ANNUAL REPORT '93

SCIENCE EDUCATION INSTITUTE

"Science Education for Philippines 2000"

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MESSAGE

The year 1993 was the birth of a new battlecry for the Department of Science and Technology --- Science and Technology Agenda for National Development or STAND.

As one of the line institutes of DOST, the Science Education Institute supports STAND by widening its reach towards developing a critical mass of highly trained scientific and technological manpower and improving science education in the country. Year after year, SEI has continually moved ahead undertaking various programs and projects which included the administration of science scholarships, the upgrading of science instruction through training programs and equipment grants and the implementation of numerous S&T inclined youth activities. These programs are anchored towards a commitment to invest in our youth - the future scientists, engineers and technologists who will steer the wheels of industrialization and our science educators who mold the minds of the young towards a productive future.

In 1993, the Institute spearheaded the formulation of a five-year plan called the Science and Technology Education Plan or STEP 2000. This is a long-term plan designed to work for the development of a scientifically and technologically literate citizenry and to accelerate the development of S&T manpower needed for social and economic growth. Through a number of programs and projects incuded in this plan, it is envisioned to attain its goal within the period 1994 to 1998.

With these array of accomplishments for the year under review, SEI continuously expands its reach to provide quality science education as a strong foundation of the visions of Philippines 2000.

ESTER B. OGENA, Ph.D.
Director

HIGHLIGHTS

The year under review is characterized by significant moves that brought new directions for the Institute. A number of plans were realized which paved the way for more improvements and developments in science education. The following are reports on the most notable undertakings of SEI for the year.

SCIENCE AND TECHNOLOGY EDUCATION PLAN (STEP)

In 1993, the **Science Education Institute (SEI)** took leadership in the formulation of the **Science and Technology Education Plan (STEP) 2000**.

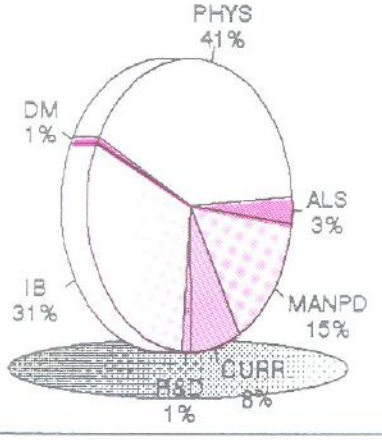
The Plan was conceptualized in cooperation with the **Department of Education, Culture and Sports (DECS)**, the **University of the Philippines System (UP)** and the **Regional Science Teaching Centers (RSTCs)** and in consultation with the **National Economic Development Authority (NEDA)**. In a series of workshops and meetings, representatives from these cooperating institutions deliberated on the Plan guided by objectives to: a) develop a scientifically and technologically literate citizenry; and b)accelerate the development of S&T manpower needed for social and economic growth.

The Plan which is operationalized through programs and projects are due for implementation from 1994 to 1998. On the whole, it focuses on the development of teachers and learners through the implementation of various strategies along the following:

1) Curriculum/Instructional Materials Development
2) Manpower Development
3) Delivery Modes
4) Physical Facilities/Equipment
5) Research and Development
6) Institution Building
7) Alternative Learning System

The STEP which was presented to different sectors including the academe, government institutions and non-government organizations in a national consultation meeting was later approved for implementation by both the **Science and Technology Coordinating Council (STCC) of the DOST** and the **Social Development Committee (SDC) of the NEDA**. It was highlighted by the signing of the Memorandum of Agreement between the DOST and DECS Secretaries who shall be the main proponents in the implementation of the Plan.

FINANCING THE PLAN



PROGRAM	BUDGET
CURRICULUM	P 877.20M
MANPOWER DEVELOPMENT	1,647.80M
DELIVERY MODES	88.15M
PHYSICAL FACILITIES	4,534.21M
RESEARCH AND DEVELOPMENT	146.80M
INSTITUTION BUILDING	3,371.55M
ALTERNATIVE LEARNING SYSTEMS	331.50M
TOTAL	P10,997.21M

The five-year plan would require a total amount of **₱ 10.997 B** for implementation. As envisioned, the budgetary allocation for the various projects shall be requested from foreign institutions and governments giving aids to development projects of other nations.

NEW SEI SCHOLARSHIP SLOTS

For 1993, the Science Education Institute granted new scholarship slots under its two scholarship programs at the undergraduate level. These are the DOST-SEI Undergraduate Scholarship Program and the Junior Level Assistance Program (JLAP).

The DOST-SEI Undergraduate Scholarship Program aims to encourage high school graduates to pursue S&T related courses in the tertiary level through scholarships to deserving students. For AY 1993-94, 270 slots were awarded to students who passed the qualifying examination which was administered nationwide on October 25, 1992 to 6,668 incoming freshmen.

The JLAP is designed to attract incoming third year engineering students enrolled in identified engineering institutions to act as immediate feeders for high-level development programs in engineering. The test was administered in 6 selected areas in July 1993. One hundred forty (140) incoming junior examinees took the exam, of whom 81 were awarded the scholarships.

A remarkable number of graduating high school students who belong to the upper 10% took the exam administered in October 1993 for the 1994 DOST-SEI Undergraduate Scholarship Program. A significant increase of 39.38% compared to 1992 was attributed to the massive multi-media information drive undertaken in promoting the scholarship program. The television ad shown during primetime in at least four big channels i.e. Channels 2, 4, 7 and 9 and a radio plug aired in 60 radio stations nationwide boosted the DOST-SEI scholarship programs even to the remotest part of the country. The result of this examination will be announced in February, 1994.

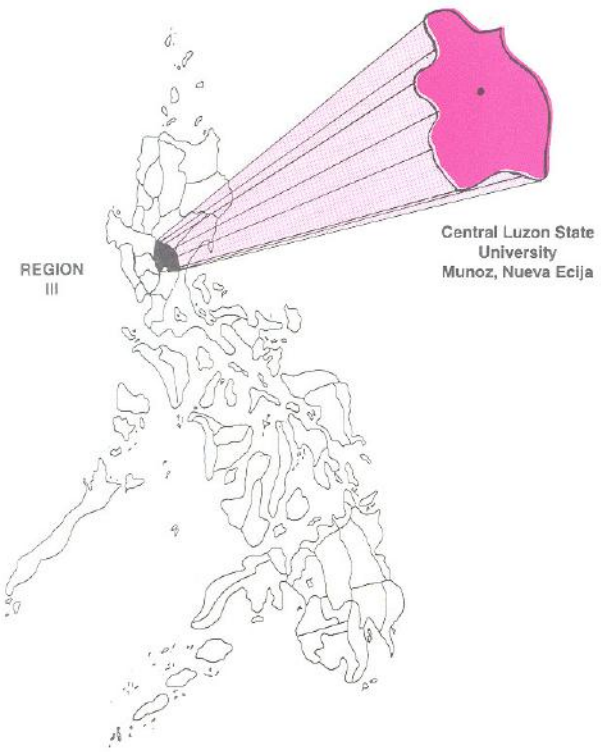
CLSU AS THE 15TH RSTC

In 1977, the Central Luzon State University (CLSU) was first established as a Regional Science Teaching Center (RSTC) along with the other sixteen (16) RSTCs nationwide. Due to budgetary constraints however, the number of RSTCs was reduced to eleven (11) in 1980. Among the 5 centers eliminated was CLSU.

In 1988, the newly-organized Department of Science and Technology gave the RSTCs the needed support to improve their capabilities. By 1992, a total of 14 tertiary institutions served as RSTCs. That year, a committee was created to evaluate the capabilities and the proposals submitted by some universities vying to become the 15th RSTC which shall specially serve the science education development programs of Region III. The criteria set in the assessment were along: a) faculty capability; b) curricular offerings; c) science laboratory and library facilities; and d) management support to science education programs.

Having been a recipient of various grants from different organizations and institutions, its strong faculty line-up and adequate library and laboratory facilities for both the colleges of science and education are factors that convinced the members of the evaluation committee to recommend the CLSU to DOST as the RSTC for Region III.

The establishment of CLSU as the RSTC for Region III was highlighted by the signing of **Memorandum of Agreement** between the **DOST Secretary, Dr. Ricardo T. Gloria and the CLSU President, Dr. Fortunato E. Battad** on **November 13, 1993** in the presence of all the University Presidents and Directors of the RSTCs. During the said occasion, Dr. Battad officially appointed **Dr. Victorino Mones and Dr. Lilia Torres as RSTC Director and Deputy Director**, respectively.



SELECTION OF THE THREE MODEL RSTCs

The Philippine-Japan Project-Type Cooperation for the Improvement of Science Education and Manpower Development is a cooperative project of the DOST, DECS and the University of the Philippines. Under this program is the Selection of Three (3) Model Regional Science Teaching Centers (RSTCs) which shall be provided assistance by the Japan International Cooperation Agency (JICA) for the development of elementary and secondary science and mathematics education in the country. The assistance shall include **Faculty and Administrators/Staff Development** through deployment of Japanese Overseas Cooperation Volunteers (JOCV) who will give lectures during short-term science education training programs and faculty and administrators/staff in-service trainings within the Philippines and in Japan; **Strengthening of Science Laboratory and Library Facilities** through science equipment and library materials grant; and **Civil Works** by providing buildings including facilities which shall make the RSTC equipped with the most modern facilities for the conduct of science education training programs in the regions.

The Philippine committee recommended to the JICA its choice of the 3 model RSTCs based on these criteria:

1. Faculty Profile
2. Science Education Curricular Offerings
3. Availability of Land Space for Expansion
4. Peace and Order Situation
5. Availability of Facility for Trainings in Science and Mathematics
6. Availability of Transportation from the Center of the City/Province to the RSTC
7. Availability of Dormitories for trainees
8. Linkages of other departments with the institution
9. Availability of Housing/ Dormitory for the JOCV Volunteers.

As a result of the evaluation of both parties, the following satisfied the criteria for the 3 model RSTCs:

1. Bicol University for Luzon
2. West Visayas State University for the Visayas
3. Ateneo de Davao University for Mindanao

The activity was highlighted by the signing of the Memorandum of Agreement between the Philippine Government and the Japanese Government represented by Dr. Moriya Miyamoto, Chief Advisor in Preparation and Dr. Erlinda C. Pefianco, DECS Undersecretary on October 26, 1993 at the Shangri-la Plaza, Makati, Metro Manila.

P 28 M EQUIPMENT GRANT TO 14 RSTCs

Under the program, **Strengthening of Regional Science Teaching Centers,** each RSTC was granted ₱2 million worth of science laboratory equipment in 1993 for a total Grants-in-Aid of ₱28 million.

The fourteen recipient-RSTCs are based in the following tertiary institutions:

1. Saint Louis University
2. Mariano Marcos State University
3. Saint Mary's College
4. Philippine Normal University
5. Bicol University
6. West Visayas State University
7. University of San Carlos
8. Divine Word University
9. Western Mindanao State University
10. Mindanao State University
11. Ateneo de Davao University
12. Notre Dame of Marbel University
13. Xavier University
14. University of Southern Mindanao

SEI is now working for the budgetary allocation of science laboratory development program to be included in the general appropriation for 1994. This shall include grants for the 15 RSTCs in the total amount of 30 million pesos.

1993 SELECTION TEST FOR SPECIAL SCIENCE CLASS

Sixteen thousand five hundred twenty seven (16,527) incoming first year high school students took the Scholastic Aptitude Test for the first batch of Special Science Classes last June 7 to 11, 1993. This selection test was conducted in the 110 S&T Oriented high schools all over the country. The test consists of 180 questions distributed along three subject areas specifically, English, Mathematics and Science. On the basis of the results in this test, 8,966 students or 54% of the total examinees qualified for enrollment in the special science classes. These students comprised the 175 first year sections of special science classes.

S&T SCHOLARSHIP ACT

House Bill #7224, otherwise known as Science and Technology Scholarship Act of 1993, calls for the development of the country's S&T manpower. It seeks to institutionalize a scholarship program for the nation's poor but deserving bright students and other specially-gifted citizens. Those deserving from each municipality will be granted scholarship to study in any Department of Education, Culture and Sports (DECS)-accredited school here and abroad. The grant applies only to the fields of science, mathematics, engineering and other related areas. The bill further stipulates that the Department of Science and Technology (DOST) through the Science Education Institute (SEI) shall directly implement the program.

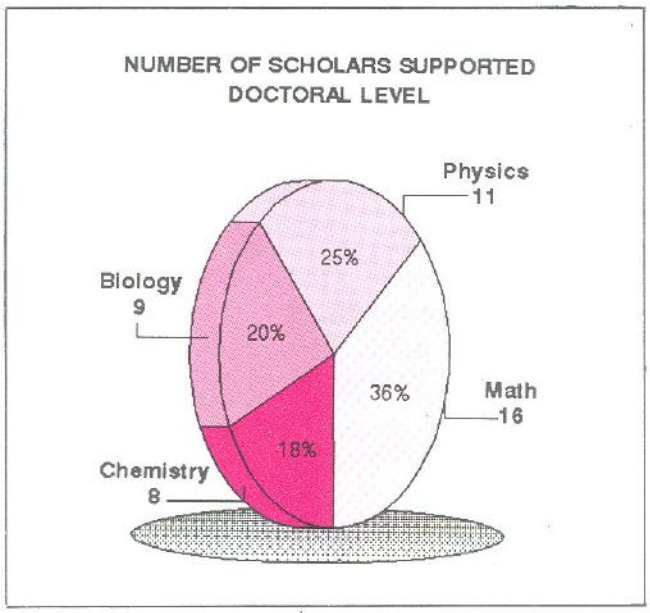
About ₱100 million is earmarked for the scholarship and this will be increased by at least ₱50 million every year upon its implementation.

1993 ACCOMPLISHMENTS

Pursuing its goals through 1993, SEI presents herein its significant accomplishments for the year. Its programs and projects geared towards the development and strengthening of S&T infrastructure are classified under: 1) Manpower Development in Science and Engineering; 2) S&T Manpower Assessment; 3) Recognition of S&T Efforts; 4) Development of S&T Culture; 5) Organizing and Strengthening of S&T Network; 6) Support for Upgrading Science Education in Secondary Schools; and 7) Projects supported by DOST Grants-in-Aid Program.

1. MANPOWER DEVELOPMENT IN SCIENCE AND ENGINEERING

HIGHER LEVEL MANPOWER DEVELOPMENT



a. FACULTY DEVELOPMENT PROGRAM FOR TEACHER EDUCATORS OF THE RSTCs

This program aims to upgrade the teaching capabilities and improve the teaching competencies of science and mathematics teachers in the regions through scholarship grants in the master's and doctoral levels and certificate/diploma program. The graduate scholarships program aims to develop high level expertise of science and mathematics teacher educators, teacher trainors, school administrators and supervisors.

This program presently supports 44 scholars in PhD in Science Education at the UP College of Education and De La Salle University. Two scholars graduated from UP in 1993. Nenita A. Malaluan from Ateneo de Davao University and Elvira L. Nguyen from UP, finished their doctorate degree majors in physics and mathematics, respectively.

Three scholars who are Biology majors are currently taking their Enrichment Program at Monash University, Australia. They are Rosabel A. Abuan from St. Mary's College, Ma. Eden I. Aranaz from Bicol University and Ofelia F. Brioso from Western Mindanao State University.

b. IBP LADDER-TYPE FACULTY DEVELOPMENT PROGRAM

The IBP Ladder-Type Faculty Development Program was instituted to provide faculty members of Institution Building Program (IBP) schools adequate academic preparation for the pursuit of further graduate studies in the breeder science fields of Biology, Chemistry, Mathematics and Physics.

The ladder-type program commenced with an intensive short-term training program for those faculty who need upgrading. Those who showed potential for further training advanced to a one-year Certificate Program, after which they could enroll in the M.A. or even M.S. program.

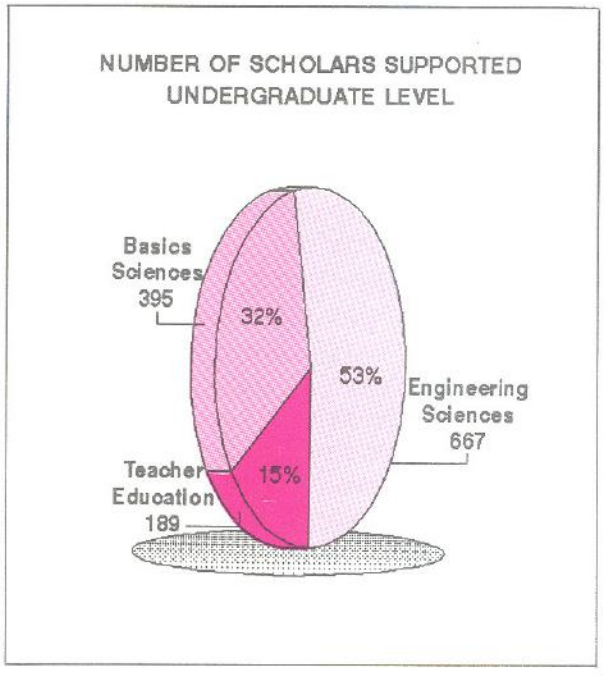
Five scholars graduated from UP Diliman in 1993. They are:

Name/Degree	Schools of Origin
Wilfredo V. Alangui, MS Math	UP College, Baguio
Rosario J. Licong, MA Phys	MSU-IIT, Iligan City
Emma L. Dorado, MS Bio	NDCM, Koronadal
Felix M. Salas, MS Chem	South Cot.
Mario P. Obrero, MA Phys	VISCA, Baybay, Leyte
	Univ. of Northern Phils.

Four scholars are currently doing research in the fields of Chemistry and Biology. Nine others are in various stages of thesis writing in the fields of Biology and Chemistry and are expected to graduate in 1994.

The faculty development grant provided two-year period for M.A. and M.S. degrees in the breeder science fields. However, there are variety of problems encountered during the period of conduct of their research studies and this given period is relatively short for the degree. There were cases when an IBP scholar resumes teaching in his mother institution at the end of the scholarship period even without finishing the degree.

ELEMENTARY, SECONDARY AND UNDERGRADUATE LEVEL MANPOWER DEVELOPMENT



Recognizing the need to improve manpower quality for the country to achieve industrializing status by the year 2000, the Science Education Institute (SEI) continued with the administration of scholarship programs at the undergraduate level and the conduct of trainings relevant to the upgrading of S&T. The following report shows the accomplishments of these programs.

a. UNDERGRADUATE SCHOLARSHIP PROGRAMS

The undergraduate scholarship programs are: The **Undergraduate Scientific Manpower Development Program; Scholarship Program for PSHS Graduates; and The Junior Level Assistance Program in Engineering.** These programs aim to develop qualified and competent scientific and technological manpower to operationalize and facilitate attainment of the NIC status by the turn of the century. For AY 1993-94, 1,065 ongoing scholars are enrolled in baccalaureate degree courses in pre-selected colleges and universities.

Recognizing the quality of these graduates, companies, R & D institutions, the academe and some government agencies tap the graduates of these programs.

Activities for further development of scholars

Summer Practical Training - This provides opportunities for the senior scholars to experience practical work and apply the knowledge they acquired from school and to explore work opportunities. Forty-five companies, R & D institutes and other private entities such as banks, radio stations and insurance companies served as the training venues of 108 senior scholars.

Talakayan sa Agham, Exposure Trips cum Lecture and Science Interblock are activities conducted to develop the scholars' awareness on S&T breakthroughs. Scholars who are enrolled at UP and Ateneo join efforts to create an avenue where they can freely interact with scientists, researchers and educators to upgrade their knowledge and mold their leadership and management capabilities.

b. SCHOLARSHIP PROGRAM FOR SCIENCE AND MATH EDUCATION, MAJOR IN PHYSICS

This is a 10-year program that provides incentives to qualified students who are interested to pursue as a profession teaching in secondary science and mathematics. The objective of this program is to produce highly trained and competent teachers who after graduation, will teach in their home regions. Heavy expenditures on in-service training and upgrading of poorly prepared physics teachers in the field are also lessened.

In 1993, nineteen (19) BSE-Physics students from various teacher training institutions with identified RSTC, completed their course. Of these new graduates, six (6) got employed as physics teachers in various public secondary schools in their respective home regions at the start of school year 1993-94.

A total of fifty-five (55) scholars were supported during the year including the thirty-two (32) new awardees.

c. A COOPERATIVE PRE-SERVICE EDUCATION FOR SCIENCE AND MATHEMATICS TEACHERS AND PARTIAL SCHOLARSHIPS FOR BSE MAJOR IN PHYSICS

The DOST-SEI continually undertakes the scholarship project for teacher education in science and mathematics in cooperation with the Philippine Normal University (PNU) and the De La Salle University (DLSU). The project's major objective is to stimulate and enhance interest among selected high school graduates to pursue undergraduate courses in Physics, Mathematics and Chemistry and to train them to become competent teachers equipped with the necessary skills for the profession.

The project includes as a sub-component, partial scholarship for college sophomores and juniors in Bachelor of Secondary Education (BSE) major in Physics at PNU.

A summer enrichment training program for third year BSPT and BSE Physics scholars was conducted on May 3-25, 1993 at the UP-ISMED. A total of 59 scholars participated in the program. The training provided opportunities for the scholars to be exposed to the teaching of Science and Technology IV of the Secondary Education Development Program and to strengthen their knowledge of content and professional competencies. The scholars were also taught how to develop low cost instructional materials (e.g. improvised equipment, teaching aids, lesson plans, sample tests, etc.)

d. NAPOCOR-DOST SCHOLARSHIPS FOR THE PEOPLE OF LANAO DEL SUR AND MARAWI

This scholarship is tailored for the Maranao tribes residing in Lanao del Sur and Marawi City, who have high aptitude in science and mathematics. These Maranaos are given opportunities to pursue careers in engineering. The program was initially implemented in AY 1993-94 with 19 freshmen scholars who enrolled at MSU-Marawi City and MSU-IIT. Their financial assistance included tuition fees, book allowance, PE & MS allowance and ₱1,000/month stipends. NAPOCOR transfered the scholarship funds through a DOST-SEI Trust Fund.

e. DOST-SEI SHELL SCHOLARSHIP PROGRAM

A tie-up with the Pilipinas Shell Foundation, Inc (PSFI) was established in 1993 for the project Scholarship Program for BSE major in Physics. The project provides incentives to qualified incoming third year college students currently enrolled in secondary science teaching. It aims to produce highly qualified, competent and committed Physics teachers who will teach in public secondary schools in their respective regions. This two-year program (4 semesters) extended financial assistance to fourteen incoming third year BSE Physics students enrolled at PNU in AY 1993-94.

f. CERTIFICATE/DIPLOMA PROGRAM FOR SCIENCE AND MATHEMATICS TEACHING AT THE SECONDARY LEVEL

In support of the faculty development program for the Network of 110 S&T Oriented High Schools, SEI started implementing the 3-semester Certificate/Diploma Program in Science and Mathematics Teaching in June 1992. The recipients of this program are science and mathematics teachers from the 110 high schools. The schools are required to send 2 participants each for Chemistry, Biology and Physics, and 4 participants each for Math.

Of the 106 participants in the first batch, 28 graduated in Summer 1993 and 78 in October 1993. The second batch of 52 scholars started with the program in June 1993.

g. SHORT-TERM TRAINING PROGRAMS

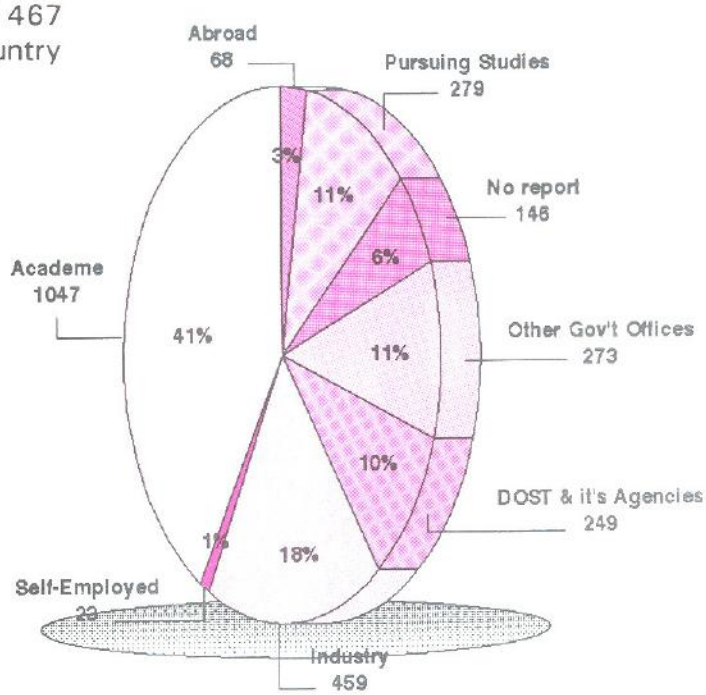
For 1993, the 14 RSTCs conducted the short-term training program for science and mathematics teachers in the elementary level. A total of 525 elementary science and mathematics teachers serving a total of 467 elementary schools throughout the country trained under the said program.

In the tertiary level, two activities were undertaken. These were the Trainors Training on the Certificate Program held at the UP Institute for Science and Mathematics Education Development which was participated in by 42 faculty members of the RSTCs; and the Workshop in Inorganic Chemistry participated in by 16 faculty members from the colleges of science and education.

h. CERTIFICATE PROGRAM FOR SECONDARY SCIENCE AND MATHEMATICS TEACHERS

A two-summer program, the Certificate Program aims to upgrade the teaching competencies and capabilities of secondary science and mathematics teachers who are not majors nor minors in science and mathematics subjects. In 1993, 283 secondary science and mathematics teachers received their certificate of proficiency. Starting the course in the same year, the 552 on-going grantees received their certificate of attendance for finishing the first phase of the course.

DEPLOYMENT STATUS OF DOST-SEI SCHOLAR GRADUATES AS OF MARCH, 1993



2. S&T MANPOWER ASSESSMENT

The S&T Manpower Assessment Division is charged with the assessment of manpower utilization. As such the Division identifies and forecasts qualitative and quantitative scientific manpower requirements and career opportunities in the different sectors of the economy particularly in science education. It also conducts research studies to determine priority areas in science and technology education development and undertakes assessment of internal and external environmental conditions relevant to more responsive S&T manpower education development programs. The results of these undertakings are primarily used as inputs in the formulation of policies, plans and programs in S&T.

Significant contributions to S&T Manpower Development Program were noted in 1993 in the form of completed surveys and studies and the establishment of institutional linkages as channels of information. Moreover, capabilities of the faculty in conducting action researches in science and mathematics subjects were enhanced through logistics and financial support provided by the Institute. These accomplishments are outlined below:

a. *NATIONWIDE SURVEY OF HIGH SCHOOL SCIENCE AND MATHEMATICS TEACHERS*

The nationwide survey that dealt on the characteristics of Science and Mathematics teachers in the country was also completed in 1993. The survey determined the profile of Science and Mathematics teachers in the country. It also looked into the teachers' qualifications vis-a-vis the subjects taught. Moreover, it described the overall school profile according to school population/enrolment; total number of teachers; total number of Science and Mathematics teachers and types of school.

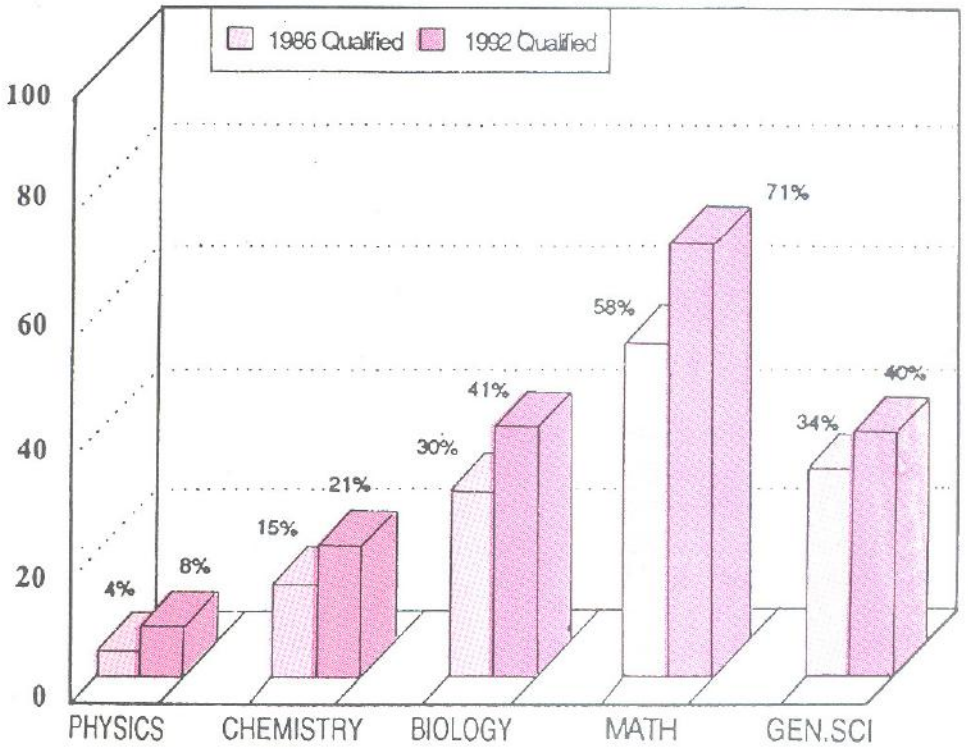
In general, there were 4,246 high schools included in the final analysis of data which consisted of 2,860 public and 1,386 private high schools. One of the highlights of the survey results is the low incidence of qualified teachers who teach Science and Mathematics. Most of the qualified teachers, i.e., those whose major field of study matched the subjects they were teaching, were in Mathematics (72%). However, in the other subjects, i.e. General Science, Biology, Chemistry and Physics, there were less than 50% who were qualified to teach these subjects. It may be suggested that training and course offering especially in the field of Physics teaching, which had only 8% of qualified teachers, must be provided.

b. *A SURVEY OF TEACHER-TRAINING INSTITUTIONS OFFERING BACHELOR OF SECONDARY EDUCATION (BSE) PROGRAMS*

The survey of a sample of teacher-training institutions (TTIs) offering Bachelor of Secondary Education (BSE) was accomplished in 1993. The survey results describe the capabilities of teacher-training institutions in relation to the production of BSE graduates particularly faculty characteristics, admission requirements, students' personal demographic characteristics, school classroom characteristics and expressed needs for support and upgrading.

The general perception that some schools offering BSE programs still need to upgrade their standards was well noted through some established assumptions deduced from the survey results. The number of accredited institutions was 54 out of the total 192 responding schools or 28.1%, while 41 or 21.1% indicated that they were not accredited. Majority, i.e. 97 (50.5%) indicated

PERCENTAGE OF TEACHERS QUALIFIED TO TEACH



information. It may be logical to assume that most of them were not accredited or are still working to achieve that status.

Another significant observation gathered from the study is that generally, schools involved in the study had not been producing many graduates as the incidence of a school producing graduates anywhere from 181 to 200 was very rare. On the average, only 6 schools (3.1%) with more than 200 graduates was noted.

c. *PROFILE OF SCIENCE AND MATHEMATICS SUPERVISORS*

One survey which is a carryover from 1992 and completed in 1993 was the Survey of Science and Mathematics Supervisors. The main goal of the project was to generate relevant information that would constitute one of the bases for the design of training programs for secondary level science and mathematics supervisors. A total of 241 supervisors responded, 24 of whom were regional supervisors, 146 division supervisors and 71 acting supervisors or promotables to said rank.

One of the significant findings of the project was on the level of specialization of the supervisors vis-a-vis the subject areas they supervise. In the regional level, it was found that only 38% of those with MA/MS had science and mathematics specialization, while 62% came from other fields. Moreover, only 25% had Ph.D./Ed.D. and they had no specialization in science and mathematics. Similar conditions had been obeserved in the division level wherein only 23% of those with MA/MS had specialization in science and mathematics. Moreover only 9% of the respondents had Ph.D./Ed.D. and they do not have science and mathematics as their specialization.

Significant information on personal-demographic variables such as average years of teaching experience, subject areas supervised, work/training experience and other relevant data useful for design of training programs for secondary level science and mathematics supervisors were also recorded.

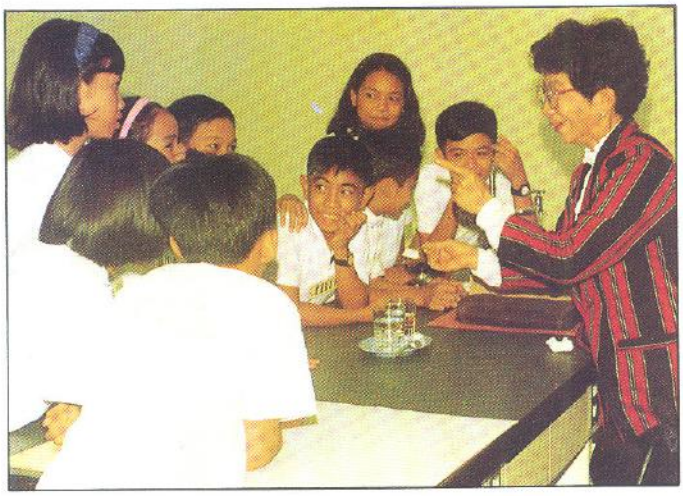
3. RECOGNITION OF S&T EFFORTS

a. *1993 DR. JUAN SALCEDO, JR. SCIENCE EDUCATION AWARDS*

In cooperation with the Department of Education, Culture and Sports and the Bato Balani Foundation, Inc., the Science Education Institute conducted a two-year nationwide search for the most outstanding science/mathematics teachers/educators in the elementary, secondary and tertiary institutions.

The awards serve as recognition of the exemplary contributions of science and mathematics teachers along the following: development of instructional materials and teaching-learning aids, use of innovative teaching strategies, conduct of researches, and their meaningful involvement in professional activities which contribute to the promotion of science and technology consciousness.

The search was opened to all full-time Filipino teachers in both public and private elementary and secondary schools, and full time teachers involved in teacher training from the tertiary level institutions offering Science/Mathematics Education Degree Programs.



Expounding a point - finalist in action during the Demonstration Teaching portion of the national finals of the 1993 Dr. Juan Salcedo, Jr. Science Education Awards, June 29, 1993, UP-ISMED, Diliman, Quezon City

A distinct feature of the 1993 Search was the Regional Qualifying Test (RQT) carried out in two stages. For Stage I, all regional finalists and tertiary nominees took a 30-item content test for the subject they teach. Only the highest scorer in a subject area of a particular category can proceed to Stage II which is the High Level Thinking Skills Test. The top ranking finalists per category were declared regional winners. Rating was made by the Awards Technical Committee based on weighted scores of documents presented and the result of the High Order Thinking Skills Test.

Finalists all and eventual national winners (lower photo)

The three top ranking regional winners per category were declared national finalists. Only one national winner was selected for each of these categories - elementary, secondary and tertiary. Each winner in the three categories received a presidential trophy and cash prize of sixty thousand pesos while the nominating school received a plaque of recognition, sponsored by the Bato Balani Foundation, Inc. The awarding ceremonies was held at the STTC, UP-ISMED auditorium, Diliman, Quezon City last July 22, 1993.

National Awardees with DOST and Bato Balani Foundation official during Awarding Ceremonies of Dr. Juan Salcedo Jr. Recognition Award, July 22, 1993, STTC, UP-ISMED Auditorium, Diliman, Quezon City.

Elementary Level - MRS. JUANITA M. RIMBAN, Tabora Elementary School, New Lucban, Baguio City/Cordillera Autonomous Region - Elementary Science

Secondary Level - MRS. LEAH L. SALVALEON, Iligan City National High School, Iligan City/Region XII - High School Physics

Tertiary Level - DR. JOSE A. MARASIGAN (represented by a colleague), Ateneo de Manila University, Loyola Heights, Quezon City/NCR - College Mathematics

b. ACADEMIC HONORS

For AY 1992-93, 207 scholars graduated under the Undergraduate Scholarship Program of SEI. Out of this number, 64 graduated with academic honors and 9 others completed their course earlier than the prescribed period.

These scholars who graduated with honors were awarded medals and cash equivalents during the Awarding Ceremonies held in conjunction with the 1993 National Science & Technology Week celebration.

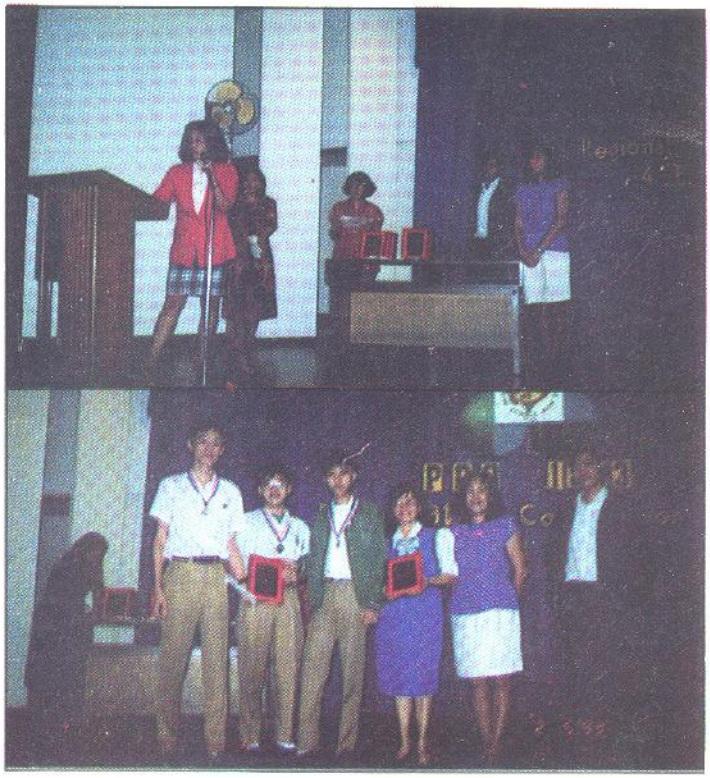
Twenty scholars were awarded for academic excellence and proficiency during the Toast for Excellence tendered by the PNU officials on March 21, 1993. Dr. Avelina Llagas, Director of the Bureau of Secondary Education, DECS gave the inspirational message to the outstanding scholars.

c. TOP PLACERS

Three scholar graduates emerged as top placers in the 1993 Philippine Board Examination for Teachers (PBET). They are:

Sharon de la Torre - Second Placer
BSPT (Cum Laude) - batch '93
Alex Gonzaga - Fourth Placer
BSMT (Magna Cum Laude) - batch '93
Cecile Lopez - Sixth Placer
BSCT - batch '92

Mr. Allen Bernardo, a DOST-SEI scholar graduate, topped the Mechanical Engineering Board examination.



4. DEVELOPMENT OF S&T CULTURE

To popularize science and mathematics education among the youth, several programs are implemented to cultivate interest and involvement in science and math endeavors. Toward this end, informal and out-of-school science activities were conducted to develop science consciousness like training programs and national and international competitions.

YOUTH PROGRAMS

a. *PHILIPPINE MATHEMATICS OLYMPIAD (PMO)*

The PMO is a competition open to secondary students aimed at discovering outstanding young mathematicians in the country and developing their talents fully. It also aims to stimulate improvements in mathematics education.

The Interregional and National Stage Competitions of the 4th PMO was conducted on the first quarter of 1993. The Interregional Stage was held in three venues: 1) De Meester Residence, Quezon City for Luzon; 2)University of Eastern Philippines, Eastern Samar for Visayas; and (3) Davao Christian High School, Davao City for Mindanao. There were 312 students and coaches who participated in the Interregional Stage.

The National Stage Competition which was participated in by 128 students and coaches was conducted on 4-5 March 1993. The pre-final phase was held on 4 March 1993 at the UP Alumni Hostel and the final phase on 5 March 1993 at the UP-ISMED Science Teacher Training Center. Antonio T. Carpio, Presidential Legal Counsel of the Office of the President was the guest of honor during the Awarding Ceremonies.

International linkages and cooperation were also achieved in 1993 thru participation in the following international mathematics competitions:

1993 International Mathematics Olympiad (IMO)

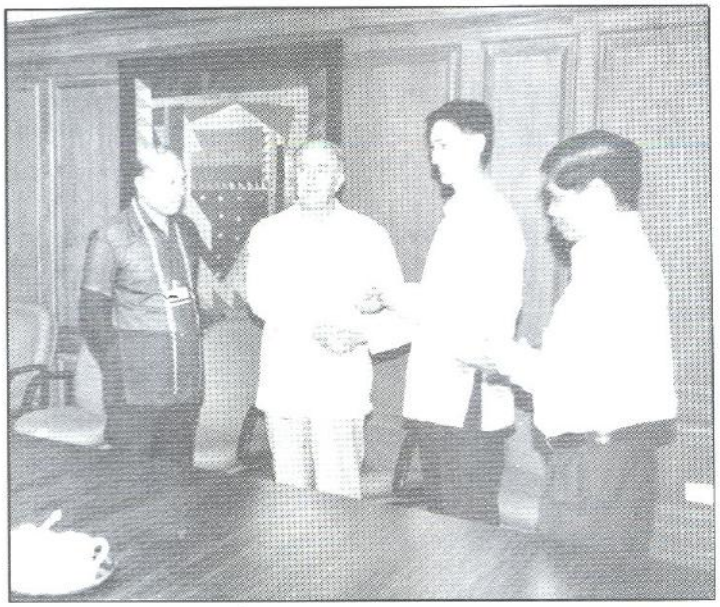
For the sixth consecutive year, the Philippines participated in the 34th IMO held in Istanbul, Turkey on 13-24 July 1993. Two team leaders and six student-contestants represented the country in this prestigious competition. Wyant Chan of Uno High School was awarded a bronze medal which is his fourth medal for the IMO.

The team leader of the delegation was Dr. Jose Marasigan of Ateneo de Manila University while the deputy team leader was Prof. Fe Reyes of UP Diliman.

Asia-Pacific Mathematics Olympiad (APMO)

The APMO is a correspondence contest in mathematics for secondary students held every second week in March for each of the 13 participating countries around the Pacific rim. Forty examinees from the Philippines participated in the APMO. They brought home a gold, a silver, a bronze and seven honorable mention awards.

Australian Mathematics Competition (AMC)



The Australian Mathematics Competition sponsored by the University of Canberra and Westpac Banking Corporation is considered the biggest mathematics competition in the world.

For the Philippines, the 1993 AMC was administered to 117 students on 3 August 1993. Three (3) students were awarded Prize Winner Certificate, including AMC pins and cash awards of A$20 and A$25; sixteen (16) students received each a Certificate of Distinction and forty-one (41) received Certificates of Credit for their respective performance in the competition.

Glen C. Ong from Xavier School was one of the 39 Westpac medalists out of the more than half a million student entrants from Australia and the Pacific region. In 1991, he was awarded a Westpac Medal in the Junior Division of the AMC, making him the first Filipino to be awarded a Westpac Medal. This year, he is the first Filipino to be a recipient of a second Westpac Medal which was presented to him by Ambassador Mack Williams in a Ceremony held on 18 November 1993 at the Australian Embassy in the Philippines. He also received the Prize Winner Certificate, AMC Pin and Cash awards of A$20.

b. 1993 NATIONAL SCIENCE CLUB MONTH

The results of the findings on the evaluation study entitled "NSCM Evaluation Through The Years: 1988-1992" conducted by the College of Education of the University of the Philippines, Diliman served as bases of the NSCM National Executive Committee's decision to implement a different scheme in the celebration of the 1993 NSCM.

The plans and program of activities for the national level celebration were based on the two-day Evaluation and Planning Workshop conducted by the NSCM Technical Working Group. The theme of this year's celebration is "Pakikiisa ng Kapisanang Agham sa Pagkamit ng Mithiing 2000". The national level celebration focused on only one main activity which was dubbed as the "Tri-Island Science Club Managers' Seminar-Workshop on the Vitalization and Mobilization of Science Clubs". It was held in three venues and conducted on three different dates:

Cluster A (Luzon) - 4-5 September 1993 RELC, DECS-NCR, Marikina

Cluster B (Visayas and Bicol) - 11-12 September 1993 Iloilo City

Cluster C (Mindanao) - 18-19 September 1993 Initao, Misamis Oriental

The 1993 NSCM celebration formally opened during the first seminar-workshop held on 4 September 1993 in Marikina, Metro Manila with Senator Orlando S. Mercado as guest of honor. It was also attended by DOST Secretary Ricardo T. Gloria and SEI Director Ester B. Ogena.

A total of 295 participants attended the seminar-workshop. As an output of the seminar-workshop, the regional participants submitted a division/regional Action Plan which they intend to implement starting October 1993 until September 1994.

b. *SEARCH FOR THE OUTSTANDING YOUTH SCIENCE-RESEARCHERS (TOYS)*

The Search for TOYS is an annual and nationwide competition aimed at encouraging science-minded students from elementary to college level to undertake original and significant researches in accordance with the annual theme. This year's theme is "Community Use of Indigenous Energy Resources". The investigatory projects were showcased in a weeklong exhibition called Science Fair.

Through this Search, research and development is introduced among young Filipino students. It encourages the youth to undertake scientific activities that will develop creativity, analytical mind and proper values. It also provides a venue for intellectual and social interaction among participants and experts that will create an atmosphere of better understanding and appreciation of scientific activities and breakthroughs.

The national level competition for AY 1992-93 Search was held at UP Los Banos on 15-19 February 1993. Three winners were chosen and were awarded trophies and cash awards for all three categories - elementary, secondary and collegiate.

The division search for AY 1993-94 for NCR was conducted in October 1993. Fifty-five (55) entries from secondary category and 51 entries from elementary competed for the honors. The top 3 winners for both categories in 4 divisions were chosen and awarded cash awards.

The regional level competition was held at the Cecilio Apostol Elementary School, Kalookan City on December 1-3, 1993. Twelve (12) entries from secondary category and eight (8) from the elementary competed during the Science Fair.

Search for the Outstanding Junior Scientist (OJS)

This is a continuing cooperative project of the Pilipinas Shell Foundation, Inc. and DOST-SEI. Secondary students all over the country who can present and defend a scientific paper for the science fair are qualified to participate. Each of the 3 selected OJS will represent the Philipines to Singapore Youth Science Fortnight, Thailand Science Week and Brunei Science Week. Through these Science Fairs, the young Filipino delegates will be given the opportunity to discuss the implications of science to society with other Southeast Asian delegates and with senior members of the science community.

Seminar-Workshop on How to Undertake Science Investigatory Projects

This activity is a sub-component of the program, "The Search for the Outstanding Youth Science Researchers (TOYS)". The seminar's objective is to tap interest among teachers to engage in scientific researches and to come up with better quality projects. This seminar-workshop was held on 25 September 1993 at DECS Teachers Training Center, San Fernando, Pampanga and participated in by 67 science supervisors and elementary science teachers. The resource persons were Elma Rafael of SEI, Erlinda Basa of UP-ISMED and Lourdes Lozano of DIWA Learning Systems. The lecturers taught the participants the some mechanics of organizing science fairs and helped them acquire the necessary skills in undertaking science investigatory projects. A group activity called Formulation of Problem and Hypothesis allowed the participants to apply what they learned from the lectures. Each group presented its output which the lecturers and their co-participants evaluated. After attending this seminar the participants are expected to promote the use of systematic procedures in conducting scientific research among young science students.

Development of TOYS Informational Materials

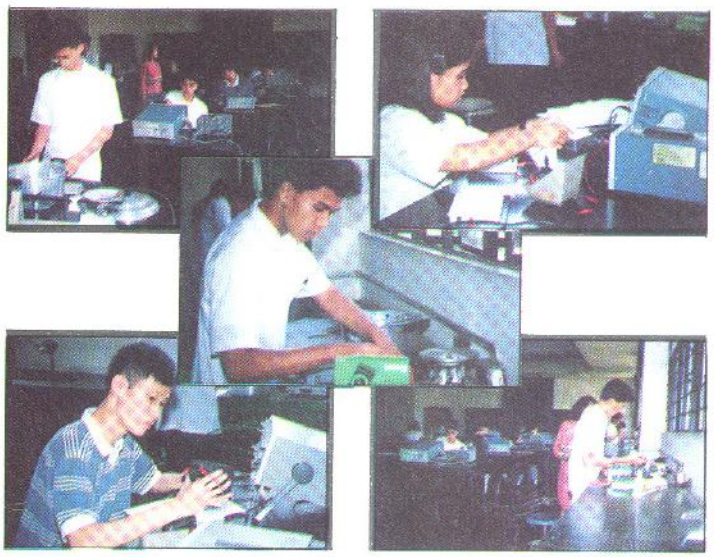
A. Compilation of Abstracts of TOYS Winning Projects

The abstracts of the top 3 winning entries in the elementary, secondary and tertiary levels of the Search for TOYS from 1989 to 1993 were compiled. The same was done for abstracts of the winning projects in the DOST-SEI and Pilipinas Shell joint project, the Search for the Outstanding Junior Scientists (OJS) covering the period from 1988 to 1993. Also included in this compilation are the abstracts of the projects of the Philippine delegate from 1986 to 1989 International Science Engineering Fair (ISEF).

The abstracts are categorized according to the science fields. The compilation contains 98 pages.Copies of this compilation will be disseminated to all DOST Regional offices and DECS Secondary Science division offices.

B. Primer on How to Conduct Science Investigatory Projects

Cognizant of the difficulty encountered by both the students and science teachers in conducting science investigatory projects, investigation schemes are taught in the "Primer on How to Conduct Science Investigatory Projects". Through this primer, a greater number of young science enthusiasts are expected to be reached and educated.



5. SEI SUPPORT FOR UPGRADING SCIENCE EDUCATION IN THE SECONDARY SCHOOLS (ESEP)

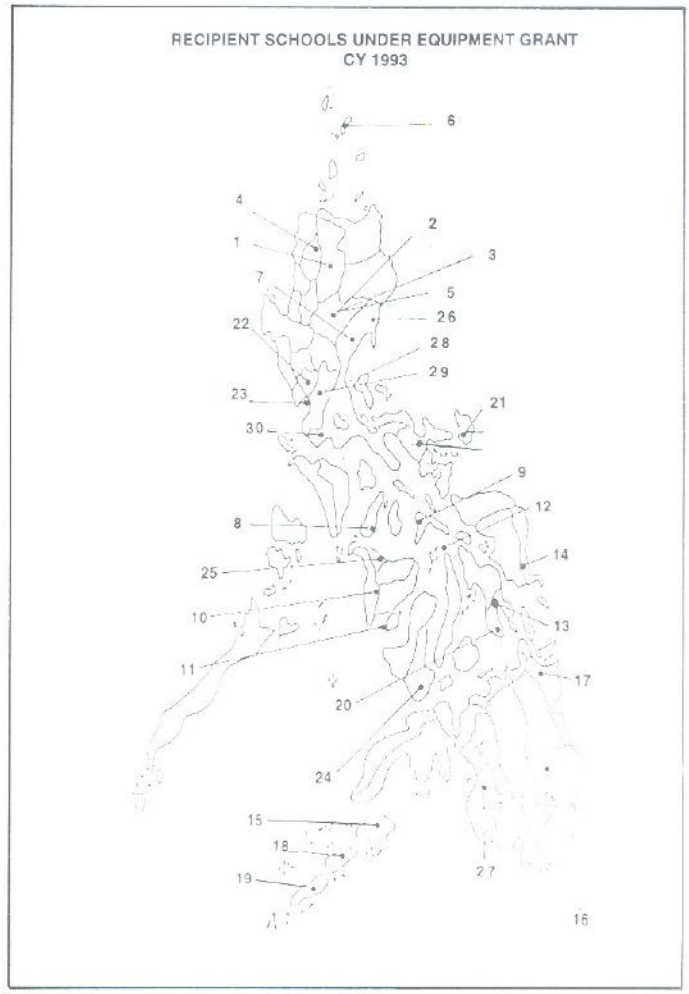
a. UPGRADING OF LABORATORY FACILITIES OF SELECTED SECONDARY AND TERTIARY SCHOOLS

The DOST-SEI granted ₱80,000.00 worth of science equipment to one high school in each of the 20 provinces classified as the most depressed areas. The recipient schools under the equipment grant for CY 1993 are as follows:

1. Doña Eufronia Memorial Puson HS
2. Sta. Maria National HS
3. San Alfonso HS
4. Northern Abra National HS
5. Lepanto National HS
6. Batanes National HS
7. Dilasag Barangay HS
8. Looc National HS
9. Aroroy HS
10. Gen. Leandro Fullon National HS
11. Buenavista Municipal HS
12. Manlabang National HS
13. Ichon Barangay HS
14. Taft National HS
15. Lamitan National HS
16. Del Monte Nationalized HS
17. Bislig Municipal HS
18. Pangutaran National HS
19. Unmat National HS
20. Dongon Barangay HS

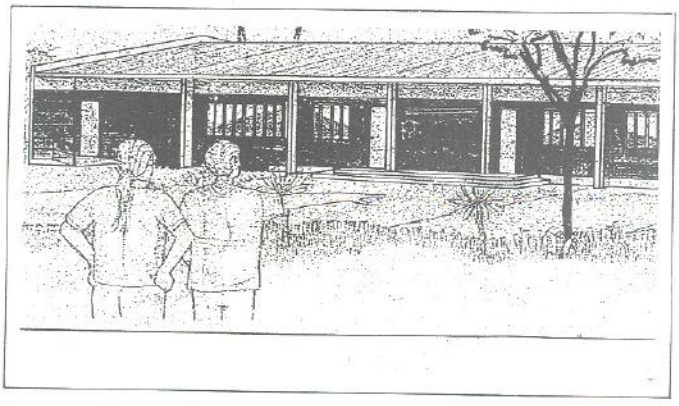
In addition, the following secondary and tertiary schools were likewise given science equipment and computer grant:

Schools	Amount Granted (₱)
21. Catanduanes State Col	- 45,000.00
22. EARIST	- 350,000.00
23. Tagaytay City HS	- 200,000.00
24. Dumaguete Science HS	- 200,000.00
25. Aklan Nat'l HS	- 200,000.00
26. Madella Agro Ind'l NHS	- 50,000.00
27. S. Kudarat Islamic Aca	- 179,000.00
28. Philippine Science HS	- 500,000.00
29. Quezon City Science HS	- 250,000.00
30. P. Borbon Mem. State Col	- 250,000.00
31. Partido State College	- 100,000.00



b. ENGINEERING and SCIENCE EDUCATION PROJECT (ESEP) CIVIL WORKS COMPONENT

The Science Education Institute, thru the Project Implementation and Coordination Office (PICO) is currently implementing the World Bank assisted-Engineering and Science Education Project (ESEP). It has for its objective the upgrading of the country's technological capability by strengthening engineering and science education. It also aims to improve science and mathematics instruction in secondary schools to better prepare the students for engineering and science courses in college.



Under the program, 102 Science and Technology Oriented High Schools will be the recipients of laboratory buildings which will be constructed. The construction of the new facilities will improve high school science and mathematics instruction specially now that a special science curriculum is being implemented in these schools.

The buildings which cost about P1.40M each will house a laboratory room for physics and another laboratory room for chemistry. These rooms are provided with complete laboratory facilities such as water, electricity, gas line and two comfort rooms. Also, provided is a storage room for equipment and chemicals.

The construction of the first batch of 38 laboratory buildings is scheduled to commence this year. The construction of the second batch of 64 laboratory buildings is scheduled for CY 1994. In addition, eight (8) existing science laboratories will be upgraded and renovated to meet ESEP standards.

To ensure that DOST's interest is protected in the execution of the contract, one resident engineer will be assigned in every construction site. He will monitor every aspect of the construction until the building is turned-over to the owner.

c. *THE R&D SUPPORT FOR THE IMPROVEMENT OF SCIENCE EDUCATION IN THE COUNTRY*

Under this project, the DOST-SEI awards grants-in-aid (GIA) for research and development projects/studies in science education specially for the teachers in the 110 science oriented high schools. Its aim is to strengthen the research and development capabilities of the faculty members. The program is expected to develop well-trained scientific manpower concerned with R&D activities at the secondary level.

The "R&D Support for the Improvement of Science Education in the Country" on its second year of implementation, has approved twenty three projects (23), twenty one of which are on the implementation phase. Of these researches **85%** are along the teaching learning process; **10%** in curriculum instructional materials development; and **5%** on the development of assessment tools. The different action researches deal on: a) Teaching-Learning Process; b)Curriculum/Instructional Materials Development; and c) Development of Assessment Tools.

The proposals underwent an average of 2 to 3 re-evaluations by the subject specialists, indicating that the proponents who were faculty members or supervisors of Node Institutions or science oriented high schools were guided in the implementation of their projects. It is envisioned that these researches will lead to innovations in teaching and learning of science and mathematics and eventually accelerate other science and mathematics programs.

6. PROJECTS SUPPORTED BY THE DOST GRANTS-IN-AID PROGRAM

a. *PROGRAM OF EXCELLENCE IN MATHEMATICS*

The Program of Excellence in Mathematics is an intensive training program for secondary students with exceptional talents in mathematics. It complements, supplements and enriches the existing school mathematics program in the country. It also aims to identify and develop gifted students in mathematics who would pursue for excellence in this field. From this pool of students, the participants to the International Mathematics Olympiad (IMO) are selected.

In 1993, sixty (60) talented youths in mathematics completed their training at the NCR Training Center while eighty (80) trainees completed their training in three Regional Training Centers. The 3 Regional Training Centers established are located at UP Baguio, UP Cebu and MSU-IIT in Iligan City. At present, about 90 and 85 trainees are undergoing training for AY 1993-94 in NCR and in the regions respectively. Also, training for NCR students to prepare them for for the participation in the 1993 International Mathematics Olympiad was conducted.

b. *PROGRAM OF EXCELLENCE IN PHYSICS (PEP)*

The PEP is an intensive and comprehensive training program to complement, supplement and enrich the existing secondary school physics program in the country.

This project is under the joint sponsorship of the DOST through the SEI and the Samahang Pisika ng Pilipinas (SPP). The training started in April 1993 and expected to culminate at the end of the year. Thirty (30) participants were selected through a qualifying examination in Physics to attend the training. The top participant in this training was sent to represent the country in the 24th International Physics Olympiad held on 10-18 July 1993 in Virginia, U.S.A.

c. *PHILIPPINE PHYSICS OLYMPIAD (PPO)*

The Philippine Physics Olympiad was instituted to fill in the gap in the scientific skills development among secondary students. Through competitions in physics, the project hopes to supplement what the students normally receive from formal classwork and at the same time stimulate their interest in this field of science. The objectives of the olympiad are to stimulate the improvement of physics education and to identify and motivate students with talents in physics.

The conduct of the pilot run of the PPO at the regional level was held at the Philippine Science High School (NCR) and UP at Los Baños (for Region IV) on 4-5 February 1993. At the NCR, there were 9 participants in the individual competition and 8 schools for the team competition. In Region IV, there were 16 teams and 27 individuals who participated in the competitions.

The proposal to hold the PPO on a nationwide scale was approved this year. Financial allocation of P876,000.00 was granted by DOST for the implementation of the PPO from the division, interregional and national level. Thus, information dissemination as well as test materials preparation have been undertaken by the DOST, DECS Regional Offices and the PPO National Technical Committee. The division stage was held last 10 December 1993 in all fifteen regions all over the country (including CAR and ARRM). The winners for this stage were qualified to compete in the interregional competition which will be held on 3-4 February 1994.

The project was implemented under the joint sponsorship of the Department of Science and Technology (DOST) through the Science Education Institute (SEI), Department of Education, Culture and Sports (DECS) and the SPP.

Philippine Participation to the XXIV International Physics Olympiad (IPhO)

The XXIV IPhO was held on 10-18 July 1993 at the College of William and Mary, Williamsburg, Virginia, USA. The Philippine team was represented by Dr. Vivien Talisayon, (Team Leader) and Archimedes Figuerres (participant) both from the Philippine Science High School.

The Philippine team was invited as observers, but the team leader was able to negotiate for the participation of A. Figuerres as a regular competitor after undergoing screening and training process. The Philippine was sponsored by DOST and SPP.

Invitation has been extended to the Philippines for regular and full participation (5 students and 2 team leaders) in the XXV IPho in Beijing, China on 12-19 July 1994.

d. CAREER INCENTIVES PROGRAM (CIP) FOR DOST-SEI SCHOLAR-GRADUATES IN BASIC AND APPLIED SCIENCES

The Career Incentives Program for DOST Scholar-Graduates is an on-the-job training program which aims to provide the grantee (known as research trainee) with valuable opportunities in the actual work settings toward the enhancement of the new graduates' employable skills as well as utilization of their academic training and talents. The project partly helps in averting the problem of underemployment among the scholar-graduates.

The implementation of CIP is a continuation of the program instituted from 1985 to 1992. Earlier, there had been a series of similar programs aimed at preventing loss of scientific and technological manpower.

The maximum period of training for each research trainee is six months. The research trainee, considered equivalent to a Science Research Specialist I, is on a contractual status.

Various DOST regional offices, sectoral councils, research and development institutes and main office divisions signified interest in accommodating trainees in areas where their skills and training could be appropriately utilized and maximized. A total of thirty (30) slots were made available.

Scholar-graduates from all over the country applied in the program. A matching process was used to determine the placement of each research-trainee using as bases of his qualifications and the needs of the training institution. The first batch of eight (8) research trainees started training on June 1, 1993. Eventually, fourteeen more scholar-graduates joined the program. After 2 months, ten (10) of the total twenty-two research trainees, resigned from the program and got employment in private companies.

To monitor performance, the research trainees are required to submit Accomplishment/Evaluation Reports monthly to SEI duly noted by their immediate training supervisors. A lecture on "Work Ethics and Values", was conducted for these trainees on 30 September 1993 by Mr. Fernando Amor, a field officer of the Civil Service Commission. Feedbacks indicate that the the research trainees learn easily and perform their tasks very satisfactorily in their given tasks.

e. CAREER INCENTIVES PROGRAM FOR DOST-SEI SCHOLAR GRADUATES OF SCIENCE AND MATH EDUCATION

The program aims to provide training opportunities for the young graduates of science teaching in actual classroom situations and to ensure immediate placement of the new teacher-graduates in the secondary public schools preferably in the STCC node schools.

The program helps in solving the perennial problem of the delay in the payment

of salaries of newly-placed teachers. Through the coordination made by SEI, DECS issued Memorandum No. 272, assuring employment of the new scholar graduates and that SEI-DOST will pay for the first three (3) months salary of these scholar graduates provided they will be issued a probational appointment for one (1) academic year.

To date, thirty-four (34)) new scholar graduates availed themselves of this program and are assigned in their respective home regions.

f. BASELINE DATA DEVELOPMENT IN MONITORING THE IMPACT OF SCIENCE AND MATH ENRICHED CURRICULUM

The evaluation and the monitoring of the implementation of science and math enriched curriculum in the network of science oriented high schools extends for five years. Prior to the implementation of said curriculum, SEI deemed it necessary to come up with benchmark information which would serve as basis for setting up performance targets and for measuring the impact of the science education component of the Engineering and Science Education Project (ESEP).

One of the surveys completed in 1993 was that of generation and analysis of data which will serve as baseline information needed for evaluating and monitoring the science and math enriched curriculum. The immediate aims of the survey were: (a) to come up with documented bases for setting up performance targets needed to measure the impact of the project; and (b) to develop a scheme for managing and monitoring information on the performance of network high schools specifically participation, attainment, achievement, and equity effects.

Analysis of survey results highlighted the description of school and faculty profiles. The characteristics of the schools and faculty were assessed through descriptive statistics such as frequency and percentage distribution by school, node and region. The information generated provided more details in the benchmark set to monitor the science education component of ESEP.

Follow Up Study of the Baseline Data Development Project

The introduction of the science enriched curriculum in the 110 science oriented high schools was one of the initial steps in the implementation of "Secondary School Level Manpower Development Programs in Science and Mathematics".

A preliminary activity was the administration of the qualifiying examinations, i.e. the Scholastic Aptitude Test, to Grade 6 graduates who sought admission to the special science classes in these schools. The results of their examination performance were studied through the tabulation of checked results as compared with the questionnaires filled in by the respective high school principals.

A follow-up survey of the schools and their faculty was again conducted, this time on the first year of implementation of the science enriched curriculum, giving comparative information on schools and faculty, before and on the first year of implementation.

One of the significant changes noted in the initial years of the Manpower Development Programs was the decrease in the incidence of drop-outs. Comparatively speaking, the network high schools have been somewhat successful in curbing down drop-out rate among its students. Preliminary data on the pupils' performance have also been monitored together with some of their personal demographic characteristics. Described in the study are other information on factors such as enrolment, drop-out rate, proportion of graduating students who passed the NCEE, faculty size, number of science and math teachers, tests administered other than the Scholastic Aptitude Test and problems encountered in its administration, and possible problems in the implementation of the science-enriched curriculum as perceived by the principals.


PPO 1993
Stage C
5 February
PPO 1993
Stage Competition
4-5 February 1993


1993
NALS
NATIONAL FINALS

GENERAL ADMINISTRATION

HUMAN RESOURCES DEVELOPMENT

TRAINING PROGRAM	PARTICIPANTS
Nurturing Talents in Mathematics, Science and Technology Nat'l Inst. for Educ'l Research (NIER) Tokyo, Japan, Jan 18-Feb 3	Elma C. Rafael
Visit to Institutions of Science and Engineering United Kingdom, England, Feb 14-28	Ester B. Ogena
Seminar-Workshop on Communication Planning Imus, Cavite, Feb 25-27	Ruby R. Cristobal
Financial Application for GACPA Dap, Pasig, Mar 29-Apr 2	Gina O. Mendoza
Budgeting for Stability and Growth Seminar Baguio City, April 1-2	Aida T. Ayran Luisa G. Maravillas
Civil Service Law and Rules Seminar CSC-NCR, Quezon City, Apr 6-8/May 18-20	Filma G. Brawner Francisco A. Milan III
Data Base III System Training Course Interface Computer Learning Center, Apr 18-Jul 11	Roberto B. Paqueo
Civil Service Counsellor's Course CSC-NCR, Quezon City, May 3-7	Aida T. Ayran
Convention-Workshop of the Phil. Guidance and Personnel Assoc. Shangri-La, EDSA, May 12-14	Elma C. Rafael Ma. Daisy A. Demoni
21st National Conference-Public Personnel Administration Occupational Safety and Health Center, Q.C.,May 13-14	Luz S. Rimorin
Multivariate Data Analysis UP, Quezon City, May 31-Jun 11	Reynaldo V. Arceta
Manpower Planning, Concepts and Principles for Policy-Making DAP, Pasig, Jul 21-23	Ameta B. Balute
Revenue Regulation No. 10-93, RA 7649 DOST Executive Lounge, July 29	Gina O. Mendoza Luisa G. Maravillas
GSIS Pre-Need Products GSIS, Manila, Aug 9	Racquel T. Tolentino Gina O. Mendoza

Junior Exec. Training-Supervisory Training for Effective Administrative Management (JETSTREAM) CSC-NCR, Quezon City, Aug 9-27	Filma G. Brawner
24th Annual Management Congress Hyatt Regency Hotel, Manila, Sept 9-10	Aida T. Ayran Luz S. Rimorin
Weather Forecasting Pag-asa, Quezon City, Sept 13	Ruby R. Cristobal
16th National Convention of GACPA Cebu City, Oct 26-29	Gina O. Mendoza
5th Meeting of Nat'l Project Coordinators for the 3rd Int'l Mathematics and Science Study (TIMSS) Frascati, Italy, Oct 15-28	Ester B. Ogena
4th Annual Symposium-Convention of the Philippine Records Management Association Baguio City, Nov 8-9	Racquel M. Tolentino Immaculada M. Muncal
27th General Conference of UNESCO Paris, France, Nov 5-10	Ester B. Ogena
19th PICE Annual National Convention Westin Philippine Plaza, Nov 11-12	Francisco A. Milan III William G. Tumale
Asian Workshop on Global Change Education Madras, India, Nov 22-27	Ester B. Ogena
JICA/World Bank Asia Reg'l Senior Policy Seminar on Secondary Education for the 21st Century CSC-NCR, Quezon City, Dec 5-11	Ester B. Ogena
Policy Analysis DAP, Pasig, Dec 6-10	Ameta B. Balute
35th Training on Appointments Preparation CSC, Quezon City, Dec 6-10	Luz S. Rimorin
Convention Seminar of the Association of Gov't Accountants of the Phils. Phil. Village Hotel, Pasay City, Dec 9-10	Gina O. Mendoza Josefina S. Sta. Maria Raquel M. Tolentino

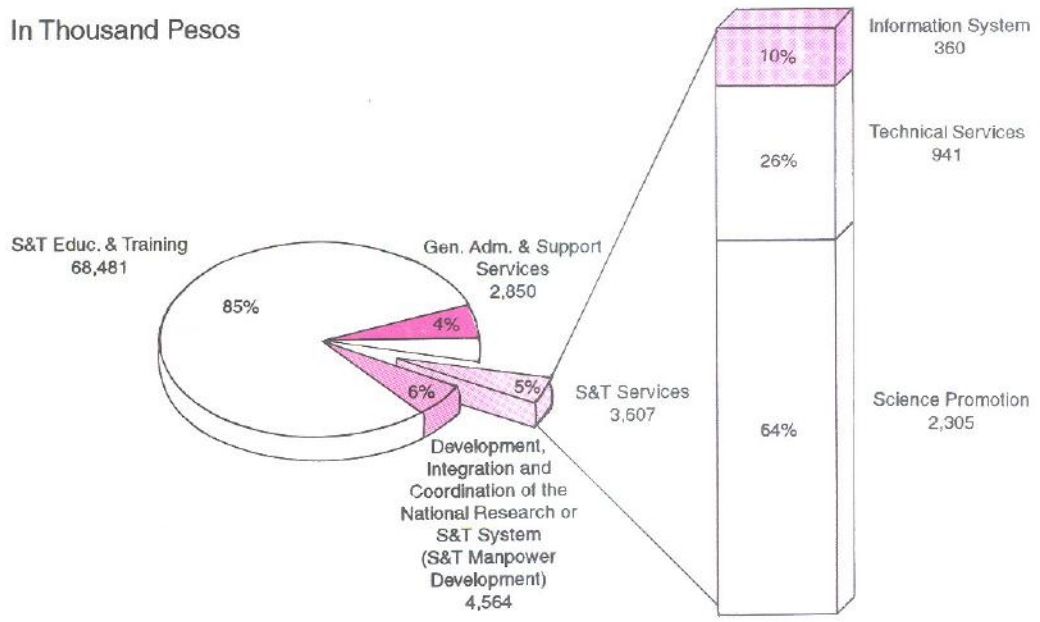
NAME	AREA OF STUDY/UNIVERSITY
Reynaldo V. Arceta	MA Economics, DLSU
Ameta B. Balute	MoS Statistics, UP (Graduated)
Josefina A. Fernandez	MA Education, PNC
Amparo F. Olarte	MST Chemistry, DLSU

FINANCIAL SUMMARY

DISTRIBUTION OF 1993 EXPENDITURES
by Function and Expense Classification

FUNCTION	1993 EXPENDITURES			
A. LOCALLY-FUNDED	P.S.	M.O.E..	C.O.	TOTAL
	3,841,868	75,420,243	240,000	79,502,111
1. S&T Services				
a. Information System		360,260		360,260
b. Technical Services		941,193		941,193
c. Science Promotion		2,305,944		2,305,944
2. S&T Education and Training		68,481,029		68,481,029
3. Development, Integration and Coordination of the National Research or S&T System (S&T Manpower Development)	1,988,547	2,334,984	240,000	4,563,532
4. General Administration and Support Services	1,853,321	996,833		2,850,154

The expenditures for the year 1993 totalled to P79,502,111 distributed among different SEI functions in S&T Services, S&T Education and Training, Development, Integration and Coordination of the National Research or S&T System and General Administration and Support Services. The highest share of expenditures was placed in S&T Education and Training (P68,481,029), signifying the Institute's full support and determined effort to develop and upgrade S&T manpower in the country through education and training.



KEY OFFICIALS

ESTER B. OGENA, Ph. D.	**Director**
VIOLETA N. ARCIAGA, Ph. D.	**Chief, STED**
ELMA C. RAFAEL	**Chief, SID**
FILMA G. BRAWNER, Ph. D.	**Chief, STMAD**
AIDA T. AYRAN	**Chief, FAD**