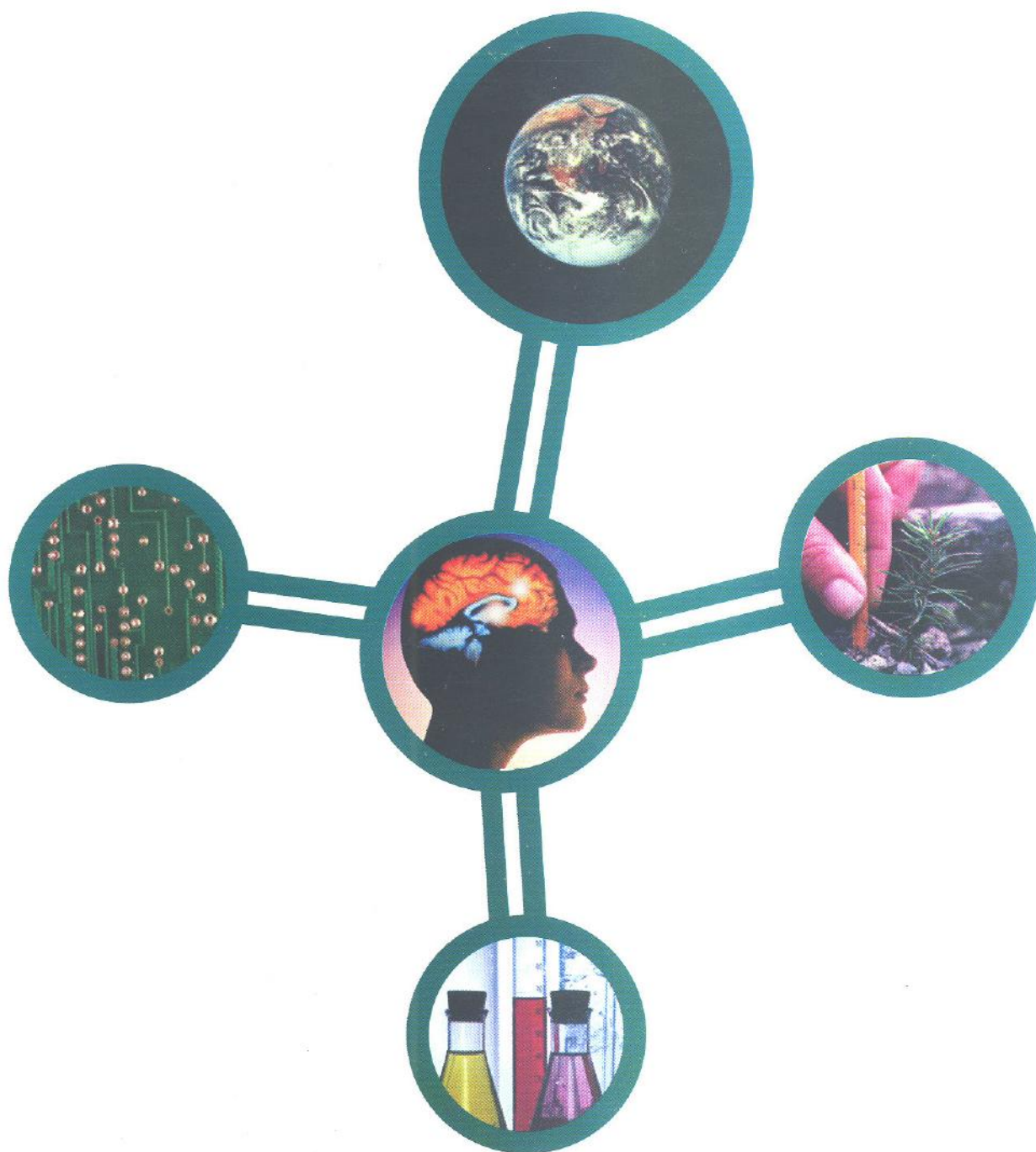




SCIENCE & TECHNOLOGY EDUCATION FOR PHILIPPINES 2000

# Science Education Institute



1995  
ANNUAL  
REPORT

## ***Sharpening Our Competitive Edge Through Science and Technology Education***

*The Science Education Institute has been given the mandate to aid government efforts to achieve a Newly Industrializing Country Status for the Philippines, and sustain economic and social development. Towards these ends, the SEI has been implementing projects and programs based on the following strategies:*

- \* Strengthening science & technology teaching capabilities*
- \* Developing science education infrastructure and facilities*
- \* Assessing the S & T manpower resource requirements*
- \* Developing S & T culture among Filipinos*

*The SEI has also been implementing programs designed to tap potential scientists and technologists among Filipinos.*

*It also takes part in the formulation of policies and other reform measures in manpower development which will give the country the scientific and technological edge it needs for global competition.*

*SEI has been doing all these for it believes that with sufficient intellectual capital, collective participation and directed actions, the visions of Philippines 2000 can be achieved.*

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## Message

*Scientific literacy is indispensable to an educated manpower, and crucial to the survival of a society. Five years now from year 2000, we ask ourselves: How far have we gone towards attaining the critical rate of scientific literacy required of us as a nation?*



*Dr. Ester B. Ogena  
Director, Science  
Education Institute*

*As we attempt to answer this, we see ahead of us three major challenges: first, the perennial challenge to bring science closer to Filipinos' hearts, even as it competes for attention versus political and entertainment issues; second, the task of attracting the youth to science and technology careers (rather than to easier or more popular courses); and third, the effort to keep science education at pace with the tremendous flow of new information.*

*In 1995, SEI scored several successes in meeting these challenges. We saw to it that SEI kept "its finger on the pulse of science".*

*Concerned with striking the right balance between S & T human resource supply for the current and future industry demands, SEI intensified its S & T Human Resource Development Programs. Thus, scholarship slots in various fields were increased.*

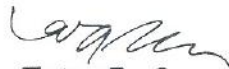
*Fired with the country's vision of global competitiveness, the Institute strengthened its vital linkages with the global community through meritorious participation in International Competitions, Studies and Conferences. Local linkages with both the government and private sectors had likewise*

*expanded through our projects, like the establishment of an electronic network in Science Education. Other initiatives on information technology were also given priority.*

*We believe that S & T, per se, need not be too serious a subject matter, especially for the youth. Thus, we continued to venture into science-oriented activities which capitalized on the youth's enthusiasm and interest: science fairs and congresses, competitions, encounters with scientists, forming organizations, and giving awards and incentives.*

*In our resolve to implement all these and initiate new projects, SEI is steadily firming up the human resource infrastructure on which our country's developmental goals depend. As we move on closer to the 21st century, we will pursue relentlessly what we have committed doing since 1988 and what we began undertaking this year.*

*This annual report is a testament to that commitment, and a proof of our combined will towards empowering our people through scientific literacy, and ensuring our nation's global competitiveness through science education.*

  
*Ester B. Ogena*  
Director



# Highlights of Accomplishments

## Full Implementation of the S & T Scholarship Act

The Science and Technology Scholarship Act of 1994 (otherwise known as R.A. 7687) went into full swing, with the number of qualifiers reaching 2,587. Qualified scholars who actually enrolled reached 1,667.

The study of the distribution of scholarship slots in terms of supply and demand for courses and for industries is a major component of next year's program of activities.

## Development of Philippine Database and Electronic Network

The Institute spearheaded two major projects in 1995 -- the establishment of the Philippine Database in Science Education, and the Electronic Networking in Science Education Between SEI and Selected Priority Institutions. The Database project involved mainly the participation of academe and professional organizations, and entailed training of personnel for data gathering, development of a data structure, and data analysis.

The Network, on the other hand, which involved participation of government agencies, was set up to collect, systematize and centralize data relevant to science education through a system of computer networking.

## Participation in TIMSS

National testing under the Third International Mathematics and Science Study (TIMSS) was conducted in March 1995. First level analysis on Philippine participation in TIMSS followed the testing.

Moreover, Dr. Gilbert Valverde, a TIMSS curriculum analysis specialist, came to the Philippines in February to train Filipinos involved in the project.

## Upgrading of Laboratory Facilities

In response to the need for newer and better equipment, SEI provided support to selected secondary and tertiary institutions to enable them to upgrade their science laboratories and facilities. IT classrooms with state-of-the-art equipment were set up in selected schools to serve a greater number of students and teachers.

# Science and Technology Human Resource Development

## Full implementation of the S & T Scholarship Act of 1994 (R.A. 7687)

The S & T Scholarship Act of 1994 (R.A. 7687)—the landmark piece of legislation providing science scholarship grants to poor but talented students—saw full implementation in 1995.

Aiming to support at least two scholars in every municipality in the country, R.A. 7687 targets students coming from families with an annual income of P55,000 and below.

Without the financial aid provided by

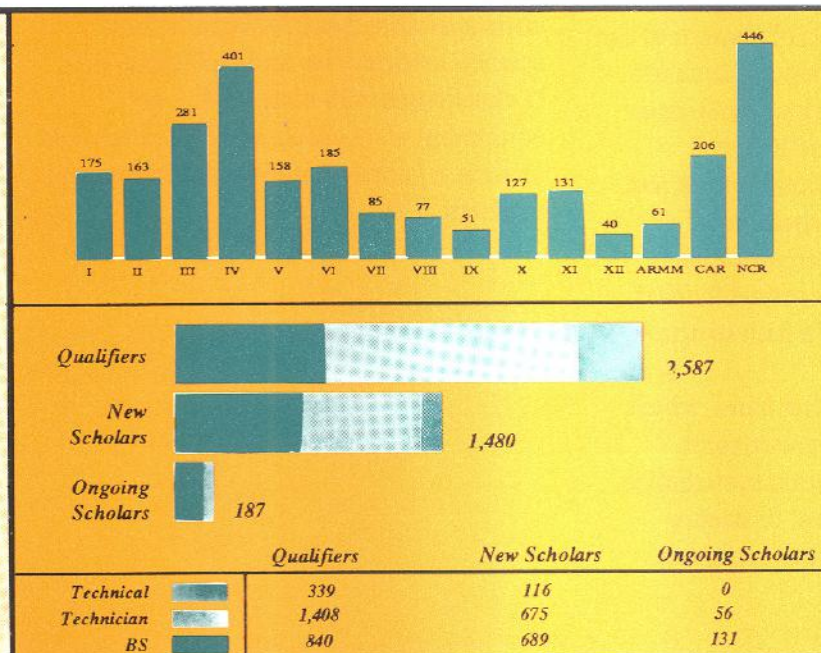
R.A. 7687, many of these students could have enrolled in less expensive but non-science courses; and without the proper tracking and academic guidance, they may have taken courses unsuitable to their abilities and skills—and end up unemployed or underemployed in the future.

For 1995, the program supported 1,667 scholars coming from different barangays, towns and cities of the country.

From a larger perspective, R.A. 7687 serves as an investment to develop future S & T manpower needed for the Philippines' growing competitive economy.

## Distribution of S & T Scholars by Region

Graph shows the distribution of the 2,587 qualifiers per region. Projections indicate a need for increased budgetary allocations, inasmuch as the current budget does not allow for additional qualifiers in subsequent school years.



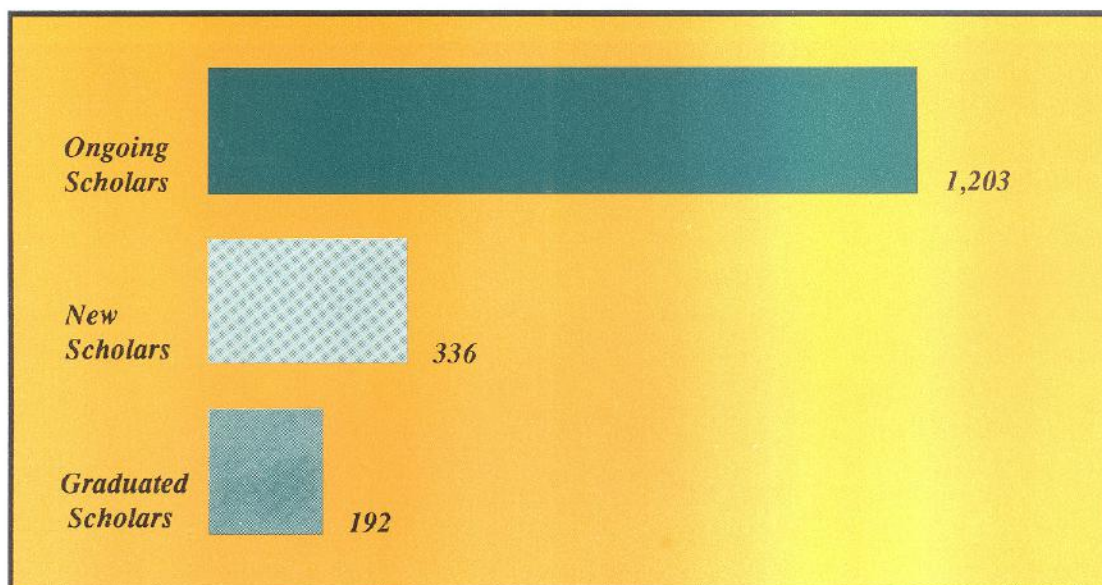
Shown here is the program's implementation at a glance



## Undergraduate Scholarships

Complementing the R.A. 7687 Scholarship Program, the Institute's Undergraduate Scholarship Program continued to identify and help talented students regardless of socioeconomic status, particularly for scholarship in the basic, applied, engineering, science teaching, health and other science courses.

- \* Ensure the scholars' academic success and socio-psychological development;
- \* Help them cope with the rigors of college life; and,
- \* Prepare them adequately for their chosen careers in S & T fields.



*Shown here is the number of new, ongoing and graduated scholars in SY 1995-1996.*

### Undergraduate S & T Manpower Development Program Status Reports for SY 1995-1996

Designed to help address the lack of highly qualified and technologically competent manpower in the Philippines, the S & T Undergraduate Scholarship Program currently supports 1,220 science scholars. An increase in the number of new slots (445) per year was proposed.

## S & T Learning Assistance Program

The S & T Learning Assistance Program (STLAP) was pilot-tested in 1995. Conceptualized as a holistic support program to the scholarship programs, STLAP aims to:

The following strategies are incorporated into this support program: Personal Inventory, Counselling, Parent Involvement, Foster Parent, Career Talk Series, Mentorship, Summer Work Education Experience Project, Occupational Orientation Day, Values Clarification and Entrepreneurship Skills Training.

## Junior Level Assistance Program in Engineering

Another support program for those in S & T courses, the Junior Level Assistance Program in Engineering (JLAP) provided assistance to 194 students and graduated 66 scholars in the second semester of 1995.



## Faculty Development Program

The Institute pursued its Faculty Development Program in 1995, through its Pre-Service, In-Service and Career Incentive Programs.

This year, a total of 1,029 secondary school science and mathematics teachers and 512 elementary school science and mathematics teachers throughout the

On the other hand, the Career Incentives Program (CIP) for DOST-SEI Scholar Graduates supported the on-the-job training of 14 research trainees as well as six scholars under the teacher education component of the said program.

A total of 2,141 secondary school teachers finished the Certificate Program for Science and Math teachers, while a

*Shown at the topmost is the ratio and number of S&T personnel per UNESCO requirement. The figures below showing the number of graduated personnel vis-a-vis target number indicates that human resource development efforts will have to be stepped up to reach the ideal number.*

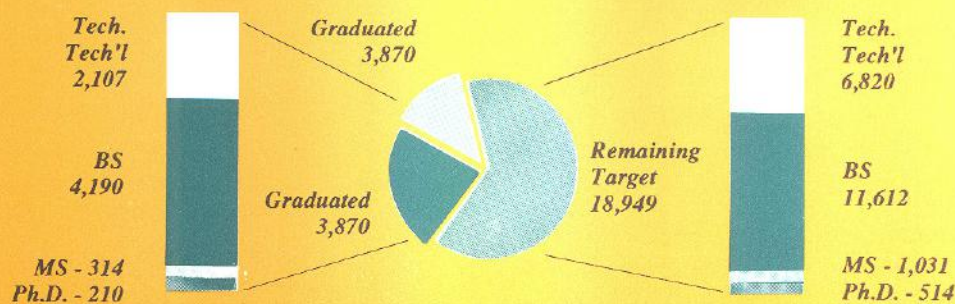
380 Personnel per 1 million of expected 78 M total population by year 2000

At the rate of:  
1 Ph.D. : 2MS : 5BS for R&D : 10 BS for S&T Services : 10 BS for Science and Math Teaching : 15 Technician/Technical

Actual target Number by Year 2000 - 29,640

Broken down into:

690 - Ph.D.      6,892 - BS (S&T Services)  
1,380 - MS      6,892 - BS (S&T Tch'g)  
3,447 - BS (R&D)      10,339 - Tech/Tech'l



### Proportion of Graduated/Trained S & T Personnel with the Target Number for Year 2000

country were the beneficiaries of the Certificate Training and Short-Term Training Programs respectively.

The programs are aimed at upgrading the teaching capabilities of the science and mathematics teachers in the secondary and elementary levels. This is to equip the teachers with the necessary S & T tools in the preparation of the best students for the country's S & T manpower requirements in the near future. The programs are implemented by the Institute in cooperation with the 15 Regional Science Teaching Centers (RSCT) nationwide.

number received and some continued to pursue their Ph.D. in Science Education. Likewise, nine mentors from the RSTCs received recognition awards for their outstanding performance as Ph. D. scholars.

## Sandwich Program

The Sandwich Program is part of the scholarship program in Ph.D. in Science Education that provides short-term training in a foreign university to enrich the research and academic backgrounds of the scholars.

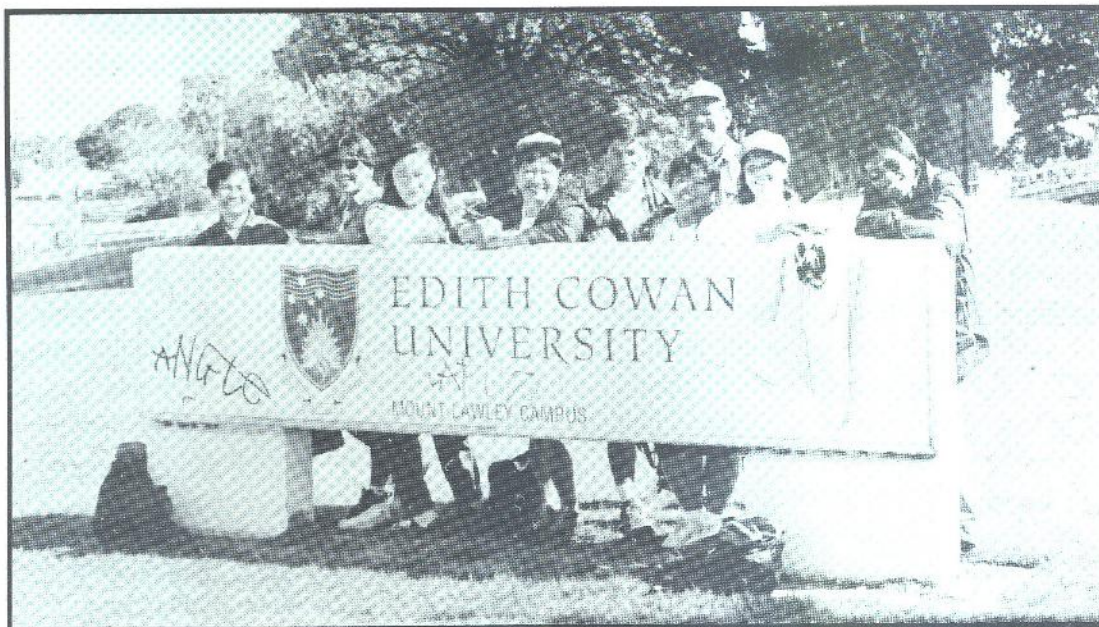


For 1995, nine Ph.D. scholars attended the program at Edith Cowan University in Perth, Australia.

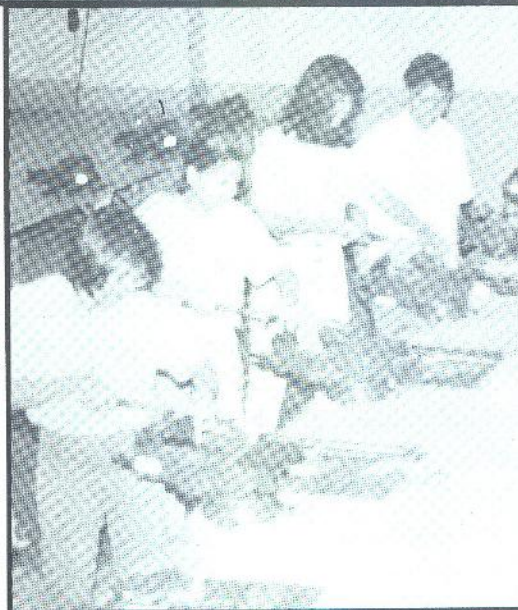
## Technology-based Teacher Education Curriculum

To produce teachers who are competent and effective in teaching Physics and

Technology courses, the Technology-based Teacher Education Curriculum was designed this year. It was pilot-tested at Philippine Normal University starting SY 1995-96 and will be pilot-tested at the Leyte Normal University and Bukidnon State College next school year.



*Shown here are the 9 Ph.D. scholars who attended the 1995 Enrichment/Sandwich Program on 1 October - 30 November 1995 at the Edith Cowan University, Perth Australia.*



*Participants in the Technology-based Trainors' Training get to hone their various S & T teaching skills with hands-on exercises.*



# Strengthening of Regional Capabilities

## Faculty Development Program for Teacher Educators of the RSTCs

The Ph.D. in Science Education program is a scholarship program for those interested to pursue doctoral studies in Science Education, major in Physics, Chemistry, Biology or Mathematics. It aims to prepare post-graduate students to play an active role in improving science in the Philippines—as administrators of science departments, science supervisors in school systems, supervisors of science laboratories, research directors or professors of science and science education courses. As of 1995, 15 completed their degrees while 40 scholars are still being supported.

## Masters Program for Selected Institutions

The Masters Program for Faculty Members of Selected Teacher Education Institutions (TEIs) is a two-year scholarship program aimed at strengthening the capabilities of selected teacher education institutions in the fields of Biology, Chemistry, Mathematics and Physics. The program is offered at the De La Salle University (Manila), University of the Philippines (Diliman) and the University of San Carlos (Cebu). Thirty-three scholars from 15 TEIs availed of the program starting second semester of 1995-1996.

## An Alternative Approach to RSTC Faculty Development

As its contribution to the successful attainment of the national development plan, the science education sector has to continuously exert effort to produce more competent teachers for science and technology courses. The number of on-going scholars at the UP College of Education and De La Salle University was found insufficient compared to the human resource requirement of a rapidly growing economy like the Philippines.

To help bridge this gap, the Distance Education Program for Ph.D. in Science Education was established this year in cooperation with the UP Open University, UP Diliman, Ateneo de Manila University and De La Salle University.

Designed to provide the regions with an effective Ph.D. program through the distance education scheme, the program has so far offered scholarship slots to the faculty members of the RSTCs and the Centers of Excellence for Teacher Education.

## Provision for Equipment Support

To upgrade schools in terms of science teaching facilities, SEI selected educational institutions as recipients of the Pilot Mobile IT Class Project and IT classrooms.



Initial preparations were made this year for the fabrication of the bus to be used as Pilot Mobile IT Classroom. Full-blast fabrication is slated for 1996 to include equipping the bus with 20 laptop computers running educational softwares, audiovisual facilities and videotaped lessons in science and mathematics.

The project is envisioned to provide a model for developing IT literacy in public schools where computers are not yet available as a learning facility.

Model IT classrooms with state-of-the-art equipment and softwares were setup at the College of Education, University of the Philippines (Diliman) and the Philippine Normal University. These institutions are being developed to showcase the use of IT in teacher education programs that will produce computer-oriented teacher graduates.

Grants were also made to 68 S & T-oriented high schools, 15 private high schools and 4 RSTC colleges in the form of books and other teaching tools.



# Capability-building in Science Education Research

*Secretary William Padolina speaks at the 1995 R & D Forum in Science Education held in Cebu City.*



*R & D practitioners actively participate in the discussions during the 1995 R & D Forum in Science Education.*



## Research and Development Program for Science Education

In its bid to strengthen the R & D capabilities of faculty members in the 110 S & T Oriented High Schools, the SEI launched the R & D Support for the Improvement of Science Education in the Country. Aimed at empowering schoolteachers or instructors in identifying key problems in science and math instruction and devising viable solutions to these problems, the program supports teachers in the conduct of school-based R & D projects.

## R & D Forum in Science Education

A vital next step in the conduct of action researches, the 1995 R & D Forum in Science Education held at the University of



San Carlos, Cebu City in July served as the venue for the research proponents to disseminate their findings which could provide inputs on the improvement of science education.

Forum participants included regional division science and mathematics R & D supervisors, one secondary science and mathematics department classroom teacher from each identified school, and SEI scholars under the ESEP Certificate/Diploma Program.

### **Seminar-Workshop on the Preparation of Action Researches**

Science education research is one area which needs greater participation from education practitioners. As such, the SEI and DECS sponsored two seminar-workshops on the Preparation of Action Research Proposals for the R & D Grants-in-Aid (GIA) Program.

The seminars focused on developing the participants' skills in: identifying relevant researchable topics which can be carried out in secondary schools, formulating research questions, writing an action research proposal, and their awareness of administrative procedures for research projects funded under the R & D Projects in Science Education GIA.

Selected schools were invited to send science or mathematics teachers as participants in these seminar workshops which consisted of lectures, discussions and practicum.

All in all, 45 teachers attended the two workshops. Outputs were draft proposals on the following areas of concern:

- a. teaching-learning process;
- b. curriculum/instructional materials development; and,
- c. development of assessment tools.

### **Monitoring of Student Performance in S & T Schools**

The Institute has made it a point to conduct annual evaluation of the academic performance of students enrolled in classes using the enriched curriculum which allocates more time for S & T subjects.

The evaluation helps ensure that the students who benefit from the SEI scholarships are fully equipped with the knowledge and skills they need to excel in college and eventually in the workplace. Equally important, the results will guide planners and implementors in the proper improvement of the overall curriculum, and help increase the number of students interested in pursuing S & T careers.

For 1995, two sets of examinations were administered—the Science Aptitude Test was administered in May in the 110 S & T Oriented High Schools for the purpose of selecting grade 6 graduates who will qualify and enroll in the first year science-enriched curriculum in SY 1996-97.

The Achievement Test in Mathematics, Science and English was also administered in March to first year and second year students to determine the learnings gained during SY 1994-1995.

A total of 7,949 special science students and 5,884 regular students (from the best sections) took the achievement tests for freshmen; while 7,714 and 5,420 sophomores constituted the special science and regular classes respectively.

Overall results showed that students from the special science class groups have an academic edge compared to the regular classes.

### **Assessment of S & T Manpower Resources**

In its effort to yield quantifiable data on S & T human resources stock, the Institute collaborated with the National Statistics Office (NSO) in extracting 9,456,166 records (in the NCR alone) with variables on personal and socioeconomic data such as age, sex, geographic I.D., and course/degree. With the acquisition of modern and powerful computers, SEI will then be able to extract and process all the data requirements on the total S & T human resources stock using the 1995 Census of Population and Housing when available. The records extracted will be used for future program planning and implementation, and the development of databases.

### **Establishment of Philippine Database in Science Education**

SEI collaborated with academic institutions offering science education courses, and professional organizations in science and math teaching in establishing the Philippine Database in Science Education.

The project aims to create a centralized electronic database consisting of researches, publications and other materials

related to science education. The Database is meant to serve as a reference material for graduate students, teachers as well as policy- and decision-makers in science education. Data sharing between and among the different science education sectors will be made easier once the Database is fully operational.

The Database incorporates materials from diverse sources such as theses and dissertations on science and mathematics education by graduate students for the past 10 years; publications from researches; action researches by teachers; and in-house researches on policy data by members of professional organizations and other sectors involved in science education.

Phase I of this project was begun towards the end of 1995 with the following activities completed at year end:

- \* installation of servers in the UP-ISMED for the Quezon City area, Philippine Normal University (PNU) for Manila, and SEI for Tagig
- \* training of required personnel for data gathering techniques and encoding skills
- \* bidding and hardware procurement
- \* development of Data Structure

For Phase II, which will be implemented in 1996, additional servers will be put up, and Local Area Networks (LANs) set up for the library of each server node.

### **The Philippines in TIMSS**

The Third International Mathematics and Science Study (TIMSS), part of a ten-year study program to review the science and mathematics curricula in various countries, yielded several positive results for the Philippines in 1995.



In March, data on Science and Mathematics achievement were gathered from Grade 6 and first year high school students. Participating schools were also surveyed for teacher, administrator and school data.

Results of the 1995 test (administered to 11,904 students of 397 elementary and secondary schools) were sent to Hamburg for analysis. Data on teachers and schools were included in the international data files.

On the other hand, a textbook analysis workshop was conducted by Michigan State University's Dr. Gilbert Valverde, a member of the Curriculum Analysis Team. Present at the workshop were 15 Filipino specialists in the said field.

In another development, National Research Coordinator Dr. Milagros Ibe (an SEI test consultant) attended the meeting of TIMSS National Research Coordinators in Canada.

# Promotion of Science & Technology Culture

## Youth Science Program

Since science and technology are often perceived to be very difficult (if not the most difficult among the various fields of specialization), a strong resistance is usually met when one teaches science or initiates science-related activities.

The Youth Science Program (YSP) was conceived by the SEI as a non-academic program aimed at increasing and sustaining the interest of the youth and the general public in science and technology through innovative activities, community-based projects, awards and competitions.

In 1995, the SEI enjoined parents and out-of-school youths to participate in the

different projects under YSP. Recognizing the merits of the YSP projects, private foundations and organizations such as the Rotary Club of Paranaque South, Bato Balani Foundation, Inc., McDonald's Philippines, Landbank of the Philippines and Approtech Asia supported these projects. Following are the major YSP projects.

## Philippine Math Olympiad

The Philippine Math Olympiad (PMO) is held annually to hone the mathematical skills of secondary level students. It also provides the standard for upgrading the level of mathematics teaching in schools.

*Secretary Padolina together with SEI Director Dr. Ester Ogena presents a plaque of appreciation to Rotary Club of Paranaque South representatives for their sponsorship of the 2nd Gawad AGKATEK.*





Students who perform well in the PMO are made to undergo the Program for Excellence in Math (PEM) training and are then sent to the international mathematics competition.

The batch of 1995 math achievers was led by Karl Oliver Yu of Grace Christian High School (first placer in the level III individual category) and Joel Caisido of the Philippine Science High School (first placer for level IV). The teams from Zamboanga Chong Hua High School (in Region IX) and the Philippine Cultural High School (Main) placed first in the Level III and Level IV team categories, respectively.

## Philippine Physics Olympiad

The Philippine Physics Olympiad (PPO) not only promotes Physics, but also good fellowship among the third and fourth year high school participants.

Brilliant secondary students of Physics are given advanced and intensive training in the Program for Excellence in Physics (PEP). Individual national winners or finalists of the PPO are qualified to participate in the PEP training and may form part of the country's SEI-sponsored delegation to the International Physics Olympiad (IPO).

## Philippine Participation in International Competitions

**Australian Math Competition.** An annual competition organized by the University of Canberra and their Math-

ematical Association, the Australian Math Competition (AMC) has been a venue for Filipino excellence, with the country having won four WESTPAC medals since it joined the competition in 1986. SEI spearheads the training and participation of Filipino talents in international math competitions such as the AMC.

Patrick Philip Lim, a first year high school student of Xavier School, was the lone Filipino WESTPAC medalist during the 1995 AMC.



*Shown in the photo are members of the Philippine delegation to the 36th International Mathematical Olympiad held in Toronto, Canada on 13-25 July 1995 -- (from left to right:) Rolando Navarro, Jr., Richard Eden, Jayvee Rebutillo, Michael Daniel Villena Samson, Winsong Lim and Bernard Chan*

**36th International Mathematical Olympiad.** Dr. Jose Marasigan (Team Leader) and Mrs. Evangeline Bautista (Deputy Team Leader) led the country's delegates to the 36th International Mathematical Olympiad (IMO) held in Waterloo and North York, Canada. The Philippine delegation came back with a bronze medal won by Bernard Chan.

**XXVI International Physics Olympiad.** The country fielded its own delegates to the XXVI International Physics Olympiad (IPhO) held in Canberra, Australia, led by Team Leader Mr. Ernys Boronilla and Deputy Team Leader Mr. Jose Perico Esguerra. Five student-contestants who



came from the Philippine and Manila Science High Schools represented the country in the 26th IPhO.

**SEARCC International Software Competition (ISC) 1995.** Six delegates led by Mr. Nelson Marcos participated in the South East Asian Regional Computer Conference (SEARCC) International Software Competition held in Colombo, Sri Lanka.

Secondary school category:  
Mr. Isal O. Kulong  
High School Physics Teacher  
Quezon City Science High School  
Bago-Bantay, Quezon City

## National Science Club Month

The annual National Science Club Month (NSCM) celebration gives the

*Secretary Padolina poses with (L-R) Dr. Ester B. Ogena, DOST Undersecretary Amelia C. Ancog, Mr. Isal O. Kulong (awardee for secondary school category), Ms. Anita B. Almojera (awardee for elementary level category) and DECS Asst. Secretary Marcial Salvatiera during the Dr. Juan Salcedo, Jr. Awarding rites at U.P.-ISMED.*



## Dr. Juan Salcedo Jr. Science Education Awards

The annual Dr. Juan Salcedo Jr. Award, in honor of the late scientist and founder of the RSTCs, is given to elementary, secondary and tertiary mathematics and science teachers who exhibit exemplary performance in teaching. There were 25 regional awardees, as well as two national winners in 1995. The two national awardees are as follows:

Elementary school category:  
Ms. Anita B. Almojera  
Elementary Science Teacher  
Zaragoza Elementary School  
Bacnotan, La Union

science clubs throughout the country a chance to engage in meaningful and productive S & T activities with their culmination slated in September. These activities promote awareness, interest and involvement of the youth in S & T oriented projects.

The 1995 NSCM Celebration kicked off with an open-house-in-DOST activity entitled A DAY WITH THE SCIENCE COMMUNITY YEAR 2 held on September 4 at the DOST Complex. Activities during the whole-day affair were as follows:

- 1) Encounter sessions with scientists and S & T professionals
- 2) Lecture-demonstrations on DOST technologies



- 3) Lectures on "Creative Science Teaching Strategies" and "Creativity in Science Clubbing"
- 4) On-the-Spot Creative Poster Design Contest
- 5) Gawad AGKATEK Photo Exhibit
- 6) Formal Opening and NCR Gawad AGKATEK Awarding Ceremonies

A total of 300 students, teachers, and parents participated in these different activities. Forty-three resource persons from DOST's institutes and councils, and 20 facilitators from SEI shared their expertise and time during the sessions. McDonald's Philippines and Coca Cola Bottlers Philippines, Inc. were the Day's sponsors.

To answer the need for a retraining of science club advisers, the Science Club Advisers Re-orientation Training (SCART) was conceptualized and pilot-tested in Region XI. It was held for from February 11-12 at Casa Mercado, Teachers College, Davao City. Fifty-nine (59) science club advisers attended the training. Handled by Dr. Elisa Paqueo Arreza of UP Diliman, the training was divided into three major sessions:

- 1) **Opening/Input session** which included talks on the DOST-SEI Youth Science Popularization Programs and the Evaluative Report of NSCM Through the Years
- 2) **Workshop Session 1** in which participants reviewed the state of science clubbing in their respective schools, district and/or division, identified constraints or problems met in pursuing science club projects and activities, and brainstormed on solutions to these problems
- 3) **Workshop Session 2** wherein participants mapped out proposed science clubbing activities/projects

Dr. Arreza gave a synthesis of the two-day activity, zeroing in on the critical role of science club advisers in the promotion of public understanding of science, technology and environment in the 21st century.

Participants recommended that science club advisers be provided regular and relevant trainings so that the science club movement will be sustained. Moreover, they expressed the need to organize into a unified national body.



*Mr. Rene Aranda of the Philippine Daily Inquirer, poses with the contestants of the On-the-Spot Creative Poster Design Contest after judging the entries. The contest was held during the 1995 NSCM Celebration Opening Day.*



## Gawad AGKATEK (Agham, Kapaligiran at Teknolohiya)

This project encourages the involvement of in-school and out-of-school science clubs to undertake community projects and activities through the application of science, technology and environment concepts.

In 1995, 69 projects were submitted as entries to the 2nd Gawad AGKATEK. Of

### 2nd Place:

RAINFED RICE AND FISH CULTURE  
SJES Science Club  
San Jose Elementary School  
San Jose, Sierra Bullones, Bohol

### 3rd Place:

PROMOTION OF NON-CHEMICAL  
CONTROL ON VEGETABLES

*Secretary Padolina gives a message during the press launch of the 2nd Gawad AGKATEK held at Jade Vine Restaurant on February 17, 1995. Looking on are BBFI Director Amada Javellana, DECS Secretary Ricardo Gloria, Senator Orly Mercado and Rotary Club of Paranaque South President Gerardo David.*



these, 39 projects were given the Gawad AGKATEK Regional Awards. The National Awarding Rites was held at Malacanang Palace on October 9 with President Fidel V. Ramos as the guest of honor and keynote speaker. The 2nd Gawad AGKATEK National level awardees were as follows:

#### 1st Place:

PROJECT SOMAL (SAVE OUR MARINE LIFE)  
DDSNHS Science Club  
Davao del Sur National High School  
Digos, Davao del Sur

#### The Young Earthsavers

Sergio Osmena Central School  
Sergio Osmena, Zamboanga del Norte

Beginning 1995, the Award of Sustainability is given to the regionally and nationally awarded AGKATEK projects which are well-sustained and continue to create an impact in the community. Thirty-six projects were reevaluated for the Regional Award of Sustainability and, for each region, the most sustained project was conferred the award. The judges' unani-



mous choice for the National Award of Sustainability was The Young Researchers' winning project—Promotion on Nursery Enterprise of Asexually-Propagated Mangoes (Katipunan Central School, Katipunan, Zamboanga del Norte), incidentally the first place winner during the 1st Gawad AGKATEK in 1994.

Financial sponsors of the 2nd Gawad AGKATEK were Rotary Club of Paranaque South, BatoBalani Foundation, Inc., PAGCOR, Philippine Geothermal Incorporated, Nestle Philippines, Landbank of the Philippines and Goodwill Bookstore.

## Young Women S & T Enrichment Program

Believing that women empowerment must start early, SEI embarked in 1995 on the Young Women S & T Enrichment Program. The program's main concern is to generate among young women a greater awareness of issues and problems confronting them, and enable them to develop confidence-building skills particularly in S & T fields.

Under the program, the following activities were undertaken:

- 1) Organization of the Young Women as Voices Of Empowerment in Science (YWAVES), an all-female group whose members are inclined towards S & T, was formed on February 24 through the initiative of SEI. It was created to strengthen the role of young women in S & T, enhance their scientific talents, skills and interests and provide a venue for sharing ideas and insights on issues affecting young women. After the organizational meeting, the officers and members (totalling 25), formulated their Constitution and by-laws, and recruited more members.

- 2) Conduct of the Young Women's Science Congress (YWSC), a science fair competition among high school girls, was held on March 17 at the DOST Executive Lounge. Out of the 26 entries, the following students were chosen as the awardees:

- Jo Ann Antenor  
Manila Science High School  
Project: Low-Cost Building Blocks from Bagasse Ash
- Teresa Santiago  
UP Integrated School  
Project: Kuhol Killer

Ms. Jo Ann Antenor joined the NGO Forum during the 4th World Women's Conference in Beijing in September.

- 3) Conduct of the Workshops on Increasing Women Participation in Science and Technology. Through a UNESCO grant, SEI conducted one Experts' Workshop and two Trainors' Workshop on Increasing Women Participation in S & T. Participated in by 12 science experts and 150 science teachers/guidance counselors/parents, the workshops were able to identify factors which inhibit female students from pursuing S & T careers, devise S & T career guidance programs and modules to attract females to science and gradually change traditional attitudes towards women. The workshops were held at U.P. Los Banos, U.P. Diliman and DECS Ecotech Center, Cebu City.

# Strengthening of Linkages

## Establishment of an Electronic Network in Science Education

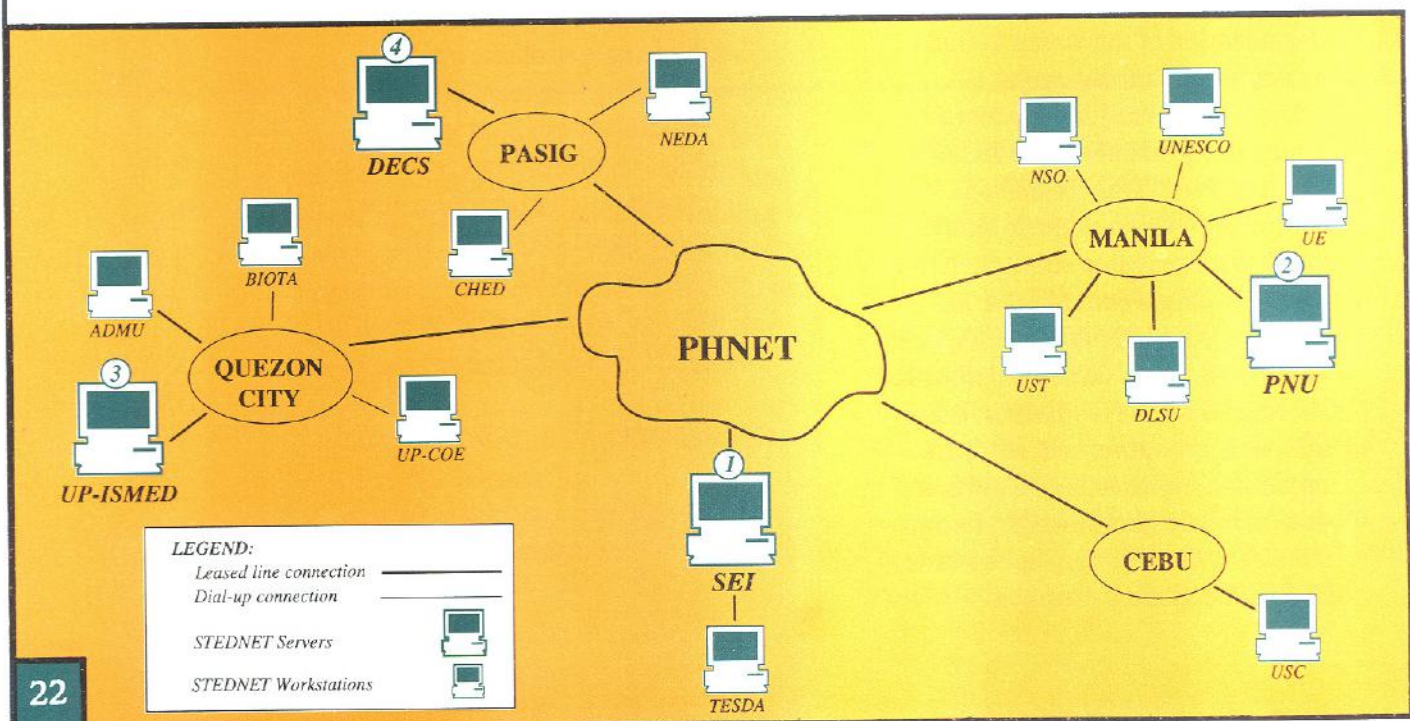
Establishing an electronic network in science education enables SEI and other institutions to develop electronic linkages and exchange information (e.g., enrollment rates, number of high schools, etc.) vital for policy making.

Servers were set up in strategic points in UP-ISMED for Quezon City, Philippine Normal University (PNU) via a primary node in De La Salle University (DLSU) and Centro Escolar University (CEU) for Manila. SEI was assigned to handle the Tagig area and the Biology Teachers Association.

For the first phase, the following institutions were the cooperating agencies: the

National Economic and Development Authority (NEDA); Bureau of Elementary Education, Bureau of Secondary Education, and Bureau of Non-formal Education, all of DECS; Commission on Higher Education (CHED); Technical Education and Skills Development Authority (TESDA) and UNESCO-Department of Foreign Affairs (UNESCO/DFA).

Scheduled for completion in 1996, Phase II will require the cooperation of the following agencies: National Statistics Office (NSO), Department of Budget and Management (DBM), Philippine Overseas Employment Administration (POEA), Department of Labor and Employment (DOLE) and Planning and Evaluation





Services of the Department of Science and Technology (PES, DOST), Ateneo de Manila University (ADMU), University of Santo Tomas (UST), University of San Carlos (USC-Cebu) and the Philippine Association of Physics Instructors (PAPI) are also being considered for inclusion in Phase II of the Database Project.

The main program of this project is designed to be Internet-based so that the information can be availed of not only locally but also worldwide. Specifically, the first Home Page in Science Education in the Philippines will be established in this phase of the project.

Overall, the project was conceptualized as a means of:

- Systematizing data collection and retrieval by putting up and developing structures that would allow information or data to be stored as databases and accessed by different users;
- Developing a centralized source of science education material for convenient and accessible data gathering;
- Serving as reference material for graduate students, teachers or policy decision makers; and
- Facilitating data sharing thru link ups with other local and international networks.

## The SEI in International Conferences

SEI Director Dr. Ester B. Ogena participated in the 1995 meeting in Riga as the

official Philippine representative to the International Association for the Evaluation of Educational Achievements (IEA).

At the same time, Dr. Ogena was named Governing Board Member of the Malaysia-based SEAMEO Regional Center for Science and Mathematics (RECSAM) as Philippine Representative, with her membership in effect from 1995-1998.



*Director Ester B. Ogena participates as UNESCO Commissioner and Philippine representative in the UNESCO General Conference in Paris.*

As UNESCO Commissioner and member of the Philippine Science and Technology Committee, Dr. Ogena also attended the 38th UNESCO General Conference in Paris in November 1995.

## SEI and PBSP

The Institute has established linkages with the Philippine Business for Social Progress (PBSP) in the implementation of teacher training programs for both the elementary and secondary school teachers.

The linkage was achieved through an approved proposal submitted by SEI to PBSP.

As proposed, the PBSP signified its commitment to provide assistance to DOST in its mission to uplift the human resource capability in science education of the elementary and secondary school teachers throughout the country.

# Financial

## Distribution of Expenditures by Function and by Expenses Classification, 1995

Function	1 9 9 5 E X P E N D I T U R E S *			
	Total	P.S.	M.O.E.	C.O.
Total	P 148,177,616.78	P 4,571,417.70	P 138,706,199.08	P 4,900,000.00
1. Research and Development				
2. Technology Delivery				
3. S & T Services (sub-total)	8,830,701.50		8,830,701.50	
a. Information System	304,055.30		304,055.30	
b. Technical Services	5,783,995.10		5,783,995.10	
c. Science Promotion	2,742,651.10		2,742,651.10	
4. S & T Education and Training	125,049,451.04		125,049,451.04	
5. Development, integration and coordination of the National Research or S & T System	5,964,095.16	2,081,747.88	2,107,347.28	1,775,000.00
6. General Administration and Support Services	8,333,369.08	2,489,669.82	2,718,699.26	3,125,000.00

\* Includes all types of expenditures

Prepared by:  
Luisa G. Maravillas  
Planning Officer III



# Staff Development Training

## ACOSTA, HELEN

- Property Inspection (Westin Philippine Plaza, May 27)

## ARCETA, REYNALDO

- Component Programming Using SPSS Windows Developers Kit & Advanced Data Processing & Tabulation Using SPSS Windows Tables V6.1 (Asia Pacific Center for Research [ACRE], Roxas Blvd., Pasay City, Feb.9-10)
- Property Inspection (Westin Philippine Plaza, May 27)
- Basic PC Trouble-Shooting and Maintenance (TLRC, Jun. 14-21)
- Technical Writing (AIJC, Sta. Mesa, Aug. 2-4)
- Maintenance Training (Makati City, Nov. 27-Dec. 5)
- 2nd National Convention of Government IT Personnel (Cebu City, Dec. 7-9)

## ARCIAGA, VIOLETA

- Technical Writing (AIJC, Sta. Mesa, Aug. 2-4)
- International Conference on Teacher Education: Innovative Alternatives for the 21st Century (Bangkok, Thailand, July 7-14)
- 5th SEAMEO INNOTECH International Conference (Shangri-la Hotel, Makati, Dec. 5-7)

## DE ASIS, RODELIO

- 2nd National Convention of Government IT Personnel (Cebu City, Dec. 7-9)

## ASUNCION, ALICIA

- Technical Writing (AIJC, Sta. Mesa, Aug. 2-4)

## ASUNCION, MARINEL

- GACPA Membership Meeting (Shangri-la Hotel, Mandaluyong City)
- Property Inspection (Westin Philippine Plaza, May 27)

## AYRAN, AIDA

- Asian Congress for Records Managers and Archivists (Baguio Convention Center and Teacher's Camp, Baguio City, Mar. 20-22)
- Auditing Rules, Detection of Fraud and Other Irregularities (Westin Phil. Plaza, Apr. 1)
- 23rd National Conference on Public Administration (GSIS Financial Center, Pasay City, Apr. 7-8)
- New Rules in Collection and Disbursement (Mayon Int'l. Hotel, Legaspi City, July 10-11)
- Inventory Control and Warehouse Management (Bayview Park Hotel Mla., Nov. 10)
- 5th National Convention (Live-in Seminar) (Subic Free Port Zone, Zambales, Dec. 3-5)

## BALLON, LOURDES

- Government Cash Accountability and Management (Sulo Hotel, June 2)
- Technical Writing (AIJC, Sta. Mesa, Aug. 2-4)

## BRAWNER, FILMA

- Third International Math & Science Study (TIMSS) (London, England, February 13-15)
- International Conference on Public Understanding of Science (Beijing, China, Oct. 15-20)

## BRONOLA, JESUS REY

- Sexual Harassment (DOST Exec. Lounge, July 6)

## BULAON, GERALDINE

- Monitoring and Evaluation of Development Programs (Asian Inst. of Journalism, Sta. Mesa, May 24-26)
- Technical Writing (Asian Institute of Journalism, June 21-23)
- Effective Public Relations (STII, July 25)
- Microsoft (Windows, Word 6.0 and Excel 5.0) (TLRC, July 28-Aug. 23)

## BUSTAMANTE, EDELMIRA

- Science Education: Providing a Curriculum of Quality (London, England, Mar. 19-31)
- Technical Writing (Asian Institute of Journalism, Jun. 21-23)
- Training the Trainors (Shangri-la Hotel, Makati, Nov. 14-16)
- SPSS Training Data Entry II Introduction to SPSS for Windows Base (PICC Comp., Pasay City, Dec. 11)

**CARTECIANO, JOSELITO**

- News and Feature Writing (Asian Institute of Journalism, Sta. Mesa, Mla., Jan.18-20)
- Technical Writing (Asian Institute of Journalism, June 21-23)
- Effective Public Relations (STII, July 25)

**CASTILLO, ALFREDO**

- Issues and Problems on Audit of Government Expenditures (Sulo Hotel, Q.C., Apr. 28, May 12)

**CASTILLO, MA. TERESA**

- Training on Computer Operation (Makati City, Dec. 11-18)

**CAYANAN, LEAH SOCORRO**

- Study Course on Women in Science and Technology (AIDAB, Australia, Mar. 26-Apr. 15)
- Effective Public Relations (STII, July 25)
- Training the Trainors (Shangri-la Hotel, Makati, Nov. 14-16)

**CRISTOBAL, RUBY**

- Effective Public Relations (STII, July 25)

**DEMONI, DAISY**

- Technical Writing (Asian Institute of Journalism, Jun. 21-23)
- SPSS Training Data Entry II Introduction to SPSS for Windows Base (PICC Comp., Pasay City, Dec. 11)
- SPSS Training Data Entry II Introduction to SPSS for Windows Base (PICC Comp., Pasay City, Dec. 11)

**DOCOR, NONA**

- Issues and Problems on Audit of Government Expenditures (Sulo Hotel, Q.C., Apr. 28, May 12)

**ESPONILLA, ANITA**

- Guidelines & Procedures in the Conduct of Inspection of Gov't. Purchases (Westin Phil. Plaza, Oct. 7)

**FELICIANO, JOSEPHINE**

- Mini-Micro CDS/ISIS Version 3.07 (Operator and Designer Level) (PCHRD, July 6-7, July 10-14)
- SPSS Training Data Entry II Introduction to SPSS for Windows Base (PICC Comp., Pasay City, Dec. 11)

**FERNANDEZ, JOSEFINA**

- Government Cash Accountability and Management (Sulo Hotel, Jun.2)
- Technical Writing (Asian Institute of Journalism, June 21-23)

**GALLARDO, ANGEL JR.**

- Foxpro Programming (TLRC, Aug.1-13)

**GARCELLANO, JOSEFINA**

- Government Cash Management and Control (Westin Phil. Plaza, Apr. 22)
- Moral Fitness (DOST Exec. Lounge, Oct. 27)

**IBRAHIM, ZAMORA**

- Zero Waste Management (Bahay Alumni, Diliman, Q.C., Dec. 8-9)

**LAUREL, GINA**

- GACPA Membership Meeting (Shangri-la Hotel, Mandaluyong City)
- The Newly Enacted Expanded Value Added Tax (Century Park Sheraton Hotel, Nov. 24)

**LAURON, LILIA**

- Technical Writing (Asian Institute of Journalism, Jun. 21-23)

**LOPEZ, EDWIN**

- Foxpro Programming (TLRC, Aug. 1-13)

**MACARAEG, ANITA**

- Technical Writing (Asian Institute of Journalism, June 21-23)
- Health and Prosperity Seminar (DOST Exec. Lounge, Sept. 14-15)

**MANINGAS, PETRONILA**

- Technical Writing (Asian Institute of Journalism, June 21-23)

**MANONGAS, ROSELYN**

- Moral Fitness (DOST Exec. Lounge, Oct. 27)

**MARAVILLAS, LUISA**

- Asian Congress for Records Managers and Archivists (Baguio Convention Center and Teacher's Camp, Baguio City, Mar. 20-22)
- Auditing Rules, Detection of Fraud and Other Irregularities (Westin Phil. Plaza, Apr. 1)
- Inventory Control and Warehouse Management (Bayview Park Hotel Mla., Nov. 10)
- 5th National Convention (Live-in Seminar) (Subic Free Port Zone, Zambales, Dec. 3-5)

**MENDOZA, CORAZON**

- SPSS Training Data Entry II Introduction to SPSS for Windows Base (PICC Comp., Pasay City, Dec. 11)

**MENDOZA, GINA**

- Public Bidding Essentials and Principles, Rules and Regulations in Government Controversies and Solutions (Sulo Hotel, Quezon City, Apr. 21)

**MIRAPLES, DORCAS**

- Technical Writing (AIJC, Sta. Mesa, Aug. 2-4)
- Microsoft (Windows, Word 6.0 and Excel 5.0) (TLRC, July 28-Aug. 23)

**MUNCAL, IMMACULADA**

- Supply and Property Management (Westin Phil. Plaza, Apr. 29)
- Becoming a More Valuable Secretary (thru Effective Records Management) (Westin Phil. Plaza, June.10)
- Health and Prosperity Seminar (DOST Exec. Lounge, July 18-19)
- Moral Fitness (DOST Exec. Lounge, Oct. 27)



OGENA, ESTER

- ESCAP Expert Group Meeting on Regional Economic Cooperation for Industrial & Technical Skills Development for Adopting New and Emerging Technologies (Beijing, People's Republic of China, Mar. 29-31)
- Development of a Distance Learning System in Basic Science (Beijing, People's Rep. of China, May 16-20)
- National Demonstration Laboratory for Interactive Information Technologies (Wash., USA, July 12-14)
- Meeting with the Int'l. Mathematics Olympiad (IMO) Advisory Committee (Toronto, Canada, Jul. 15-24)
- 26th Governing Board Meeting of SEAMEO-RECSAM (Phuket, Thailand, Aug. 23-25)
- Visit to Science Education Programs of Selected Educational Institutions and Science Centers (Bangkok, Thailand, Aug. 21-22)
- Regional Workshop on Strategic Planning in Science and Mathematics Education in Southeast Asia for the 21st Century (Penang, Malaysia, Sept. 14-21)
- 36th General Assembly Meeting of the International Association for the Evaluation of Educational Achievement (Riga, Latvia, Sept. 24-29)
- 38th UNESCO General Conf. (Paris, Nov. 1-13)

OLARTE, AMPARO

- Monitoring and Evaluation of Development Programs (Asian Inst. of Journalism, Sta. Mesa, May 24-26)
- Technical Writing (Asian Institute of Journalism, Jun. 21-23)
- SPSS Training Data Entry II Introduction to SPSS for Windows Base (PICC Comp., Pasay City, Dec. 11)

ORTALIZA, RODOLFO

- Supply and Property Management (Westin Phil. Plaza, Apr. 29)
- Health and Prosperity Seminar (DOST Exec. Lounge, July 18-19)
- Technical Writing (AIJC, Sta. Mesa, Aug. 2-4)

PACIS, JENNY

- Training on Computer Operation (Makati City, Nov. 13)
- SPSS Training Data Entry II Introduction to SPSS for Windows Base (PICC Comp. Pasay City, Dec. 11)

PALATTAO, MARIETTA

- Government Cash Management and Control (Westin Phil. Plaza, Apr. 22)
- Guidelines & Procedures in the Conduct of Inspection of Gov't. Purchases (Westin Phil. Plaza, Oct. 7)

PARENTELA, RESURRECCION

- Technical Writing (AIJC, Sta. Mesa, Aug. 2-4)

PASATIEMPO, EMMA

- Educational Administration for the Philippines (Japan, May 8-June 10)
- Technical Writing (AIJC, Sta. Mesa, Aug. 2-4)
- Health and Prosperity Seminar (DOST Exec. Lounge, Sept. 14-15)
- SPSS Training Data Entry II Introduction to SPSS for Windows Base (PICC Comp. Pasay City, Dec. 11)
- SPSS Training Data Entry II Introduction to SPSS for Windows Base (PICC Comp. Pasay City, Dec. 11)

PEREZ, BENEDICTO

- Issues and Problems on Audit of Government Expenditures (Sulo Hotel, Q.C., Apr. 28, May 12)

PORTUGAL, LEVITA

- Monitoring and Evaluation of Development Programs (Asian Inst. of Journalism, Sta. Mesa, May 24-26)

- Technical Writing (AIJC, Sta. Mesa, Aug. 2-4)

REBUTA, VERGEL

- Basic Statistics with Exploratory Data Analysis (U.P. Diliman, Apr. 3-8)
- Internet: The Worldwide Web (University of San Carlos, Cebu City, July 19)
- Training the Trainors (Shangri-la Hotel, Makati, Nov. 14-16)
- SPSS Training Data Entry II Introduction to SPSS for Windows Base (PICC Comp. Dec. 11)

REGALA, OLIVIA

- Becoming a More Valuable Secretary (thru Effective Records Management) (Westin Philippine Plaza, Jun. 10)
- Guidelines & Procedures in the Conduct of Inspection of Gov't. Purchases (Westin Phil. Plaza, Oct. 7)

RIMORIN, LUZ

- Auditing Rules, Detection of Fraud and Other Irregularities (Westin Philippine Plaza, Apr. 1)
- 23rd National Conference on Public Administration (GSIS Financial Center, Pasay City, Apr. 7-8)
- Settlement of Financial Accountability and Responsibility (Westin Phil. Plaza, June 10)
- Phil. Association for Government Budget Adm. (Cebu Plaza Hotel, Cebu City, June 21-23)
- GACPA Accountancy Week Celebration (Hotel Intercontinental Makati, July 17)
- Empowerment for Responsive Governance (Venees Hotel, Davao City, Sept. 28-29)
- 1st National Congress of Government Service Executives for Career Advancement (Manila Midtown Hotel, Nov. 9-11)
- Updates on Government Budgeting System (Innotech Bldg., Diliman, Q.C., Dec.)

SIMON, LUZ

- GACPA Membership Meeting (Shangri-la Hotel, Mandaluyong City)

STA. MARIA, JOSEFINA

- Government Cash Management and Control (Westin Phil. Plaza, Apr. 22)
- Settlement of Financial Accountability and Responsibility (Westin Phil. Plaza, June 10)
- Phil. Association for Government Budget Adm. (Cebu Plaza Hotel, Cebu City, June 21-23)
- New Rules in Collection and Disbursement (Mayon Int'l. Hotel, Legaspi City, July 10-11)

TOLENTINO, RACQUEL

- Asian Congress for Records Managers and Archivists (Baguio Convention Center and Teacher's Camp, Baguio City, Mar. 20-22)
- Issues and Problems on Audit of Government Expenditures (Sulo Hotel, Q.C., Apr. 28, May 12)
- GACPA Accountancy Week Celebration (Hotel Intercontinental, Makati, July 17)
- Technical Writing (AIJC, Sta. Mesa, Aug. 2-4)
- Guidelines & Procedures in the Conduct of Inspection of Gov't. Purchases (Westin Phil. Plaza, Oct. 7)
- 5th National Convention (Live-in Seminar) (Subic Free Port Zone, Zambales, Dec. 3-5)

VIRAY, CARMELITA

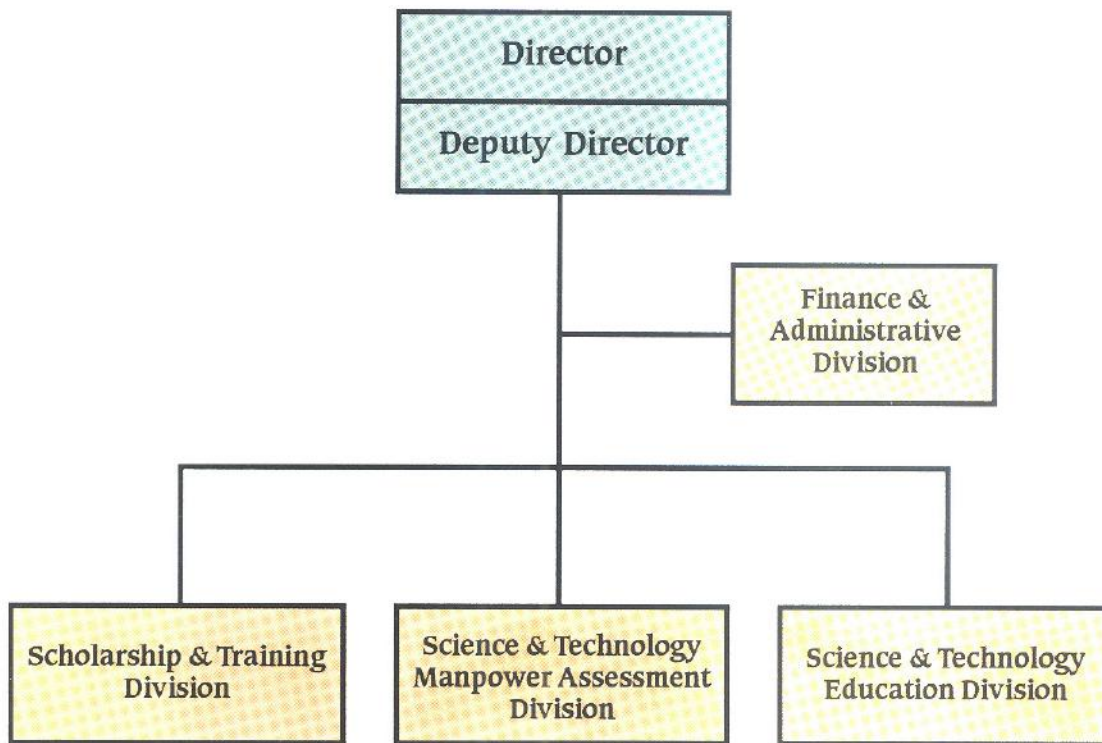
- Technical Writing (Asian Institute of Journalism, June 21-23)
- Health and Prosperity Seminar (DOST Exec. Lounge, Sept. 14-15)
- Training the Trainers (Shangri-la Hotel, Makati, Nov. 14-16)

VIRREY, JUANITA

- Government Cash Management and Control (Westin Philippine Plaza, April 22)
- Moral Fitness (DOST Exec. Lounge, Oct. 27)



# Organizational Chart



## OFFICIALS

**Ester B. Ogena, Ph.D.**

**Filma G. Brawner, Ph.D.**

**Violeta N. Arciaga, Ph.D.**

**Elma C. Rafael**

**Aida T. Ayran**

*Director*

*OIC-Office of the Deputy*

*Director and Chief, STMAD*

*Chief, STED*

*Chief, STD*

*Chief, FAD*



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