



# **ANNUAL REPORT 1989**

**SCIENCE EDUCATION INSTITUTE**

Department of Science and Technology



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## *M e s s a g e*

Twenty-five years ago, the Philippines ranked second in Asia, next to Japan, in terms of economic growth. Today, the country is way behind and outpaced by newly-industrialized countries (NIC) such as Korea, Hongkong, Singapore, Thailand and Malaysia. Can the Philippines become an NIC by the Year 2000? Our science Secretary Ceferino Follosco enjoins the government, academe and the private sectors to contribute its just share by providing for an S&T infrastructure and environment which will contribute to an S&T consciousness.

Excellence in science, mathematics and technology is crucial and vital in the quest for an NIC status. Cognizant of this, the Science Education Institute, now in its third year, has consistently worked to meet its mandate of developing highly-trained S&T manpower and improving science education in the country by undertaking projects and programs geared towards assuring our nation a steady supply of competent scientists and technologists. It is only when we can demonstrate the benefits the young people can derive from these programs, will they embrace and sustain them, and eventually utilize them effectively. All these can lead to the Philippines moving up from the bottom of the ASEAN ladder and becoming a dragon in the year 2000.

## **SCIENCE EDUCATION INSTITUTE**

*Annual Report, CY 1989*

**T**o accomplish the task of the Science Education Institute as mandated in Executive Order No. 128, specifically the development of a critical mass of scientific and technological manpower, the Institute spearheaded the implementation of programs and projects geared towards developing a

highly-trained S & T manpower and improve science education in the country. Despite its infancy and limited resources, the Institute has contributed its modest share in achieving the goals and targets of the Department of Science and Technology (DOST) in 1989.

## **PROJECTS/PROGRAMS AND ACCOMPLISHMENTS**

### **I. S & T Manpower Development**

To achieve its main objective of ensuring a consistent and adequate supply of highly trained S & T manpower, the SEI implemented programs and projects on scholarship grants in the undergraduate and graduate levels as well as training grants for science and mathematics teachers.

#### **1. Scholarship Grants**

There were eight (8) scholarship programs which the SEI supported and monitored in 1989: four (4) in the undergraduate level; four (4) in the masteral and doctoral level.

These programs had a total of 1,047 undergraduate scholars, 80 masteral scholars and 41 doctoral grantees.

##### **A. Undergraduate Level**

The annual DOST-SEI Undergraduate Scholarship Examination was held three times this year. The national examination was originally scheduled on 3 December 1989. But because of the coup attempt on 1 December, special exams were held in critical areas on 10 December 1989 and 28 January 1990. Out of 6,322 applicants, a total of 5,225 actually took the test competing for 150 scholarship slots for AY 1990-91.

#### **a.1 Undergraduate Scientific Manpower Development**

This program is a continuing project of DOST-SEI which aims to stimulate and enhance interest among specially selected high school graduates to pursue undergraduate courses in the areas of science and technology. It also aims to develop a steady supply of high level scientific manpower.

For the year 1989, another 226 awardees signed the Scholarship Agreement and have joined the crop of 621 on-going scholars to pursue baccalaureate degrees in the DOST priority courses identified among the leading edges for development. To ensure that the Program produces quality manpower, these grantees will be required to enroll only in colleges and universities identified by DOST-SEI to be with relative strength in the sciences.

As part of the continuous development of on-going scholars, the SEI also conducted



seminars, workshops, exposure trips and practical training to further develop the scholars' knowledge and experiences. These were as follows together with their specific objectives:

- (1) *Seminar on Job Hunting Strategies* — to prepare graduating scholars for job seeking ventures;
- (2) *Leadership Training Seminar* — to enable the scholars to understand and experience themselves more fully as persons; and to gain knowledge and skills in the various aspects of group processes.
- (3) *Seminar-Workshop on Time Management and Effective Study Skills* — to help the scholars develop effective study skills and attitude in order to minimize suspension/termination of scholarship privileges;
- (4) *Talakayan Sa Agham* — To familiarize scholars with the present

S&T situation in the country.

- (5) *Science Exposure Trips* — to familiarize the scholars on the latest breakthroughs of S & T in various science agencies/organizations.
- (6) *Practical Training* — Linkages with 32 private and government institutions were established for the practical training during summer of 105 junior and senior scholars in their fields of specialization. This on-the-job training provides opportunities for the scholars to apply the theories they have learned in school.

a.2 *Integrated Academic Program in the Science (INTAPS)*

The INTAPS is an honors program in the sciences that aims to promote the best possible learning institutional environment for the continuing training in the sciences of the selected scholars. It is a joint undertaking of the

*Leadership Training Seminar*





## SEMINAR-WORKSHOP ON TIME MANAGEMENT AND EFFECTIVE STUDY SKILLS



*SEI Conference Room*



*SEI Conference Room*



## 1989 - 90 S & T CAREER FORUM SERIES



*Kawit, Cavite*



*Morong, Rizal*



## 1989 - 90 S & T FORUM SERIES



*Morong, Rizal*



DOST-SEI and UPLB College of Arts and Sciences, a program for high ranking graduate of various high schools in the country. The INTAPS, provides not only the monthly subsistence and tuition but also an accreditation scheme which offers an opportunity to finish the regular 4-year BS degree course in 3 years.

At the end of SY 1988-89, there were five (5) new INTAPS graduates: 1 BS Chemical Engineering (Cum Laude), 1 BS Statistics (Magna Cum Laude), 1 BS Biology (Cum Laude) and 2 BS Computer Science (1 with Cum Laude honors). A total of nineteen (19) scholars were supported during the year including the five graduates.

Some INTAPS scholars participated in international and local competitions such as the 1989 Canadian Invitational Debating Tournament and won awards as outstanding students (sponsored by RFM Corporation and Bank of the Philippine Islands).

a.3 *A Cooperative Pre-Service Education for Science and Math Teachers*

This program aims to produce a new breed of intelligent Physics, Mathematics and Chemistry teachers, strong and competent in their areas of specialization and who will teach Physics, Math and Chemistry in public secondary schools in the country. This is a continuing program of DOST-SEI with the Philippine Normal College in consortium with De La Salle University.

Sixty (60) new scholarship slots were offered for SY 1988-89. Awardees were drawn out from the top ranking students who took the undergraduate science scholarship examination administered on 21 November 1988.

One hundred sixty-five (165) scholars were supported during this year including the new awardees with their academic performance closely being monitored. Two (2) MS fellows were supported as part of the faculty development program. Plans were also



formulated to include the conduct of a summer training at UP-ISMED to expose the scholars to recent trends and developments in science and technology. On-going scholars under this program participated in some activities such as an educational trip to Baguio City on 22-28 January 1989 and the Australian Mathematics Competition (AMC) on 2 August 1989 at the Ateneo de Manila University with eight scholars representing the Philippine Normal College. Three of them got Distinction and Credit Certificates from the AMC Westpac Awards.

Since its implementation in 1981, the program has produced a total of 319 graduates, 158 of whom were in Physics, and 161 were in Mathematics.

a.4 *Scholarship Program for Science and Math Education, Major in Physics*

Started in 1989, this is a scholarship program in the Pre-Service Education with the goal of providing incentives to qualified junior students

to select science and mathematics teaching as a profession. Initially, it is aimed at producing highly trained and competent physics teachers, develop in them a commitment to teach the subject in their home region, and lessen the heavy expenditures on in-service training and upgrading of inadequately prepared physics teachers in the field.

Thirty-five (35) scholarship slots are to be allotted every year for ten years to incoming 3rd-year students enrolled at different universities with Regional Science Teaching Centers (RSTCs) and some other institutions like UP etc., which are offering the BSE Physics Program. A Technical Advisory Committee takes charge of the selection of qualifiers based on the first two years of academic performance of the student/s and other criteria set by this body.

For AY 1989-90, out of 36 applicants 29 qualified for the scholarship based on the approved guidelines for selection.



## **B. *Masteral Level***

The two (2) scholarship programs in the masteral level are both part of the upgrading program for science and math teachers.

### **b.1 *Faculty Development Program for Teacher Educators in the RSTCs***

This is a 22-month scholarship program, part of the Faculty Development Program for Teacher Educators of the RSTCs, leading to masteral degrees in Arts, Science Teaching, Physics, Chemistry, Biology and Mathematics which aims to upgrade pre-service teacher education for secondary science teaching in teacher-training institutions throughout the country. During the year, the program supported a total of 13 scholars with eight (8) in MAT Mathematics and five (5) in MAT Physics.

### **b.2 *Ladder-Type Faculty Development Program***

This is a scholarship program whereby deserving and qualified science faculty members of IBP institutions can pursue Certificate, MA or MS in the basic sciences.

It is being undertaken by the University of the Philippines, University of Santo Tomas, and De La Salle University.

In June 1989, seven (7) scholarship grants were awarded one (1) grantee Certificate Program in Physics, one (1) in Chemistry, two (2) in MA Physics, two (2) in MS Math and one (1) in MS Biology.

As of June 1989, there were 35 on-going scholars. For the MA/MS Program, there were nine (9) scholars in Math, ten (10) in Biology, four (4) in Physics and eleven (11) in Chemistry. For the Certificate Program, there was one (1) scholar in Chemistry.

## **C. *Doctoral Level***

### **c.1 *Straight PhD Program in the Biological Sciences – A Pilot Project***

This project was started in 1989 and implemented through an agreement between DOST-SEI and UP with the involvement of its campuses Diliman, Los Banos and Manila. As a scholarship program, it is a continuing development effort of DOST-SEI



to channel its scholar-graduates into S&T careers. Specifically, it aims to supply the country with PhD's in the fields of Biochemistry, Botany, Genetics, Microbiology, Molecular Biology and Biotechnology.

For SY 1989-90, SEI awarded the first Straight PhD fellowship to its scholar graduate, Ms. Lani Rose San Mateo, currently enrolled in a PhD Program in Molecular Biology and Biotechnology (MBB) at UP Diliman. She was later endorsed for specialized training at Boston University Medical Center which started December 1989 to CY 1990 as part of her academic program under the tie-up of UP with the Center per agreement made by President Corazon Aquino with the Boston University President.

c.2 *Advanced Manpower Development Program in Chemistry Math and Physics*

This program which started in 1981 aims to produce locally high quality Ph.D. level manpower in the field of

physics, chemistry and mathematics. Its main function is to advance education and research training. The program is a consortium of three (3) leading institutions: University of the Philippines-Diliman, Ateneo de Manila University and De La Salle University. Recruitment of the new awardees for SY 1989-90 was undertaken. Four (4) new Ph.D. fellows in Chemistry were awarded. There were thirty-five (35) on-going Ph.D. fellows supported; twenty (20) were working on their dissertation while fifteen (15) were undertaking their coursework. For CY 1989, the program produced eight (8) PhD graduates in Chemistry, Math and Physics. Two (2) PhD fellows underwent research training in Germany and Ohio, USA while fourteen (14) Consortium members went on faculty visits in Australia, Japan and London during the year. There were also sixteen (16) foreign scientists from Australia, Japan, United Kingdom, United States and Vietnam whose visits were part of the scientific



linkages which the consortium actively maintains with various universities abroad.

c.3 *Faculty Development Program for Teacher Educators of the RSTCs.*

This program is a scholarship program designed to produce key science educators to over-see science education at the teacher, training and secondary school levels through a three-year Ph.D. in Science Education programs at UP. The doctoral program offers four areas of specialization, namely, Biology, Chemistry, Physics and Mathematics. This human resource output is envisioned to

play key roles in the country's science education program as administrators, supervisors and policymakers for special science high schools, DECS Regional Offices, and teacher colleges primarily through the RSTCs and Teacher Training institutions.

There were eighteen (18) PhD grantees for 1989 three (3) enrolled in Chemistry Education, five (5) in Mathematics Education and six (6) in Physics Education.

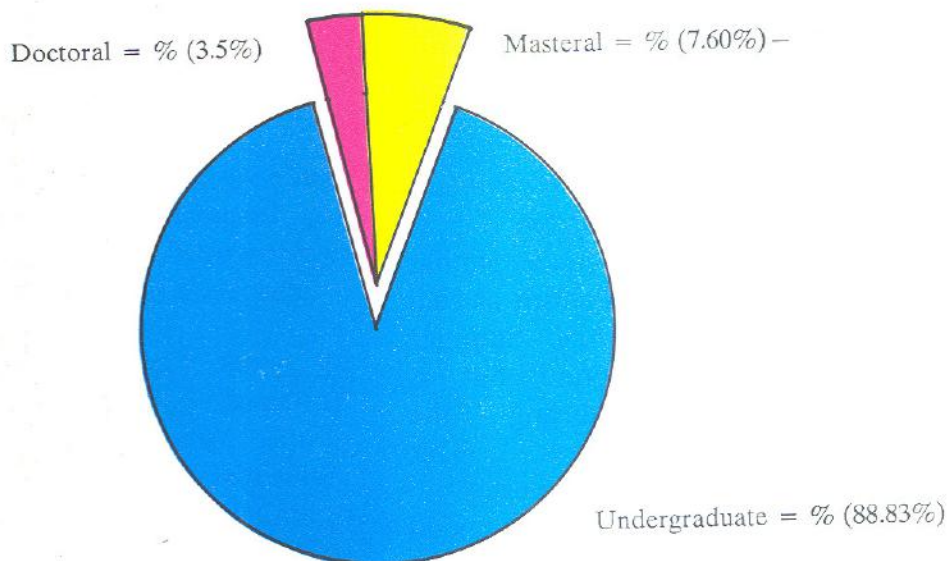
The number of DOST-SEI scholars supported during the year by level of education is shown in the Table below.

**NUMBER OF DOST-SEI SCHOLARS BY LEVEL OF EDUCATION, 1989**

LEVEL OF EDUCATION	ON-GOING	GRADUATED
Undergraduate	1,047	178
Masteral	80	12
Doctoral	41	5



## PERCENTAGE DISTRIBUTION OF DOST-SEI SCHOLARS BY LEVEL OF EDUCATION



### 2. Non degree Training Programs

#### a. ***Sequential Summer Certificate Program of the RSTCs***

This program is an instructional upgrading scheme which is implemented in the thirteen (13) Regional Science Teaching Centers (RSTCs) geographically distributed all over the country. This program is aimed at improving the teaching proficiency and competence of secondary Mathematics and Science teachers who are neither major nor minor in these fields.

Participant-teachers undergo an intensive training for the completion of an 18-unit science content courses and methodology training for two consecutive summer terms.

A certificate of Proficiency is awarded at the end of the training to participants who are able to comply with all the requirements of the program.

For 1989, a total of 1,020 teacher-participants returned to the RSTCs and completed the program. This number represents 87.18% of the same number of participants in summer 1988.

#### b. ***Intensive Training Program***

This is a summer upgrading program for tertiary level faculty members in the basic sciences of the Institution Building Program (IBP) institutions. It serves as a final evaluation material for applicants to the IBP Ladder-Type Faculty Development Program.



For 1989, 37 schools were coordinated and 71 scholars were trained — 19 in Mathematics, 25 in Physics, and 27 in Chemistry.

c. ***Certification Program for Secondary School***

This program is operationalized in a similar nature and mechanism as that of the Sequential Summer Certificate Program but is implemented during the regular semesters. This three-consecutive-semester training program is intended for secondary Science and Mathematics teachers who are neither major nor minor of these subjects. It aims to upgrade the teachers' instructional competence and keep them attuned with the needs of the school system in line with the changes in the curricular through the infusion of modern subject content and teaching methodologies.

For 1989, the program awarded 235 new scholarships grants in addition to 562 other on-going scholars. One hundred ten (110) scholarship grantees graduated this year.

In addition to these, the Certification Program under the Ladder-type Faculty Development Program had three on-going scholars; two in Chemistry and one in Physics. One of the grantees completed

the Certificate in College Chemistry during the year.

3. ***Undertakings which the Institute Supported in 1989 (Symposia/Seminar-Workshops)***

a. ***Conduct of Symposium on "Science Education in the Year 2000"***

The symposium on "Science Education in the Year 2000" aimed to establish future trends in science education as it answers the demands of various sectors contributing to the industrial development of the country. It was conducted during the National Science and Technology Week (NSTW) last July 1989 at the Philippine Normal College, Manila, with the following topics: The Philippines in the Year 2000 - Challenges in: the Social Sciences; Environment, Industry and Technology; and Economics.

b. ***Launching Program for Policies and Standards in Basic Sciences — Science Component of Teacher Education***

The launching program marked the initial implementation of the New Policies and Standards in Basic Sciences by all colleges and universities offering basic sciences and teacher education courses. It was conducted on 7 December 1989 at the DOST



Executive Lounge, and highlighted by the signing of a Memorandum of Agreement between DECS and DOST on the implementation of the RSTC programs.

c. ***Development of Low-Cost Laboratory Equipment for Introductory College/High Schools Physics Courses***

This project aims to develop teaching materials particularly low-cost equipment for physics laboratory classes and at the same time to mass produce these teaching materials for other schools and colleges.

For 1989, eleven (11) prototype laboratory equipment were prepared by the National Institute of Physics at UP Diliman, Quezon City.

d. ***UP College of Baguio Training Program for Math Teachers***

This is a two-day lecture with workshops to provide follow-up of previous seminar-workshops on the teaching of Math in the tertiary level and to further expose Math teachers to content and methodology for a selection of key subject areas, namely, Geometry, Calculus, Set Theory and Topology. It was held last 7-8 April 1989.

e. ***Library Grant to MSU-Mathematics Department***

Financial assistance in the amount of P50,000.00 was given to the Mindanao State University Mathematics Department to upgrade their library holdings in Mathematics to complement the newly opened program in mathematics offered by the department.

f. ***Development Program for University of Eastern Philippines and Isabela State University***

The purchase of P70,000.00 worth of laboratory equipment and P30,000.00 worth of science books per university was provided through a grant-in-aid of P100,000.00 each to improve the library and laboratory facilities of these two universities.

g. ***Asia-Pacific Physics Teachers and Educators Association (APPTEA) Regional Workshop on Physics and Technology Education***

The Institute provided financial support to UP Institute for Science and Math Education Development (UP-ISMED) for the conduct of this workshop which aims to provide our Physics teachers



the opportunity to learn and share experiences with their Asian neighbors and fellow Physics teachers.

Seven learning units were presented by thirteen lecturers in the workshop which was held from 1 - 9 March 1989.

h. ***National Workshop on the Interface of Secondary/University Curricula in Chemistry and Physics***

The workshop, also sponsored by UP-ISMED, focused on designing the scope, sequence and planning of the approach and emphasis of introductory college Chemistry and Physics for non-science majors and science and engineering majors to achieve a smooth transition from high school science to introductory university courses. It was held in 1-2 February 1989 with participants coming up with a course syllabi for introductory college Physics.

i. ***Workshop for Faculty of RSTC Certification Program in Chemistry and Physics***

The workshop was held from 3-28 February 1989. Its main objective was to pool and share the experiences and expertise of the RSTC faculty members of the different regions in developing model teaching units for the certification programs.

j. ***Philippine Association of Physics Instructors (PAPI) Seminar Workshop and Convention***

The Workshop aimed to help improve the teaching of Physics in the country and featured lectures, visual aids, improvised laboratory apparatus and demonstration equipment. It was held 4-6 April 1989.

4. ***Special Education Program for Bryan Dacuycuy Lino***

Bryan D. Lino is an 8-year old boy from Kalinga-Apayao who has a special talent in Mathematics. To develop his intellectual ability to the fullest, SEI provided him financial assistance and enrolled him in St. Louis University Elementary School in Baguio City. Appropriate tutorial services or individualized instruction was provided him in Mathematics and other areas where he is advanced or delayed based on the testing made by SLU and DECS- Special Education.

The latest report received from his tutor in SLU revealed that Bryan's composite mental ability score of 100 places him in the average level of mental functioning. All his sub-area scores are similarly average except for his quantitative reasoning score of 125 which is at the level of an eleven-year old.

The request for financial assistance on the education of Bryan

was endorsed by Dr. Saturnino Ocampo, DOST Regional Director for Region I.

## **II. Utilization of Scientific Manpower Resources**

In order to ensure immediate on-the-job training opportunities for DOST-SEI scholar graduates, the program entitled "Career Incentives Program (CIP)" had been implemented. This is in support to the DOST Undergraduate Manpower Resource Development Program and has been on-going since 1970.

During the year, CIP provided a total of fifty-five (55) scholar- graduates appropriate on-the-job training either in DOST agencies and regional offices (39) or in research institutes under the guidance of scientists (16). The grantees' fields of specialization included Biology, Chemistry, Mathematics, Statistics, Agriculture and Engineering. To monitor the grantees' training activities, regular meetings

were held every 15th and end of the month. Said meetings became the venue not only for the discussion of planned group activities but also for the individual presentation of technical papers on the significant activities of the grantees in their respective assigned Institutes/Offices.

As part of the grantees' developmental training, the institute organized activities for them such as: Basic Computer Classes; Summer Sports Fest; and a Lecture Series. A Newsletter Management Seminar-Workshop was also held to enable the grantees to refresh their basic skills and knowledge in the preparation of a newsletter. Starting 1990, they have decided to revive the quarterly publication of the official CIP newsletter, KINETICS which will serve as the medium of communication among grantees and the Institute.

The following tables show the distribution of CIP grantees by training agency and by field of specialization.

### **STATISTICS January - December 1989**

#### **Number of Grantees**

Total	—	55
Ongoing	—	30
Resigned	—	25



## Distribution of Grantees

FIELD OF SPECIALIZATION	Number	Percentage
Basic Sciences	(28)	50.91%
Biology	8	
Chemistry	10	
Mathematics	8	
Physics	2	
Applied Sciences	(27)	49.09%
Agricultural Engineering	2	
Chemical Engineering	8	
Electrical Engineering	7	
Mechanical Engineering	4	
Metallurgical Engineering	1	
Agriculture	1	
Statistics	4	
TOTAL	55	100.00%

## DISTRIBUTION OF 1989 CIP GRANTEES BY TRAINING AGENCY

AGENCY	NUMBER	AGENCY	NUMBER
DOST Agency	(27)	DOST Regional Office	12
AST	1	University of the Philippines	(10)
FNRI	2		
ITDI	2		
NAST	1	Diliman	7
PCASTRD	2	Los Baños	1
PCHRD	2	Manila	2
PCIERD	1		
PHIVOLCS	1	Other Agencies	(6)
PNRI	1		
PSHS	1	MERALCO	1
SEI	5	PFST	1
STII	1	USC-WRC	2
DOST Proper	7	UST	2
TOTAL . . . . .			(55)

### III. S & T MANPOWER ASSESSMENT

Projects and activities which aim to provide information on the identification of scientific manpower resource requirements in the different sectors of society were undertaken, namely:

#### 1. Assessment of Scientific Manpower Resources

The primary purpose of this study which utilizes survey results as its main source of information, is to analyze and evaluate the present complement of the nation's S&T manpower resources.

This project was designed to generate data for the Institute in strengthening the S&T policy for manpower development, as well as a starting point for any future work in S&T manpower research.

Primary tabulation produces under this study are namely: the number of PhD and MS graduates in the Academic sector; number of BS graduates of S&T courses of selected academic institutions; and a Directory of Advanced S&T Manpower in the Philippines. Prepared by the S&T Manpower Assessment Division is the table below showing the number of S&T degree holders per 10,000 population.

NUMBER OF S&T ACADEMIC DEGREE HOLDERS per 10,000 Population		
Field of Study	Number	No. per 10,000 Population
Agricultural Science	57,851	12
Engineering & Technology	217,495	45
Medical Sciences	152,985	32
Natural Sciences	15,385	3
Social Sciences	36,991	8
Others (Medical & Natural Sciences)	8,469	2
TOTAL	489,176	102

Source: Based on the 1980 NSO Census of Population & Housing



**2. Information Management of Science and Technology Manpower Development Program**

The objectives of this study are to establish institutional linkages as a means to coordinate manpower development programs; and conduct periodic presentation of SEI's manpower development program and other information generated from research studies. Dealing specifically on training/scholarship programs & S&T researches on manpower development, the survey aims to ensure continuous assessment on S&T manpower. The survey deals on three dimensions, namely, on training programs, on scholarship programs and on S&T researchers on manpower development.

**3. Survey of Scientific and Technological Labor Force**

This is a nationwide survey of households conducted in October 1989 as a rider activity to the National Statistics Office Quarterly Labor Force Survey. It is intended to capture those who are graduates of S&T courses and those who are and are not actually involved in S&T particularly in Research and Experimental Development.

**4. S&T Manpower Survey on the Textile Industry**

This project was initiated 1989 to determine the manpower requirements of the textile companies for the next five years. Survey forms were distributed to 121 textile companies in the Philippines.

#### IV. Support Activities and Alternative Delivery Programs

##### 1. Search for Outstanding Contributions to Science Education

The Search is an honors and rewards system specifically aimed at giving commendatory recognition to the meritorious efforts undertaken by educators in Science Education development, specifically in the areas of staff development, research, instructional materials and improvised science equipments. The Search has four components namely: (a) The Search for Outstanding Instructional Modules Developed in Biology, Chemistry, Physics, General Science, Elementary Science and Mathematics; (b) The Search for Outstanding Improvised Secondary School Science Equipment; (c) Search for Outstanding Division Science/Mathematics Supervisors; and (d) Search for Outstanding Science and Mathematics Teachers.

There were three National Winners awarded for the Search for Outstanding Improvised Secondary School Science Equipments. The National Winners were as follows:

##### 1. Ms. Constancia M. Cardenas

Baguio City High School,  
Baguio City

*Winning Entry:* "Convertible Plane"

*Area:* Integrated Science

##### 2. Ms. Elena T. Dadival

Baguio City High School,  
Baguio City

*Winning Entry:* "All-Purpose Bio Kit"

*Area:* Biology

##### 3. Ms. Maria Socorro I. Domingo

Tarlac College of Technology,  
Tarlac, Tarlac

*Winning Entry:* "Electro-chemistry Kit"

*Area:* Chemistry

National winners in Integrated Science, Biology and Chemistry were selected. However, in Physics, none of the finalists met the required scores/points for the national winners. The national winners received a trophy and P10,000.00 cash award each.

##### 2. Faculty Teaching Incentive Grants

This is an incentive scheme to give due recognition and support to outstanding Science and Mathematics faculty members of IBP institutions. It is a system of reward to help institutions retain highly competent faculty in their regions.

There were six awardees in 1989 distributed as follows: two in Biology, one in Chemistry, three in Mathematics and one in Physics. Awardees were entitled to a monthly incentive pay of P1,000.00 each for twelve months. In return, they were required to teach regularly in their respective institutions and to be involved with Science Education development activities for the duration of the grant.



## V. Youth Science Program

The program aims to motivate youth interest along S&T through participation in intensive research club activities as well as discover their creativity and inventiveness through science fairs, science/math quizzes and other related activities.

The program consists of projects and activities designed in such a way that the clients are not only motivated to participate but also taught to apply the S&T principles behind each activity. Thus, it supplements and complements in-school science learning.

### a. ***Search for the Outstanding Youth Science Researchers (TOYS)***

The TOYS is a series of science fairs and quizzes held from local, municipal, division, city, provincial, regional and national levels for both the elementary and secondary levels. It aims to tap the "cream-of-the-crop" among the science-inclined youth all over the country by discovering talents with constructive and innovative creativity and encouraging pursuit for research and development. For 1989, only the science fair component of TOYS was pushed through in all the 14 regions in the country. The division competition was held in September and October while the regional competition was held in November and

December. The National level competition is scheduled on 21-23 February 1990 at the Philippine Normal College, Taft Avenue, Manila.

TOYS regional and national winners at the secondary level were qualified in the selection process for the search for the Outstanding Junior Scientists (OJS) sponsored by the Pilipinas Shell Foundation, Inc.

### b. ***1989 International Science and Engineering Fair (ISEF)***

The ISEF is the "World's Series of Science Fairs" held annually with nearly 700 student contestants from affiliate fairs in the United States and a number of foreign nations; the SEI took charge of the planning and implementation of its activities. The 1989 ISEF was held in Pittsburgh, Pennsylvania, USA last 7-13 May 1989. The two Philippine delegates were:

1. **Rovie Theresa P. Mesola** — Cebu City National Science High School

*Project Title:* A Comparative Study on the Anti-Bacterial Property of Garlic (*Allium Sativum*) an *Escherichia Coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*

2. **Carol Joy L. Palma** — Aklan Agricultural College

*Project Title:* The Effectivity of Acacia, Ipil-ipil and Calliandra Leaves as Constituents of Mongo Inoculat Center

c. **1989 Singapore Youth Science Fortnight (SYSF)**

This is a project coordinated and implemented in joint venture with the Pilipinas Shell Foundation, Inc.

The three delegates from the Manila Science High School, representing the country at the 12th SYSF held at Yishan Junior College, Singapore, were winners from among fifty-five secondary school students who joined the Search for Outstanding Junior Scientists sponsored by PSFI.

The three Philippine delegates were:

1. **Maria Victoria C. Cipriano**

*Project Title:* Mixed-Culture of ~Trichoderma Harzianum Sacharomyces Cerevisae: An Induced Microbial Degradar of Cellulosic Wastes for Ethanol Production

2. **Michelle C. Santos**

*Project Title:* Infrared Spectrophometric Evidence of the Effects of Varying Concentration of HCL and Period of Digestion with NAOH on the Chitin Isolated from Shrimp Shells

3. **Adonis A. Tagala**

*Project Title:* Physical Evaluation of Phycocyanin and Phycoerythrin Isolated from Different Micro-algas Species Under Four Methods of Isolation

d. **1988-1989 Philippine Mathematical Olympiad (PMO)**

The PMO is a contest aimed at discovering the outstanding youth mathematicians in the country and develop their mathematical potentials fully. It also aims to stimulate improvements in mathematics education. The project is a joint venture of the DOST-SEI, DECS, Mathematical Society of the Philippines, San Miguel Corporation and Meralco Foundation, Inc.



The 1988-89 PMO was the second nationwide run of the competition and was carried out in three stages: Division, Regional and National. The PMO Divisional and Regional Stage Competitions were held September and November 1988, respectively through the regional offices of DOST and DECS. The PMO National Competition was conducted on 1-3 March 1989 at UP Diliman and Philamlife Theater. San Miguel Corporation donated the certificates, plaques, medals trophies and cash prizes for the grand award winners.

The national winners and other finalists qualified for the selection of participants in a training program designed for the Philippine contestants in the 1989 International Mathematical Olympiad (IMO).

e. **1989 International Mathematical Olympiad**

The IMO is the ultimate mathematics contest which is the pinnacle of excellence for secondary students of mathematics throughout the world. It is organized to help establish friendly relations among young people thereby promoting cooperation and understanding among nations. Participants in the IMO is by invitation from the host country.

The Philippines sent a team to the 30th IMO held at Braunschweig, Lower Saxony, Federal Republic of Germany from 13-24 July 1989 composed of six student-contestants selected from among 17 qualifiers who underwent a competitive examination. Jerome Khohayting, from Xavier School garnered a silver medal which was the first medal received by the Philippines. The Philippines placed 43rd among 51 competing countries. Another honor that the Philippines received was the inclusion of the mathematics problems prepared by Dr. Jose Marasigan of Ateneo de Manila, the Team Leader of the Philippine Delegation.

On their return trip, the Philippine Delegation paid a courtesy call on President Corazon Aquino at the Malacanang Guest House.

f. **1989 Australian Mathematics Competition (AMC)**

The AMC is a mathematics competition of students in the secondary schools from Australia, New Zealand and the Pacific Region, and is the largest competition of its type in the world. It is sponsored by the Canberra College of Advanced Education, Westpac Banking Corporation and Canberra Mathematical

Association to provide students in mathematics incentive to aim at excellence in mathematics.

Philippine participation in the AMC is free where test questions and answer sheets are sent to the Philippines from Australia. The AMC was conducted at the Ateneo de Manila University on 2 August 1989 where secondary and tertiary students from selected schools in Metro-Manila participated.

g. **1989-90 Program of Excellence in Mathematics**

As an offshoot of the Philippine participation in the 1989 IMO, SEI has conceived and developed the program for the prospective contestants in the IMO.

The "Program of Excellence in Mathematics" is an intensive and comprehensive training program designed for secondary students with mathematical talents. Its aim is to develop interest and excellence in mathematics. This will indirectly complement, supplement and enrich the existing school mathematics program in the country.

About 60 secondary students attending the 8-month training program at the ADMU

every Saturday which officially started on 25 November 1989. At the end of the 1989-90 training, a team of six student-contestants will be selected to represent the Philippines in the 1990 IMO at Beijing, Republic of China on 8-19 July 1990.

h. **1989 National Science Club Month (NSCM)**

As mandated by Presidential Proclamation No. 28, September is declared as National Science Club Month. The NSCM National Executive Committee chaired by Sen. Jose D. Lina, Jr. spearheaded the implementation of the activities planned for the 1989 NSCM celebration. Various science club activities like seminars, workshops, fora, on-the-spot poster/slogan contest, essay-writing contest, science/ mathematics quiz, science fairs and S&T exhibits were successfully held. Participants in the activities were science club members, advisers, supervisors, coordinators and other science enthusiasts.

Three major activities were conducted this year:

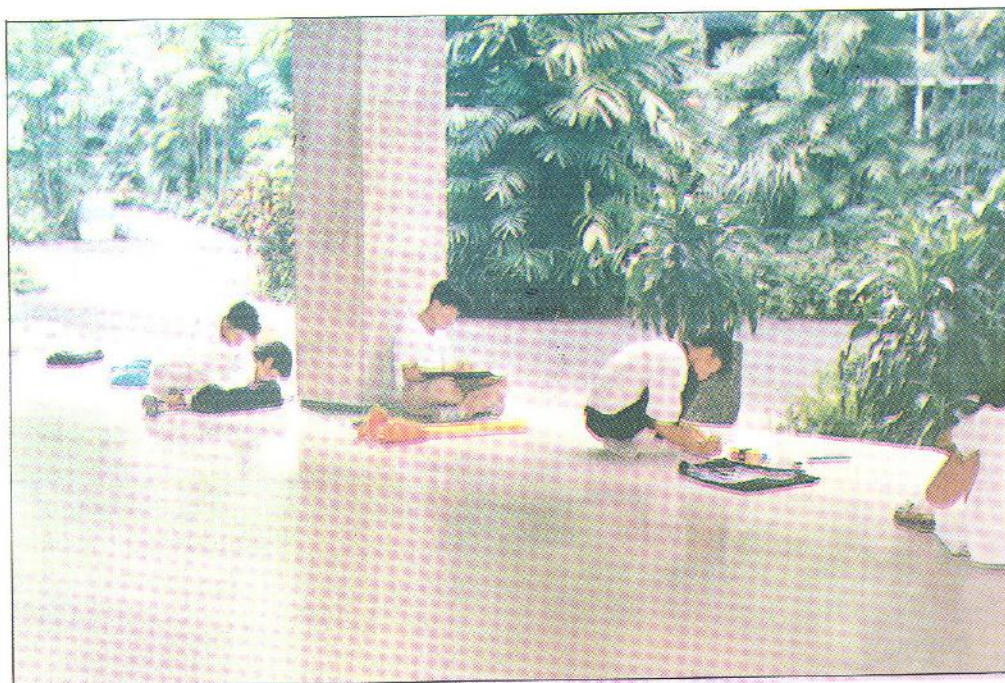
1. Survey of Science Clubs
2. Science Club Appropriate Technology Adoption Program (SCATAP) — a 4-day seminar/workshop designed to equip the



## 1989 NATIONAL SCIENCE CLUB MONTH



*1989 NSCM Closing Ceremonies at PHILAMLIFE THEATER*



*Poster Slogan Contest at PHILAMLIFE THEATER*

participants with basic information to enable them to implement SCATAP in their respective divisions.

3. Relaunching of SIGHAM Awards - Sigaw ng Agham (SIGHAM)

Awards a nationwide search for the most outstanding science club member, science club adviser, science/math supervisor for public schools, and science/math area coordinator for private schools.



## VI. Human Resources and Staff Development

During the year, SEI had a total of forty-seven staff and 21 or 45 % the administrative and other support staff. By level of education, 24 were BS/BS graduates, 1 MS/MA graduate, 2 hold doctoral degrees, 3 with PhD. units, 11 with MS/MA units, and 6 were vocational or high school graduates.

A number of its employees were sent to seminars, workshops, conferences and training programs both locally and in the international level to keep them abreast of technological developments in their respective fields of interest and specialization. Below is a list of seminars/trainings attended by the technical and administrative personnel of the Institute.

PERSONNEL	TRAINING ATTENDED (Venue)	DURATION (Sponsoring)
Dr. Manuel Eugenio Dr. Ester B. Ogena Dr. Anna Amerila Marcial Diamante Elma C. Rafael	2nd ASEAN Science and Technology Week Conference  (Westin Philippine Plaza)	30 January to 3 February  (DOST)
Violeta N Arciaga Aida T. Ayran	Workshop on Project Management (Inter-Continental, Makati)	15-17 Feb. (Keppner- Tregoe, Inc)
Leah L. Cayanan	5th Asian Workshop on Child & Adolescent Dev. (UP, Diliman, Q.C.)	21-25 Feb.
Ester B. Ogena	Planning Workshop for the 5th 5-Year Plan for the Regional Center for Science & Mathematics (Penang, Malaysia)	19-31 March  (RECSAM)
Domingo Magcamit, Jr.	Certificate Program in Office Automation (Dev. Academy of the Phil.)	27-31 March  (DAP, Pasig)
Nepa Panganiban Marianita Almeda Cristina C. Maguyon	Computer Fundamentals (Technology & Livelihood Resource Center, TLRC)	19 April to 3 May (TLRC, Makati)
Ruby R. Cristobal	Training/Workshop on Popularization of S&T (UNESCO)	17-24 April  (Malaysia)

PERSONNEL	TRAINING ATTENDED (Venue)	DURATION (Sponsoring)
Princesita Obiniana	18th National Conference on Public Personnel Admi. (BIR Bldg., Sct. Santiago Quezon City)	12-13 May (CSC)
Angel Gallardo	Leave Admi. Course for Effectiveness (BIR Bldg., Sct. Santiago Quezon City)	16-18 May (CSC)
Elma C. Rafael Leah L. Cayan Mariel Abadesco	1989 PGPA Annual Convention (Inter-Continental, Makati)	23-26 May (Phil. Guidance & Per- sonnel Asso)
Luisa G. Maravillas	Basic Print Materials Production Techniques (Univ. of Life, Pasig)	19-30 June (Phil. Human Resource Dev. Center)
Ester B. Ogena	UNESCO Regional Workshop on Public Awareness of Science & Technology (Seoul, Republic of Korea)	19-30 June (UNESCO)
Princesita Obiniana	Training on Appointments Preparation (OSHC Auditorium, North Ave. Quezon City)	24-28 July (Personnel Officers Asso of the Phil.)
Domingo Magcamit, Jr.	25th Session of the Program in Development Economics (UP Diliman, Quezon City)	August 1989 to March 1990 (UP School of Economics)
Violeta N. Arciaga	Data for Decision-Making on Research & Information Utilization (AIJ, Sta. Mesa, Manila)	18-22 Sept. (Asian Insti- tute of Journalism)
Princesita Obiniana Dante Tulalian	Transparency in Records Management (National Library Auditorium Ermita, Manila) Association)	9 October (Phil. Records Management)



PERSONNEL	TRAINING ATTENDED (Venue)	DURATION (Sponsoring)
Edelmira Bustamante Ameta B. Balute	Manpower Planning & Policy Seminar-Workshop (NMYC, Taguig, M.M.)	11-27 Oct.  (NMYC)
Aida T. Ayrán Gina O. Mendoza Roberto B. Paqueo Petronila Maningas Josefina Sta. Maria	GACPA Convention Seminar entitled "Strengthened Chapters Assist Country- side Development (Baguio Convention Center)	16-18 Nov.  (Gov't Asso. of CPA)
Gina O. Mendoza Roberto B. Paqueo Josefina Sta. Maria Luisa G. Maravillas Aida T. Ayrán Salioban Blah Cristintino Ramos	Quarterly Seminar- Dialogue of Association of Government Accountants (AGAP)  (Philippine Village Hotel, Pasay City)	8 December  (Asso. of Government Accountants of the Phil.)

**PERCENTAGE DISTRIBUTION OF PROJECTS/PROGRAMS  
BUDGET BY S&T ACTIVITY, 1989**

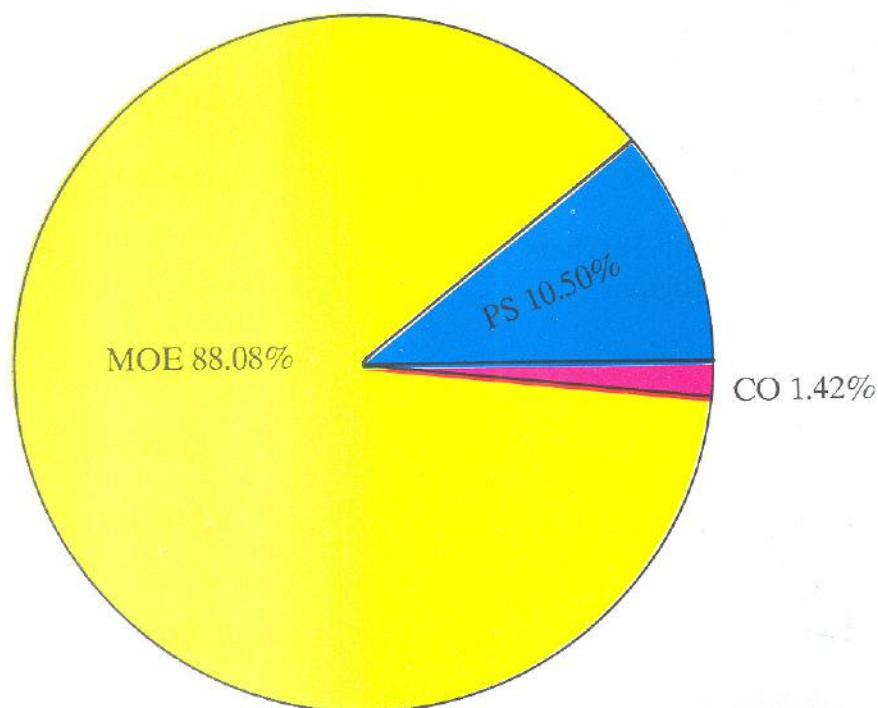
S&T Activity(ies)	Amount	Percent
TOTAL	P25,666,000	100.00%
I. S & T Services		
1. Information System	365,000	1.43
II. Education & Training		
1. Scholarship Program		
a. Undergraduate Level	12,638,953	49.24
b. Masteral Level	2,618,848	10.20
c. Doctoral Level	685,840	2.67
2. Science & Math Teachers Upgrading Program		
a. Sequential Summer Courses	3,566,278	13.90
b. Certificate Program	1,629,34	36.35
3. Apprenticeship Program	1,959,047	7.63
4. Institution Building & Training Programs	1,201,011	4.68
5. Workshops, Seminars & etc.	810,780	3.16
6. Awards & Incentives	190,000	0.74



### PERCENTAGE DISTRIBUTION OF OBLIGATIONS BY EXPENSE CLASS, 1989

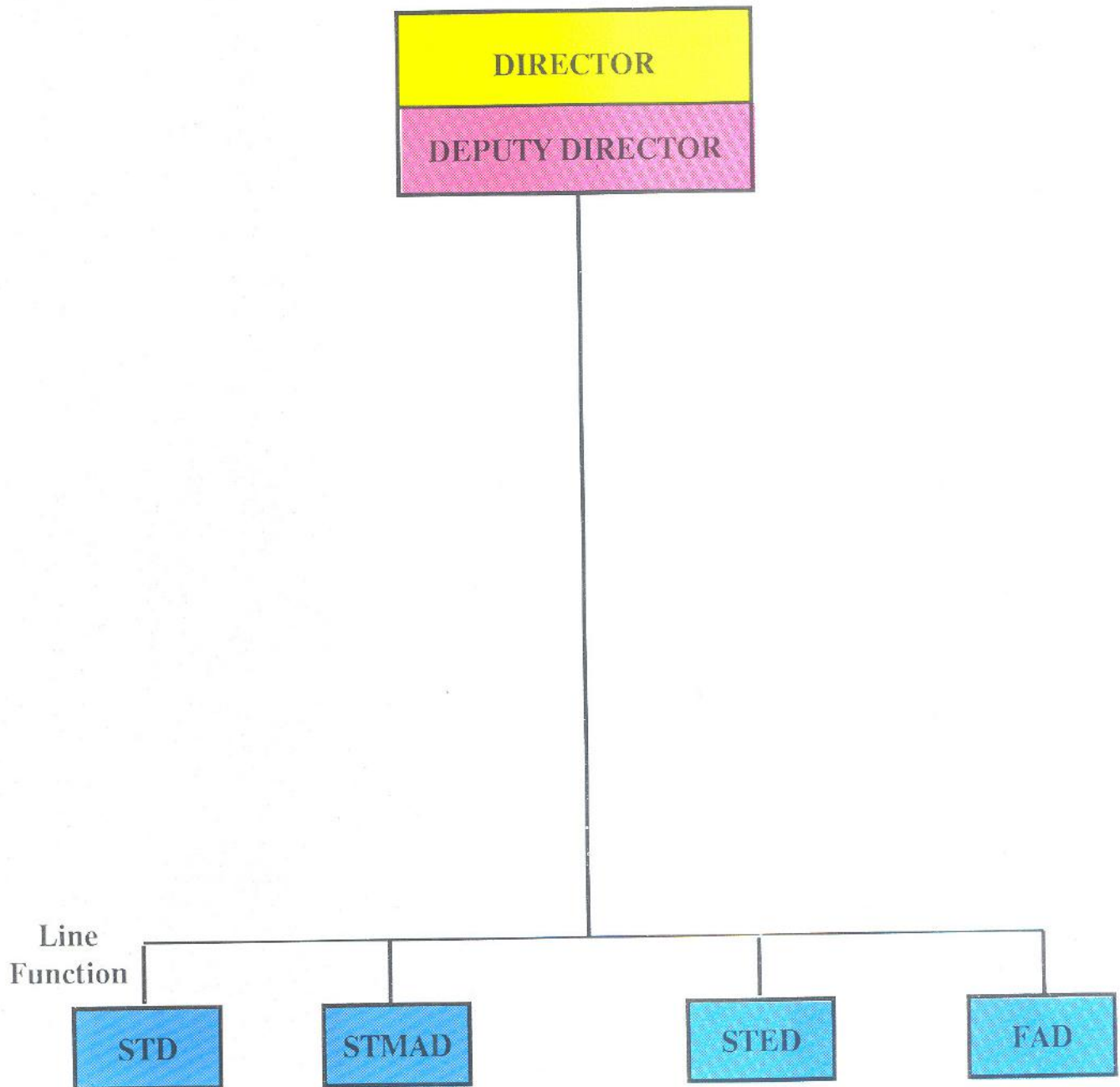
Expense Class	Amount	Percent
TOTAL	₱31,712,000	100.00%
Personal Services	3,329,000	10.50
Maintenance & Other Operating Expenses	27,933,000	88.08
Capital Outlay	458,000	1.42

### COMPARATIVE ANALYSIS OF AGENCY OBLIGATIONS BY EXPENSE CLASS



# SCIENCE EDUCATION INSTITUTE

## Organizational Chart





## SEI KEY OFFICIALS



**MANUEL R. EUGENIO, Ph. D**  
*Director*



**ESTER B. OGENA, Ph. D**  
*Deputy Director*



**ELMA C. RAFAEL**  
*Chief Scholarship & Training  
Division*



**VIOLETA N. ARCIAGA**  
*Chief Science & Technology  
Manpower Assessment Division*



**ANNA P.E. AMERILA, Ed.D.**  
*Chief Science and Technology  
Education Division*



**AIDA T. AYRAN**  
*Chief  
Finance and Administrative  
Division*