potassium Nitrate	0.25kg	1	210
39.	Potassium Chloride	0.25kg	1	210
40.	Sodium Sulfate	0.25kg	1	210
41.	Ammonium Solution	0.5L	1	210
42.	Hydrochloric Acid	0.5L	1	210
	HOME ECONOMICS			
1.	Sewing Machines		4	840
2.	Pressure Cooker		2	420
3.	Meat Grinder		1	210
4.	Electric/Gas Range(with Gas Cylinder)		1	210
5.	Blender		1	210
6.	Mixer		1	210
7.	Casserole Set		1	210
8.	Electric Iron		1	210
9.	Set of Dinnerware		1	210
10.	Set of Silverware		1	210
11.	Glassware Set		1	210
12.	Set of Frying Pan		1	210
13.	Kitchen Knife Set		2	420
14.	Cutting Devices		1	210
15.	Mixing Bowl Set		1	210
16.	Kettle		1	210
17.	Bakeware Set		2	420
18.	Set of Measuring Spoons		2	420
19.	Set of Measuring Cups		2	420
	INDUSTRIAL ARTS			
1.	Stock and Die Set		4	840
2.	Pipe Wrench Set		4	840
3.	Pipe Vise		4	840
4.	Hack Saw		4	840
5.	Pliers, Diagonal Cutting		4	840
6.	Screwdriver Set		4	840

No	Items	Planned Q'ty for One School	Planned Q'ty for 210 Schools
7.	Utility Tester	4	840
8.	Wire Stripper and Cutter	4	840
9.	Hand Drill	4	840
10.	Cold Chisel Set	4	840
11.	Hammer - Claw	4	840
12.	Hammer - Ball Pein	4	840
13.	Hammer - Cross Pein	4	840
14.	Rule, Steel	4	840
15.	Tape Rule (10', 33')	4	840
16.	Tin Snip	4	840
17.	Soldering Gun	4	840
18.	Machinist Vise	4	840
19.	Vise Grip Pliers	4	840
20.	Bench Grinder	1	210
21.	Hand Saw (Rip and Cross cut)	4	840
22.	Hand Plane (Jack and Smooth Plane)	4	840
23.	Hand Brace	4	840
24.	Zigzag Rule (Folding Rule)	4	840
25.	Wood Chisel Set	4	840
26.	Center Punch Set	4	840
27.	C-Clamp	4	840
28.	Bar Clamp	4	840
29.	Carpenter's Square (Combination Type)	4	840
30.	Try-Square	4	840
31.	Electric Arc Welder	1	210
32.	Marking Gauge	4	840