No. 4

# BASIC DESIGN STUDY REPORT
# ON
# THE PROJECT FOR CONSTRUCTING
# THE NATIONAL LEARNING RESOURCE CENTER FOR TEACHER TRAINING IN SCIENCE AND MATHEMATICS EDUCATION
# IN
# THE REPUBLIC OF THE PHILIPPINES

NOVEMBER 1987

JAPAN INTERNATIONAL COOPERATION AGENCY

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# 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 Constructing the National Learning Resource Center for Teacher Training in Science and Mathematics Education and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to the Philippines a study team headed by Mr. Takashi Yamagiwa, Senior Specialist for Curriculum, Lower Secondary School Division, Elementary and Secondary Education Bureau, Ministry of Education, Science and Culture, from July 15 to August 2, 1987.

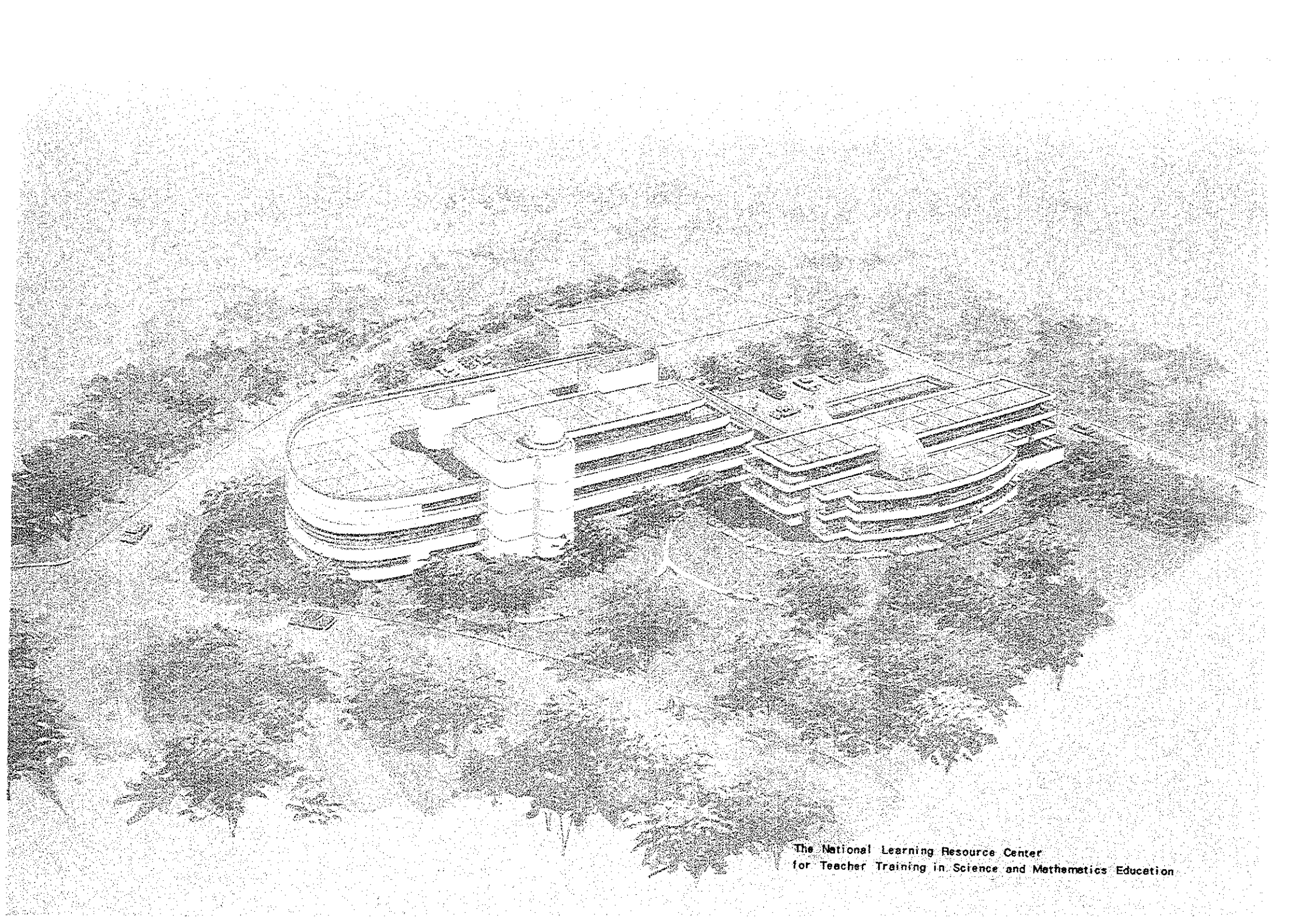
The team had discussions on the Project with the officials concerned of the Government of the Philippines and conducted a field survey in Manila. After the team returned to Japan, further studies were made, a draft report was prepared, and for the explanation and discussion of it, a mission was sent to the Philippines. As a result, 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 the two countries.

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

November 1987

Keisuke Arita
President
Japan International Cooperation Agency



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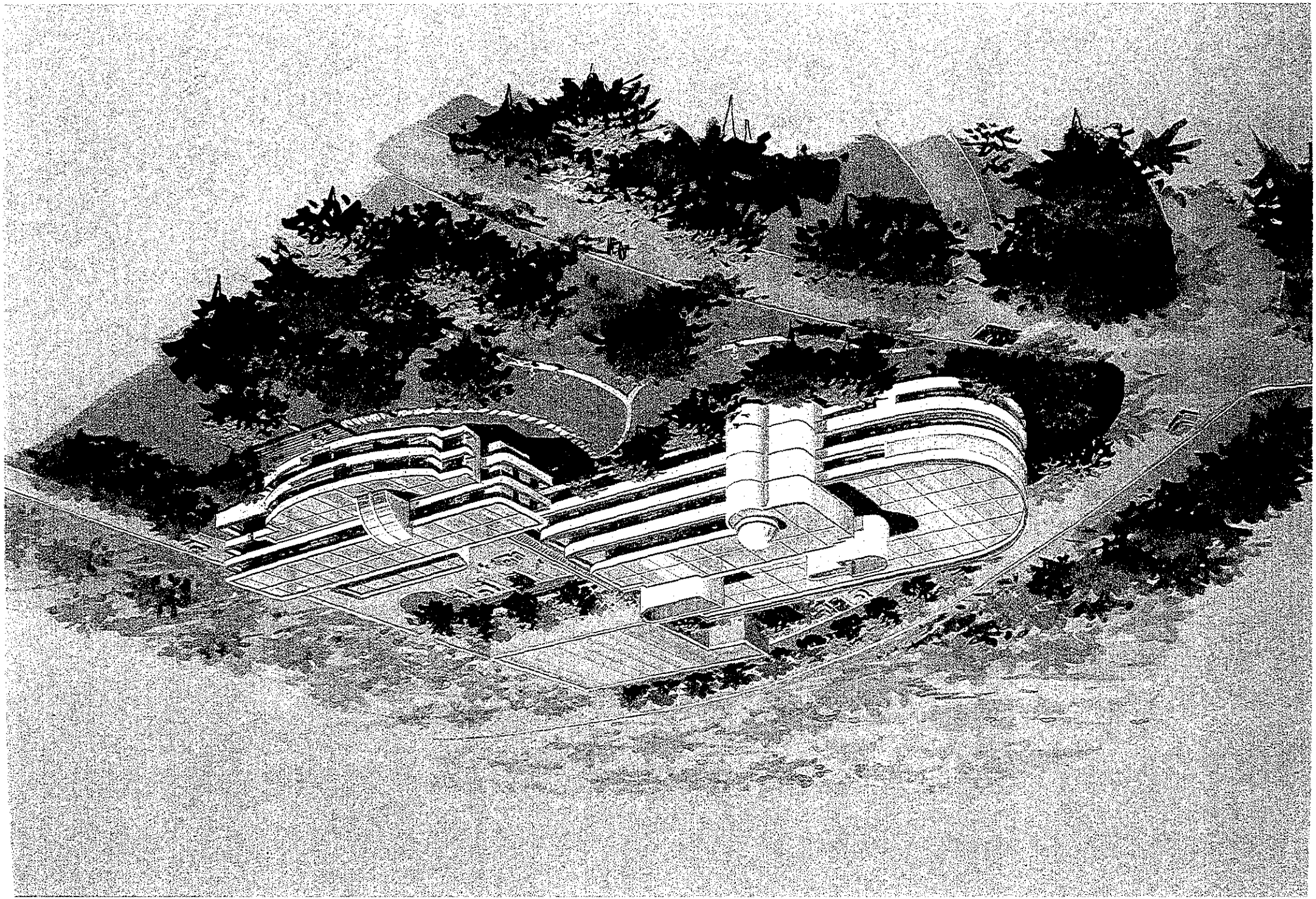

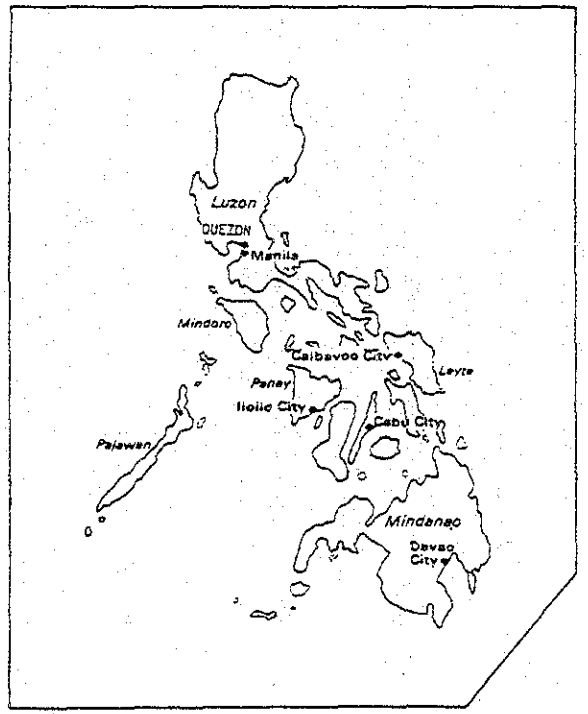
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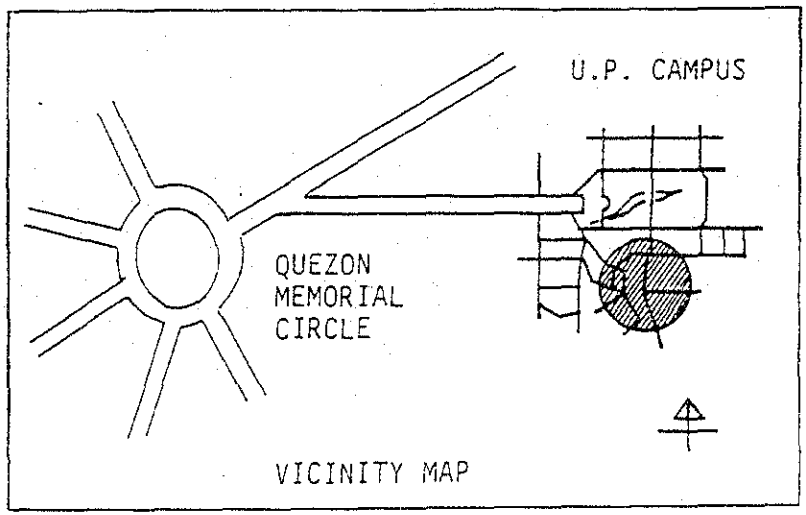
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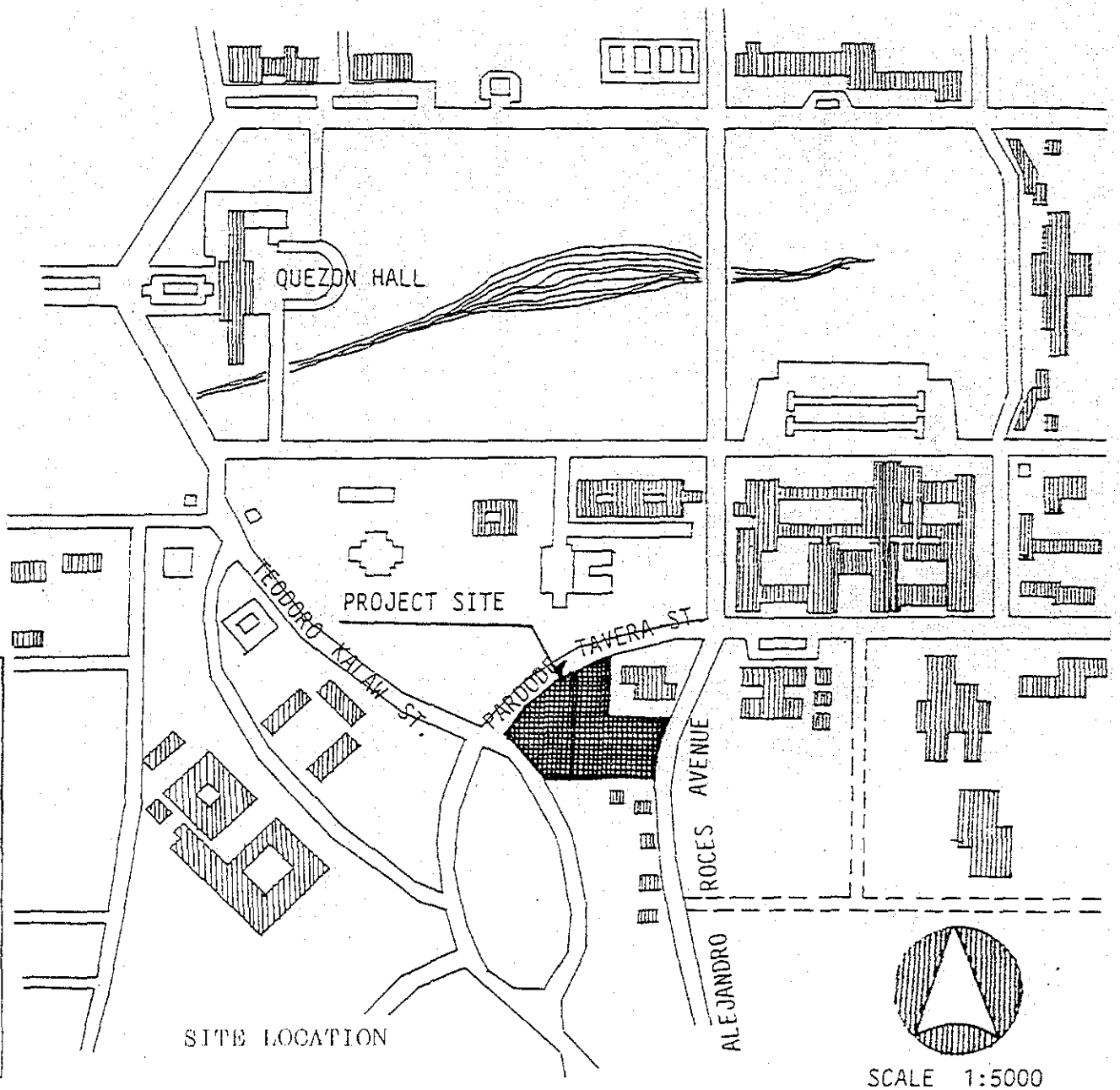
QUEZON HALL
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TEODORO KALAW ST.
PARODEL TAVERA ST.
ROCES AVENUE
ALEJANDRO
SITE LOCATION
SCALE 1:5000

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ABBREVIATIONS

| | |
|---|---|
| BEE | - Bureau of Elementary Eduation |
| BHE | - Bureau of Higher Education |
| BSE | - Bureau of Secondary Education |
| DECS | - Department of Education, Culture and Sports |
| DLRC | - District Learning Resource Center |
| DOST | - Department of Science and Technology |
| INNOTECH | - Regional Center for Educational Innovation and Technology |
| ISMED | - Institute for Science and Mathematics Education Development |
| NCEE | - National College Entrance Examinations |
| NCR | - National Capital Region |
| NEDA | - National Economic and Development Authority |
| NLRCTT | - National Learning Resource Center for Teacher Training in Science and Mathematics Education |
| PSHS | - Philippine Science High School |
| RECSAM | - Regional Center for Education in Science and Mathematics |
| RELC | - Regional Education Learning Center |
| RLS | - Regional Leader School |
| RSTC | - Regional Science Teaching Center |
| SEC | - Science Education Center |
| SEDP | - Science Education Development Plan |
| SEI | - Science Education Institute |
| SPI | - Science Promotion Institute |
| UNESCO | - United Nations Education, Scientific and Cultural Organization |
| UP | - University of the Philippines |

# SUMMARY

## SUMMARY

The economy of the Republic of the Philippines is sluggish and its economic growth has been declining since 1979, showing negative growth after 1984. Reconstruction of its economy is an important subject confronting the Government of the Philippines, which is exerting the utmost efforts to stabilize its economy and increase productivity. To attain this goal, manpower development, especially substantiation of school education as a basis for vocational ability development, is urgent.

Its Government, being aware of this situation, realizes the importance of upgrading education, especially in science and mathematics, and is working to improve the skills of science and math teachers. Yet present facilities are extremely inadequate for re-educating such teachers all over the country. In particular, re-education of elementary and secondary science and math to overcome their insufficient experience through extensive use of experimentation and practical exercises is essential. Thus, improvement of educational equipment, materials and required facilities is most urgent.

In view of the foregoing situation, the said Government has planned to establish the National Learning Resource Center for Teacher Training in Science and Mathematics on the premises of the University of Philippines to re-educate teachers through practical experiments and exercises and has requested the Government of Japan for grant aid to construct the Center.

In response, the Government of Japan dispatched a preliminary study team to the Philippines in December, 1986 through the Japan International Cooperation Agency (JICA). The team confirmed the aptness of the plan, details of the request, period of implementation, and the proposed construction site. The Government of Japan subsequently decided to dispatch a Basic Design Study Team.

The Basic Design Study team was dispatched to the Philippines from July 15 to August 2, 1987. The team discussed the subject matter with its Philippine counterpart, confirmed the background of the plan and details of the request, and surveyed the proposed construction site.

After returning to Japan, the Study Team analyzed the data collected in the Philippines. It thoroughly studied the Project's suitability, its adequacy in size and quality, and its proposed administration system through discussions with the authorities concerned on the effects of the Project. The team thus formulated a basic design for the required facilities and equipment.

Facilities and major equipment to be provided are as follows:

The proposed site for this Center is located in the southern part of the Diliman campus, the University of the Philippines, Quezon. The site is approximately 9,000 $m^2$, bordering the ISMED building site and on facing Tavera St., Lalaw St. and Roces Ave. on the other three sides.

(1) Facilities

1) Training building (3-story reinforced concrete structure, Partially 4-story)
1 building 6,221 $m^2$ in area

1st floor: Library, seminar room, exhibition room, lecturers' room, workshop, printing room

2nd floor: Laboratories for physics, chemistry, and elementary science, and an auditorium

3rd floor: Laboratories for biology, earth science, elementary mathematics, secondary mathematics, and information science

Rooftop: Penthouse for astronomical telescope, audio-visual room

2) Dormitory (3-story reinforced concrete structure)
1 building 2,129 $m^2$ in area

1st floor: Cafeteria, superintendent's room, accommodation for lecturers (4 rooms), accommodation for trainees (11 rooms, 2 per room)

2nd floor: Accommodation for trainees (23 rooms, 2 per room)

3rd floor: Accommodation for trainees (11 rooms, 2 per room)

3) Corridor

Connecting passage between the training building, the dormitory, and the ISMED building.

(2) Equipment to be provided

1) Laboratory equipment for the:

| | | |
|---|---|---|
| a. | Biology lab | Complete set |
| b. | Chemistry lab | Complete set |
| c. | Physics lab | Complete set |
| d. | Earth science lab | Complete set |
| e. | Mathematics classroom | Complete set |
| f. | Information science lab | Complete set |
| g. | Elementary science lab | Complete set |

2) Teaching material fabrication equipment

| | | |
|---|---|---|
| a. | Training material fabrication room equipment | Complete set |
| b. | Photographing and printing equipment | Complete set |
| c. | Audio-visual equipment | Complete set |

3) Auxiliary equipment

| | | |
|---|---|---|
| a. | Office and administration equipment | |
| b. | Library equipment | Complete set |

4) Vehicle

| | | |
|---|---|---|
| a. | Microbus | 2 |
| b. | Light van | 1 |

Infrastructure for power distribution, water supply, drainage and telephones exist around the site but sewage treatment and city gas supply facilities are not available. It needs to install a simple septic tank and LPG gas supply facility.

The implementation of this plan will enable improvements in both quantity and quality of the facilities and equipment required to re-educate science and mathematics teachers in the Republic of the Philippines. It is expected that more skilled teachers and improvements in science and mathematics education will result, and thus greatly contribute to the development of manpower in the Philippines.

From such a point of view, the realization of this project under Japan's Grant Aid will have a significant meaning and the effects of assistance will be far-reaching.

Although operation and administration by capable staff of the relevant agencies of the Philippines is expected in executing this project, positive and continuous support from the Government of the Philippines will be absolutely necessary for the projects success. In particular, budgetary measures required for the continuous operation of the center are essential.

# CHAPTER 1 INTRODUCTION

# CHAPTER 1 INTRODUCTION

The Government of the Republic of the Philippines has been exerting all possible efforts to stabilize its economy and enhance productivity in order to improve the nation's long uncertain economic condition, and has placed high priority on developing human resources especially vocational ability, through school education to form a sound basis for economic reconstruction. Revitalizing school education as well as giving training to teachers already in service is thus particularly urgent.

As a measure to improve education, the Government of the Philippines has inaugurated the Science Education Development Plan (SEDP) as a joint project of the Ministry of Education, Culture and Sports (MECS)* and the National Science and Technology Authority (NSTA)** in 1982. One of its goal is upgrading science and mathematics education, particularly, problematic sector of the basic education curriculum. Although an integral part of the project is the effort to improve science and mathematics teachers, the facilities, equipment and materials for gathering and re-educating such teachers from elementary and secondary schools nation-wide are extremely insufficient at present. The problem is most acute in facilities and training equipment for science and mathematics as re-education in practical experiments and exercises is essential.

To overcome the obstacles, the Government of the Philippines formulated a plan to construct the National Learning Resource Center (NLRC) to train teachers already in service using practical exercises and experiments and approached the Government of Japan for grant aid.

In response to the request by the Government of the Philippines, the Government of Japan decided to carry out a Basic Design Study for the project. Through the Japan International Cooperation Agency, a Basic

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* Presently, the Department of Education, Culture and Sports (DECS)

** Presently, the Department of Science and Technology (DOST)

Design Study Team for the Project of Constructing the National Learning Resource Center for Teacher Training in Science and Mathematics went to the Philippines for 19 days from July 15, 1987. Mr. Takashi Yamagiwa, Senior Specialist for Curriculum, Lower Secondary School Division, Elementary and Secondary Education Bureau, Ministry of Education, Science and Culture was assigned as the Team Leader.

The Study Team and the officials concerned of the Philippines discussed the basic design as shown in Appendix. The Minutes of Discussions were signed and exchanged on the matters of basic agreement on July 23, 1987 between Dr. Minda C. Sutaria, Undersecretary of the Department of Education, Culture and Sports, Dr. Leland S. Villadolid, Undersecretary of the Department of Science and Technology, Dr. Ernesto G. Tabujara, Chancellor, University of the Philippines, Diliman and Mr. Yamagiwa, the Team Leader.

Upon its return to Japan, the Team made further studies and held discussions with the relevant government agencies on the Project. Based on the results of the Basic Design Study, the Team drafted the Basic Design.

Subsequently, a Study Team with Mr. Takashi Yamagiwa as team leader was dispatched to the Philippines for 8 days from November 1, 1987 to explain the Draft Basic Design Study Report and obtain the agreement of the Government of the Philippines.

This Basic Design Study Report was prepared after all the study in the Philippines and discussions with relevant officials of both the Government of the Philippines and Japan described above. It presents the most appropriate basic design for the project.

The Minutes of Discussions, team members, meeting schedule and list of Filipino interviewers are given in the Appendix.