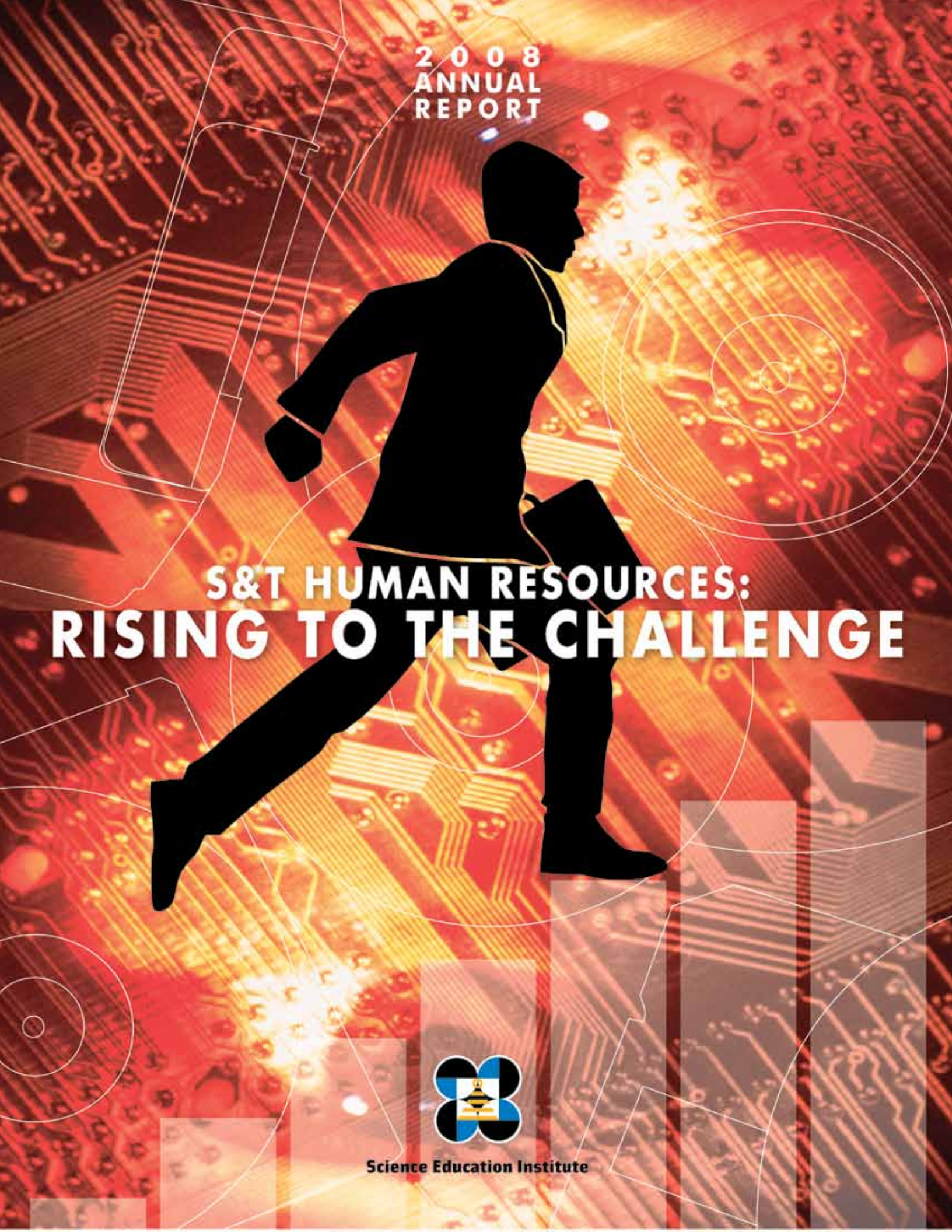
2008
ANNUAL
REPORT



S&T HUMAN RESOURCES: RISING TO THE CHALLENGE

Science Education Institute

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agency profile

Statement of Mandates (per EO 128)

- Undertake science education and training
- Administer scholarships, awards, and grants
- Undertake science and technology (S&T) manpower development
- Formulate plans and establish programs and projects for the promotion and development of S&T education and training in coordination with DECS and other institutions of learning in the field of science and technology

Statement of Vision

By 2020 and beyond, we shall have developed the Philippines' human resource capacity in science and technology required to produce demand-driven outputs that meet global standards.

Statement of Goals

- Accelerate the development of S&T human resource in the country by administering undergraduate and graduate scholarships and advanced specialized trainings
- Implement innovative science education programs
- Promote appreciation and interest in science among the citizenry
- Formulate policy recommendations toward improving the high-level training of future scientists and engineers

Statement of Program Thrusts

In support of the agreed long-term thrusts, the Human Resource Development (HRD) component will do the following:

- Enhance competencies of those expected to do R&D in the priority projects to deliver products and processes with high technology content
- Accelerate the development of human resources (BS-MS-PhD) needed for priority projects identified in the area thrusts

Statement of Strategies

- Developing high-level competencies in emerging/pioneering technologies
- Pursuing innovative/alternative schemes, approaches and partnerships in science and mathematics education and in nurturing talents towards careers in S&T
- Strengthening of R&D capability of network institutions offering graduate programs in S&T
- Developing alternative approaches for delivering undergraduate and graduate degree programs in S&T, such as local and foreign sandwich programs, company-based research degree program and research apprenticeship
- Strengthening the feeder system in basic science education for S&T
- Supporting legislative measures on HRD for S&T
- Conducting researches/studies to provide scientific basis for the various S&T human resource development programs and activities Improving S&T Governance
- Legislating measures on accelerating human resource capacity at graduate level in S&T approximating world standards, and providing funds thereof
- Providing legislative measures for developing world-class laboratory facilities
- Providing funds for big-ticket R&D priority projects, e.g. as specified in the RAND 2020

Statement of Programs

- Demand-oriented S&T education at the higher education level to stimulate high technology industries
- Quality science education for nurturing feeders in S&T
- Science and mathematics competitions nationwide at the basic education level

Statement of Performance Indicators

- Ranking of PSHS and S&T Oriented Schools in International assessment studies
- Number of BS/MS/PhD produced
- Number of trainees/recipients/beneficiaries in the specialized training programs in science and mathematics
- Number of science and mathematics competitions conducted/participated/assisted
- Number of local and international citations in journals and other publications

introduction

When it was introduced in 1994 by then President Fidel V. Ramos, Republic Act 7687 or the Science and Technology Scholarship Act quickly became the main building block for the development of much-needed human resources for S&T. Under the administration of Science Education Institute of the Department of Science and Technology (SEI-DOST), this landmark legislature is responsible for laying equal opportunities to quality education for numerous poor yet deserving students. Today, more than ever, the country is seeing continuous ranks of potential technological innovators who may someday lead our industries in a more competitive era, bringing the Philippines at last to the brink of being an important player in the global economy.

Having already proven itself at par with this challenge of producing a critical mass of S&T students and professionals, SEI is gaining a growing awareness of the need to not only make more students interested in science and mathematics education but to also help them come up with practical ways to benefit local industries. A greater and more insistent call is coming from various sectors to achieve that delicate balance between promoting academe-based scientific research and development among students, scientists and educators and enabling valuable investment returns in the private sector and other government agencies.

This can only be the next logical progression after concurrent efforts by public and private schools, universities and other learning institutions to improve science and technology education in the Philippines. Addressing the UP community in a forum called last year, Ateneo de Manila University President Fr. Bienvenido Nebres, SJ delivered a lecture entitled *"Building Internationally Competitive Institutions and Overcoming Poverty: Can These Two Paths Converge?"* with this same theme of merging the paths of academia and economic growth. According to him, now is the time for universities to explore a "new frontier" by linking science, engineering and industry and helping the Philippines become a part of the global knowledge economy.

The challenge here, according to Fr. Nebres, is to link universities to industry, possibly through projects such as science and technology parks similar to those in India and Silicon Valley, to develop S&T-based industries. These would entail a "seamless link among various pieces" comprising of technology innovators, venture capitalists, the legal and regulatory framework, and markets.

Integrating education with industry

Greater involvement of industry in education and curriculum development is also welcomed, in as much as technological advances frequently take place in industry, and the industry requirements of graduate skills are often dependent on the pace of curriculum developments. An industry-integrated curriculum would also lead to better informed teaching staff and greater student satisfaction. Industry contribution to high school ICT teaching may also help improve poor perceptions of an ICT career and increase student interest.

Industry analysts predict growth to continue to take place concurrently in all four major sectors of ICT i.e., hardware, software, services and communication. The growth and expansion of ICT will have two major impacts on ICT education: more trained human resources will be required at all levels including maintenance, design, development, implementation and leadership; concurrently, new developments and inventions will create new fields in ICT which will demand the introduction of new courses and training programs at all levels.

Students can only benefit from the integration of work-based learning, industry placements and working on industry projects, as this gives them real-world practical experience. Likewise, this strategy also benefits academic staff by helping them keep abreast of technological advances. Doing so will help address the demand for skilled ICT graduates, stem the decline in enrolments, enhance the quality of teaching, and improve the perception of the ICT profession among the general public.

Inculcating importance of research

The economic crunch in 2008, from which the whole world is still reeling, has greatly brought to the forefront the importance of the education sector to work hand in hand with industry. In the face of declining economies, countries need to develop their self-reliance even more – and self-reliance can only be possible with adequate numbers of highly skilled human capital for S&T.

Speaking at the 26th anniversary of the Philippine Council for Energy Research and Development (PCIERD) held last year, Philippine Vice President Noli de Castro also urged schools and students to conduct research to benefit local industries. The development of a talent-rich pool of scientific researchers is part of SEI's priority concern given its vast potential to further the development of science and technology in the country and spur economic growth.

The emphasis on research rests on its unquestionable importance in contributing to economic progress. Research in education is important as it leads to progress in science education and consequently progress through science. Even if the funding or number of PhDs is increased, development will hardly follow if there is inadequate correct research output. This is why any prescribed increase in R&D expenditure must be done with the assumption that, like in well developed countries, research is done properly. Research begets progress to support more research and onwards to industrialization.

Retaining human resources

Formulating S&T curricula that are in tune with national and international demands and intensify research must also be strongly complemented with programs that make working here more attractive for professionals. The significant budget increase given last year to the Department of Science & Technology is particularly laudable as it aims, among other priority thrusts, to accelerate the production of high level S&T human resources, especially in the area of R&D.

This marked for the first time the Philippines was able to allocate more than 0.14 percent of its gross domestic product (GDP) for R&D, in the face of a UNESCO report stating that developing countries typically allocate 1 percent. The highly successful Balik Scientist Program has also produced great strides in contributing to R&Ds in the priority areas that it covers, while the ongoing global economic recession can also be taken providentially, as it is the opportune time to win back more brains that can provide new ideas and innovations.

Providing well-targeted support to scientists, especially at the beginning of their research career, will contribute robustly to strengthening our national science capacity. It is about time we move beyond the question of whether ICT can support education and industries and start tackling how much, what, where, and how ICT can provide value to the existing system. By knowing what practices, models, strategies and approaches are in place, we can successfully integrate ICT education with industrial requirements in a sustainable manner.

secretary

Message from the Secretary

The year 2008 marked the 50th anniversary of the Department of Science and Technology (DOST). Making it a really favorable year for us were many positive milestones that indicated an increasing public consciousness about the importance of science and technology in our individual lives and in nation building. In spite of – or perhaps, more appropriately, due to – the global financial crisis that swept throughout the year, the government and private and public enterprises highlighted the need to intensify all efforts that will make our country rely more on its resources, specifically human resources, as economic opportunities abroad began to tighten.

We at the DOST remain fully committed to the government's pursuit of the vision to make our country join the first world ranks in 20 years. Technology is the foundation of our future economic development, and human resources are the pillars that will support our growth. The Science Education Institute's overall strategy is in line with the Medium-Term Philippine Development Plan, which firstly calls for enhancing the competitiveness of our human capital; secondly, developing a critical mass of scientists and R&D personnel; thirdly, speeding up knowledge creation and dissemination to push productivity; and fourthly, improving the mechanisms that promote technology-based entrepreneurship.

The government is clearly attentive to our gains, and we are thankful for the high level of investments pouring in for our research and development initiatives. This kind of support is the most encouraging thing to have happened in a long while, and we are using it to address national programs, acquire new knowledge, keep pace with the modern S&T environment, and improve future performance so we can become more valuable contributors. We are prioritizing research in areas that include biotechnology, agriculture, alternative energy, information and communication technology and health, among others.

Naturally, to the extent that our country desires to develop business and commerce related to science and technology, it is critical to have an adequate work force that is effectively trained in this field. SEI continues to post commendable accomplishments designed to motivate and inspire people to pursue S&T careers and bring greater awareness to the public of the wonders of science around us.

I invite you to delve further into the SEI Annual Report to learn more about these and our many other FY2008 efforts.

Thank you.

ESTRELLA F. ALABASTRO, Ph.D.
Secretary
Department of Science and Technology

director

Message from the Director

After 15 years of implementing RA 7687, we at the DOST-SEI are heartened to note the growing diversity of sectors expressing their deepening concern and yearning for involvement in improving the condition of the country's science and technology capability.

In our pursuit of attaining a critical mass of S&T human resources via education, we are likewise witnessing a critical mass of participants – both public and private organizations and individuals – that recognize the importance of science, mathematics and other related fields in nation building.

It is now being widely thought that industry could do more to help in promoting our various priority fields of study, and that government could address the issue at all levels. What we are seeing is a constantly intensifying relationship between industries and universities, resulting in the development and implementation of industry-integrated curricula. Our efforts are centered firmly in advancing our areas of Agriculture, Biology, Biotechnology, Chemistry, Earth and Space Science, Environment, Fisheries and Marine Science, ICT, Materials Science and Engineering, Mathematics, Medical and Pharmaceutical Sciences, Microelectronics, and Physics.

Efforts to achieve sustainable development will be fatally undermined without a serious commitment to revitalizing science. The government's strongest acknowledgement of this fact came early in 2008 when it appropriated a bigger budgetary support that helped a long way towards achieving one of the department's priority thrusts, which is to accelerate the production of high level S&T human resources, particularly for R&D, through the Science Education Institute.

Now more than ever, the government is very determined to establish a pool of science researchers, engineers and educators, with MS and PhD degrees. President Gloria Macapagal-Arroyo has pledged to invest billions more in engineering research and development technology to achieve a critical mass of R&D-capable manpower.

The role of researchers is increasingly being understood, with more calls coming in from the government and private entities that encourage students to conduct researches that are practical and beneficial to various industries. The need to create additional science centers has also been noted, as they play a critical role in motivating young people who want to pursue further education and learning in the sciences. These facilities also provide opportunity for the public to understand S&T and become more informed citizen.

With more such petitions, developments, and initiatives, our role at the Science Education Institute is continuously becoming more challenging every year. Rest assured that our commitment to fulfill our mandate, our strategies, and our program thrusts makes us more than able to meet these challenges and others to come.

ESTER B. OGENA, Ph.D.
Director
Science Education Institute

highlights

Human Resources Development Programs

The **RA 7687** program supported a total of 8,266 in 2008 (6,293 ongoing and 1,343 graduates), an increase of 1.09 percent from 8,177 in 2007. The 2009 S&T Scholarship qualifying examination was conducted nationwide in 93 test centers on November 9, 2008 with 21,585 examinees. Among them, 2,481 successfully qualified AY 2008-2009. The **GREAT-M Project** had produced a total of 38 graduates over the years, with 12 scholar-graduates in technology courses for 2008. **Project GIFTS** or the "**Government Initiative on Fellowships for the Talented in the Sciences for the Disadvantaged**," was also implemented. In the first stage, 114 passed the criteria for scholarship. Also launched was the **Program on Regional Opportunities for Graduate Science and Engineering Scholarships (i-PROGRESS for the Disadvantaged)**. For AY 2008-2009, 6 applicants qualified, with 4 going to MS and 2 to PhD courses.

Under the **MERIT** scholarship program, 89 BS scholars graduated in 2008. The total number of scholars supported in 2008 was 1,109 (1,020 ongoing and 89 graduates). This number is 11.6% higher than the 914 total scholars in 2007.

DOST-SEI's initiative entitled **2nd National Survey on Science and Technology Education** was published in the third quarter of 2008. Likewise, the **"S&T Skills Migration Study"** completed and published its first part covering "Emigration of Science and Technology Educated Filipino, 1998-2006" in the fourth quarter of 2008.

Technology and Curriculum Development Assistance

Three out of the five **Mobile Information Technology Classrooms (MITC)** units underwent much needed body repair and engine maintenance during the first quarter of 2008, necessitating the re-evaluation of their requests for regional deployment. Nevertheless, one unit managed to train 265 students, 45 teachers in 4 schools in the third district of Camarines Sur from December 2 to 19, 2008. The oldest of the units, deployed in 2000, has served the CARAGA region continuously for 8 years, serving 6,775 students and 207 teachers in 16 schools and 18 officials of Barangay Roxas from January to October 2008.

SEI conducted a seminar on "**Science and Mathematics Education Summit: Assessing the Proposed Science and Mathematics Frameworks for Basic Education and Teacher Education**" on Sept. 17, 2008 at the Angelo King International Center, De La Salle-College of St. Benilde.

SEI supported the development of **Model S&T Enhanced Curriculum for Pre-School**, a science-based pre-school course syllabus for DOST Day Care Center, with consultants from Labworks Education Services and the support of the teachers.

Teaching-Learning Enhancement Programs

The **e-Training for Science and Mathematics Teachers** completed its 10-month duration in September 2008. Among the 450 available slots, 401 completed the course, while 225 availed themselves of the ICT grant.

Project MOVE UPS conducted a teacher training program for elementary teachers and the Principals of the feeder schools in regions X and ARMM, which are Muslim-dominated areas. The Principals of the 60 feeder schools attended training at the Mindanao State University (MSU), Marawi City on February 25-27, 2008. From May 19 to June 7, 2008, a total of 120 science and 120 mathematics teachers were trained at the MSU.

Sixty (60) Mathematics teachers and educators from 14 different cities and provinces across the Visayas region underwent the **Mathematics Investigation Training** from October 13-17, 2008 at the Institute of Information and Communications Technology Building at West Visayas State University, Iloilo City.

SEI sponsored 10 of its scholars majoring in Physics to the **1st Physics Education Festival** held at the Ateneo de Manila University on May 26-28, 2008. The agency also sponsored 40 teachers to participate in the **National Tri-Level Conference of Teachers and Educators** organized by the Metrobank's Foundation Network of Outstanding Teachers and Educators.

S&T Promotions Programs

The first batch of winners of the **Gawad LIDER award**, for distinguished contributions to the development of science education, was named in July 2008. The sequel to the 2006 S&T radio competition program called **Pinoy SciTek Challenge (PST Challenge)** was conducted to sustain the interest of the youth in science and technology through a radio quiz show.

More Filipino youths laudable accomplishments were recognized in the field of mathematics with the country's participation in the **Philippine Mathematical Olympiad**, which entered its 11th year in 2008; the **International Mathematical Olympiad**, which was particularly challenging for the local team; and the **2008 Australian Mathematics Competition**, the international correspondence mathematics competition administered by the non-profit Australian Mathematics Trust.

The **ASEAN Youth Science Summit** successfully brought in 149 participants, including 40 students and 10 teachers from 10 ASEAN member countries, for a 2-day summit to raise student awareness on the global, regional and national issues affecting the region and the world.

The country hosted for the first time the **2nd International Earth Science Olympiad**, which featured two main activities – the competition phase consisting of written and practical tests, and the cooperation or field investigation phase. The 67 international participants were composed of delegates from USA, Japan, South Korea, Taiwan, Singapore, Indonesia, and the Philippines.

The **Science Education Lecture Series for Teachers & Students** was held on July 30, 2008 at the Kanhuraw Convention Center, Tacloban City during the National Science & Technology Week (NSTW) Regional Celebration in Eastern Visayas, coinciding with the DOST 50th Anniversary.

Physiklaban was conducted on February 9, 2008 at the University of Santo Tomas, (UST) Manila by the Samahang Mag-aaral para sa Pagpapaunlad ng Pisika (SMPP), an alliance of different collegiate physics-oriented student organizations in the Philippines.

The UP-Los Baños Microbiological Society, in celebration of its 25th anniversary, hosted **MICROWEEK 2008** with the theme "Ensuring the Future: Innovating the World through Microbiology." The event consisted of an exhibit, symposium, quiz contest on "Mikrobyo," Biology quiz, Essay Writing and Poster Making Contest and Open Taumbayan.

For the whole month of September 2008, various activities were conducted around the country to celebrate the **National Science Club Month**, which carried the theme "Science Clubbing Optimized: Igniting and Innovating!" Approximately 4,040 elementary and high school students participated in the month-long celebration.

CHAPTER
1

Developing Human Resources in Science and Technology

The economic upheaval that dominated the whole of 2008 highlighted once again the importance of getting good education – specifically S&T education – as a way out of poverty. No less than Senator Edgardo J. Angara called for drastic reforms in education, saying that "A knowledge-based economy that thrives on innovation is the key to our development, but it requires first and foremost an effort to improve our education," he said. "This means investing in education and upgrading science education at all levels."

Despite the persistently low number of S&T graduates (compared, for example, to business, nursing, and medicine graduates), the Science Education Institute (SEI) regards the small yet steady stream of its scholarship applicants every year as indicative of a rudimentary yet undeniably spirited recognition among the poor that good science education can uplift their lives. The agency welcomes this as still the best way to develop well-educated, technically-skilled workforce that can produce high-value goods and services and propel the country forward.

Scholarship and Training Programs

RA 7687 Scholarship program

The number of scholar-graduates produced under the S&T Scholarship Program remains fairly consistent as in the previous years, guaranteeing a steady supply of talented Filipino youths who are enticed to pursue lifetime productive careers in science to steer the country toward economic progress.

By the end of AY 2007-2008, the program produced 1,343 scholar-graduates in the BS and technician courses. Of this number, 6 students completed their courses earlier than the prescribed period or study while 166 or 12% graduated with honors. Below is the breakdown of the achievers:

3 Summa Cum Laude	1 Honorable Mention
25 Magna Cum Laude	6 With Distinction
128 Cum Laude	1 with Honors
	2 Academic Excellence Award

The total number of scholars support in 2008 was 8,266 (6,293 ongoing and 1,343 graduates. Although budget for the program remains at the same level as that in 2007, the accomplishment still posted 1.09 percent increase (from 8,177 in 2007).

The 2009 S&T Scholarship qualifying examination was conducted nationwide in 111 test centers on November 9, 2008 with 21,585 examinees. The Overseas Workers Welfare Associations (OWWA), a "rider" in the examination, had 2,688 examinees.

Successful candidates in the S&T Scholarship Examination for AY 2008-2009 numbered 2,481, and their names were published in 3 leading newspapers and posted in the SEI website. Together with their parents, they attended the DOST-SEI Scholarship Orientation and Signing of the Scholarship Agreement in April.

Under the S&T Learning Assistance Program, 1,732 freshman-scholars attended the Summer Orientation and Enrichment Program (SOEP), which was conducted in all regions in May 2008. For incoming senior Chemistry and Physics Teaching Scholars, the UP National Institute of Science and Mathematics Education Development (NISMED) conducted an intensive Summer Enrichment Training from March 31 until May 16, 2008. Likewise, 561 on-going scholars underwent Summer Practical Training (SPT) in various research institutions and private companies.

A DOST Scholar fills out a job application form from Landbank of the Philippines during the Job Fair at Ang Bahay ng Alumni, UP Diliman on 24 July, 2008.

Grant for Educational Assistance on Technology Courses for Muslims (Project GREAT-M)

Now on its 6th year, the GREAT-M Project had produced a total of 38 graduates over the years, with 12 scholar-graduates in technology courses for the year under review and with 2 of them graduating with honors by the end of AY 2007-2008.

As of AY 2008-2009, the program supported a total of 36 scholars who enrolled at the Mindanao State University-Iligan Institute of Technology (MSU-IIT), Mindanao State University-Marawi City (MSU-Marawi City), Western Mindanao State University (WMSU) and University of Southern Mindanao-Kabacan (USM).

MERIT Scholarship Program

Under the MERIT scholarship program, 89 BS scholars graduated in 2008. Thirty-six percent of them graduated with honors, 13 receiving Magna cum Laude and 19 Cum Laude, with 1 scholar completing the course earlier than the prescribed period of study. The total number of scholars supported in 2008 was 1,109 (1,020 ongoing and 89 graduates). This number is 11.6% higher than the 914 total scholars in 2007.

At the start of the curriculum year of 2008, 739 high school graduates qualified under the program. Among them, 437 availed themselves of the scholarship grants. The new awardees, whose names were published in 3 leading newspapers and posted in the SEI website, attended with their parents a series of sessions for the DOST-SEI Scholarship Orientation and Signing of the Scholarship Agreement in April 2008.

From April to May 2008, 37 on-going scholars underwent Su mmer Practical Training (SPT) in various institutions and private companies. As of 2nd Semester of AY 2008-2009, the program supported 1,020 on-going scholars.

Junior Level Science Scholarships

This science and engineering scholarship for regular third-year students currently enrolled in S&T priority courses supported a total of 101 Bachelor of Science scholars as of 2nd Semester of AY 2008-2009. From this number, 14 had graduated. In the previous summer, 5 on-going scholars underwent Summer Practical Training (SPT) in various institutions and companies.

The year in review also saw the implementation of Project GIFTS or the "Government Initiative on Fellowships for the Talented in the Sciences for the Disadvantaged." In the first stage held on Sept. 13, 2008, applicants were screened through a qualifying examination administered in 14 test centers on, and 114 passed the criteria for scholarship.

A total of 21 college students also passed the qualifying examination for the Junior Level Merit Science Scholarships. Those who qualified for Merit and Project GIFTS scholarships were notified to submit their grades for First Semester AY 2008-2009 as basis for the second stage screening.

These successful scholars received benefits, which included tuition subsidy and book allowance per semester/term, monthly stipend, transportation allowance, and health insurance among others. The scholars enrolled at the University of the Philippines (UP) or any of the DOST-SEI identified institutions including state colleges and universities and/or Commission on Higher Education (CHED) Centers of Excellence/Centers of Development. (SRPortillo/DOST VI).

Cooperative Pre-Service Education for Science and Mathematics Teachers (Project 8102 Ed.)

In 2008, this academic program held in cooperation with the Philippine Normal University (PNU), De La Salle University and Technological University of the Philippines (TUP) Manila produced 3 Bachelor of Science scholar-graduates, one of them graduating with Cum Laude honors.

As of 2nd Semester of AY 2008-2009, a total of 98 on-going BS scholars were supported. Included in their academic program is their participation in the enrichment training conducted by the Institute of Science and Mathematics Education Development (ISMED) at UP Diliman and off-campus teaching exposure at the S&T oriented high schools nationwide.

2008 DOST-SEI S&T Undergraduate Scholarship Special Examination

Due to the increasing number of deferred scholars who relinquish their scholarship grants as well as qualifiers with no report status, the National Technical and Selection Committee (NTSC) recommended that the vacated slots be filled out by conducting a special examination for qualifiers of the National Career Assessment Examination (NCAE). The Department of Education's National Educational Testing and Research Center (NETRC) provided SEI with the list of qualifiers in the NCAE who obtained percentile ranks of 98 and above. The qualifiers were graduates of S&T oriented high schools/special science high schools and were not able to take the DOST Scholarship Examination.

Out of the list provided by DepEd, there were about 1,994 potential qualifiers who graduated from the 110 S&T oriented high schools nationwide. Of this number, 125 students took the special examination on July 26, 2008 at identified test centers nationwide.

After the results were evaluated, 19 examinees qualified for the Merit Scholarships while 64 qualified in the RA 7687 Scholarships. Notice of award and invitation to attend orientation on the scholarship policies and signing of the Scholarship Agreement were sent to the qualifiers.

Higher Learning Scholarship Programs

Accelerated Science and Technology Human Resource Development Program (ASTHRDP)

Responding to the call to place great emphasis on research and development (R&D), ASTHRDP aims to accelerate the production of high-level S&T human resources through Master's and PhD degrees in the government's priority S&T areas of study.

In AY 2008-2009, the breakdown of MS and PhD qualifiers/scholars under the different components of the program is as follows:

PROGRAM	NUMBER OF SCHOLARS
University-based	651 MS qualifiers
	122 PhD qualifiers
Thesis & Dissertation	35 MS and 8 PhD qualifiers
Customized Residential Program	75 MS grantees for S&T Communities
Foreign Scholarship (AIT)	10 MS grantees
Research Enrichment Program (Sandwich)	2 PhD grantees
SEI Industry Component	70 on-going MS Scholars
	39 new MS qualifiers
	1 PhD qualifier

Two (2) MS scholars graduated in SY 2007-2008. One of them, a Straight BS-MS scholar, graduated Magna Cum Laude.

In March 2008, the availability of graduate scholarships for First Semester AY 2008-2009 was announced in three (3) leading newspapers: Philippine Star, Manila Bulletin and People's Tonight. It was also posted in the SEI websites with links to the websites of the DOST Councils.

Series of interviews of potential qualifiers were held on May 19, 2008 at NCR (SEI) and on May 20-22, 2008 in Legazpi City, Iloilo City, Cebu City, Tacloban City, Cagayan de Oro City and Davao City.

The signing of the Scholarship Agreement of qualifiers for NCR was held on 30 June 2008 at the Traders Hotel, Manila. Those from the regions also signed the Scholarship Agreement and were given orientation on scholarship policies immediately after the interview.

The names of graduate scholarship qualifiers for First Semester and Second Semester of AY 2008-2009 were separately published on June 8 and November 23, 2008, respectively, at the Philippine Star, Philippine Daily Inquirer, Manila Bulletin and People's Tonight.

Below: Dr. Ester B. Ogena together with the new ASTHRDP Scholars at Aberdeen Court, Quezon City.
Bottom: Dr. Ogena delivers her opening remarks during the Batch 4 ASTHRDP Scholars contract signing.

Accelerated Science and Technology Human Resource Development Program-Science Education Consortium (ASTHRDP-SEC)

The consortium – composed of four member universities in Visayas and Mindanao – aims to catalyze the development of straight Masters/Doctorate programs in science and mathematics education together with their corresponding human resources output. The universities are West Visayas State University (WVSU) in Region VI, University of San Carlos (USC) in Region VII, Western Mindanao State University (WMSU) in Region IX and Mindanao State University-Marawi (MSU-Marawi) in ARMM.

Launched in 2007, the Graduate Consortium Program now supports 70 on-going scholars, more than twice the number of qualifiers in its launching year. The breakdown is as follows:

Institution	No of Scholars
University of San Carlos	33
West Visayas State University	30
Mindanao State University	2
De La Salle University-Manila	5

The first batch of MS scholars enrolled at USC and WVSU took their comprehensive examination during the year. Effective Second Semester of AY 2008-2009, 9 scholars (7 MS, 2 PhD) qualified for the consortium program.

Accelerated Science and Technology Human Resource Development Program-Science Education (ASTHRDP-SE)

This program entails a three-year scholarship grant for Doctoral Degree in Science Education, with majors in Physics, Chemistry, Biology and Mathematics. The program aims to accelerate the number of competent educators, researchers and administrators in science education and to produce competent teachers in the Teacher Education Institutions (TEIs).

The program supports a total of 56 on-going PhD scholars, as follows:

Institution	No of Scholars
UP Open University, Los Baños, Laguna	36
University of San Carlos	33
De La Salle State University	11
UP College of Education (UPCE)	9

Their academic progress are monitored and evaluated by Project Leaders/Coordinators in their respective Training Institutions. In AY 2007-2008, 8 PhD in Science Education scholars completed their programs of study.

Other Scholarship Programs

1. The ***Program on Regional Opportunities for Graduate Science and Engineering Scholarships (i-PROGRESS for the Disadvantaged)*** launched in 2008 also aims to provide continuing educational support to poor but deserving DOST-SEI scholar-graduates who have high interest and motivation to earn master's and doctorate degrees. For AY 2008-2009, 6 applicants qualified with 4 going to MS and 2 to PhD courses.
2. Under President Gloria Macapagal-Arroyo's directive to further enhance S&T education, SEI co-implemented with the DOST the ***Engineering Research and Development for Technology (ERDT) Program***. This graduate scholarship program initiated by the ERDT Consortium Universities seeks to prioritize engineering courses and related fields. The consortium is composed of Ateneo de Manila University, Central Luzon State University, De La Salle University, Mapua Institute of Technology, Mindanao State University-Iligan Institute of Technology, University of the Philippines-Diliman and University of San Carlos.

In addition to attaining a critical mass of MS and PhD graduates, the ERDT Program aims to upgrade the qualifications of practicing engineers, upgrade engineering colleges, develop a culture of R&D, and implement research agenda aligned to the National Science and Technology Plan (NSTP) and Medium Term Philippine Development Plan (MTPDP).

Below (from left): DOST Secretary Estrella F. Alabastro together with a Scholar, his parent, Congressman Joseph Emilio Abaya and DOST Undersecretary Fortunato T. dela Peña during the "In Touch with Excellence" Recognition Ceremonies at Trader's Hotel on 16 July 2008.
Below, right: Congressman Abaya giving his keynote speech to the scholars and guests.

Company exhibits on employment opportunities, NBI on Wheels, and SSS services available during the Job Fair at Ang Bahay ng Alumni, UP Diliman.

Effective SY 2008-2009, programs came in the form of local master's and doctoral scholarships, foreign doctorate and post-doctorate scholarships, visiting professorship grants and research enrichment program.

A total of 90 students enrolled in the ERDT Consortium Universities received scholarship support, with 73 for MS and 17 for PhD courses. For Second Semester AY 2008-2009, 55 MS and 5 PhD new scholars received support under the program.

Related Activities

In Touch with Excellence

The ***2008 In Touch with Excellence***, the annual recognition ceremony for outstanding DOST-SEI scholars who graduated with honors, was held on July 16, 2008 at the Traders Hotel in Pasay City. In attendance were 58 scholar-graduates accompanied by their parents, relatives and friends. In addition, 16 PhD graduates of the various graduate scholarship programs of DOST, SEI and the Councils were also awarded plaques of recognition.

Guest speaker Hon. Joseph Emilio A. Abaya, Representative of the First District of Cavite, emphasized the role of science and technology as the driver of economic and social progress. He also mentioned the Technology Transfer Act which aims to stimulate research activities that would lead to important innovations in different fields. Four Magna Cum Laude scholar-graduates gave challenging responses. DOST Secretary Estrella F. Alabastro and DOST Undersecretary Fortunato T. Dela Peña gave the inspirational message and welcome remarks, respectively.

Scholar-Graduates who Topped the Licensure Examination for Teachers (LET) on September 10, 2008	
Audie D. Laudencia	LET 8th Placer, BSE Physics, PNU 2006 Project 9001 scholar
Carl Jestoni B. Dakay	LET 8th Placer, BSE Physics-Mathematics, USC 2004 RA 7687 scholar
Oliver V. Aromin	LET 9th Placer, BS Chemistry, MSU-Marawi City 1996 Merit scholar

Job Hunting Strategies Seminar

The ***2008 Job Hunting Strategies Seminar*** was conducted last July 21, 2008 at the DOST Executive Lounge. The activity, attended by 38 scholar-graduates coming from regions I, II, III, IV, V and CAR, aimed to prepare them for job application and build their confidence on getting their dream jobs.

Three scholar-participants, namely, Mr. Carl Vincent Cabanilla (2004 RA 7687 scholars, BS Chemistry at University of the Philippines-Diliman), Ms. Michelle Dhian M. Chua (2003 RA 7687 scholar, BS Chemical Engineering at Pamantasan ng Lungsod ng Maynila) and Mr. Paul Richard D. Santiago (2003 RA 7687 scholar, BS Electrical Engineering at Polytechnic University of

Left: Scholar-participants of Job Hunting Strategies Seminar at DOST Executive Lounge on 21 July 2008. Bottom, left: Ms. Karen Joyce Mabini, Recruitment Manager of Canon Information Technologies Phils., Inc. shares her knowledge and experiences during the Job Hunting Strategies Seminar.

the Philippines-Manila) delivered their expectations regarding the said activity.

Ms. Karen Joyce A. Mabini, Recruitment Manager of Canon Information Technologies Philippines, Inc. discussed the importance of self-assessment and self-confidence. Dr. Rosalinda C. De Mesa, a Guidance Services Specialist from the Office of the Counseling and Guidance at the University of the Philippines-Diliman was the resource person for the seminar. She discussed topics about Self Awareness, Time Management and Being a Total Quality Person. Later on, she discussed Multiple Intelligences, Critical Thinking Skills, Resume Writing, Taking a Psychological Test and Body Language for Success where she engaged scholars in some activities and conducted a job interview simulation.

Job Fair for DOST-SEI Scholar-Graduates

The annual Job Fair for DOST-SEI scholar-graduates was held on July 24, 2008 at the University of the Philippines, Ang Bahay ng Alumni, Diliman, Quezon City. The event, attended by 78 scholar-graduates and 34 non-scholars, gathered 22 companies from various industries that exhibited available employment opportunities. These companies were:

- Abenson Inc.
- Amkor Technology Philippines
- Analog Devices Inc.
- Azeus Systems Philippines Limited
- Canon Information Technologies Philippines, Inc.
- Corporate Executive Search, Inc.
- Digi Software Philippines, Inc.
- Fluor Daniel, Inc.-Philippines
- Forecasting and Planning Technologies, Inc.
- Fujitsu Ten Corporation of the Philippines
- Hitachi Global Storage Technologies Philippines, Corp.
- JGC Philippines, Inc.
- Landbank of the Philippines
- Manila Electric Company
- Nikko Metals Philippines, Inc.
- OOCL Philippines, Inc.
- 3i Interaction, Innovation, Inspiration
- People Support Philippines, Inc.
- Petron Corporation
- Philippines EDS Techno-Services, Inc.
- SGS Gulf Limited
- Vinta Systems Inc.

During the opening program, Dr. Ester B. Ogena, SEI Director, stressed the value of good education that the scholars earned during college days. Ms. Jean B. Martinez, a former DOST-SEI scholar and currently a Senior Research Analyst at RiskMetrics Group, shared her guiding principles toward successfully getting the dream job, and urged the participating companies to hire the DOST-SEI scholar-graduates and give them the chance of a lifetime.

Keynote Speaker Dr. Estrella F. Alabastro, DOST Secretary, gave some pointers on how to find a satisfying career, citing such factors as job stability, permanence and professional growth.

The human resource managers of Nikko Metals Philippines, Inc., Azeus Systems Philippines Limited, and Abenson, Inc. also delivered their respective company talks.

Representatives of the Social Security System (SSS) and the National Bureau of Investigation (NBI) facilitated the application for SSS membership and the issuance of NBI clearances to the job-seekers.

Studies on S&T Human Resources

Science and Technology Human Resource Development Planning (STHRDP) Project

Science and Technology Skills Migration Study. DOST-SEI's initiative entitled "S&T Skills Migration Study" completed and published its first part covering "Emigration of Science and Technology Educated Filipino, 1998-2006" in the fourth quarter of 2008. The objective of the entire study is to provide baseline information that will help measure the outflow of S&T human resources to foreign countries and better understand the factors contributing to the gap in the supply of S&T human resource in the country, or the so-called "brain drain."

While the published first part is to be disseminated to various government agencies as well as public and private universities in the first quarter of 2009, the second part of the study, covering "Profile of Temporary Filipino Overseas Contract Workers with S&T Qualifications," will commence this same year and will study the profile of temporary Filipino overseas contract workers who had S&T occupations.

Assessment of Scientific and Technological Manpower Resources (ASTMAR)

2nd National Survey on Science and Technology Education. Having completed and compiled the results of the "2nd National Survey on S&T Education," DOST-SEI published them in the third quarter of 2008. The survey, conducted in cooperation with the Directors of the Regional Science Teaching Center (RSTC), has three parts, namely:

1) *"A Survey of Secondary Schools."* This part gathered baseline information about the school, qualification and trainings attended by secondary S&M teachers in the country, and the extent to which these schools use computers for instruction and other purposes.
2) *"A Survey on Science and Mathematics Supervisors."* This part assesses the capabilities of science and mathematics supervisors based on their professional characteristics or qualifications. The study was conceived as an effort to establish a context for designing training programs and formulating policies in supervising S&M education, and to determine the percentage of qualified S&M supervisors. Qualified supervisors are those whose field of specializations matched that of the subject area they are supervising.
3) *"Survey on Higher Education Institutions (HEIs) Offering Bachelor of Secondary Education (BSE) Programs."* This final part gathered baseline information on HEIs pertaining to the capabilities of their faculties, admission requirements, student's personal/demographic characteristics, school facilities and priority needs for support and upgrading.

Copies of the publications are to be disseminated to various secondary schools, higher education institutions offering Bachelor of Secondary Education programs, and science and mathematics supervisors nationwide in the first quarter of 2009.

CHAPTER
2

Enhancing Science and Technology Education by Improving the Teaching & Learning Environment

After going through an overwhelming brain drain in the past decades, with its resultant erosion of our sense of competitiveness, the Philippine government is finally taking significant steps to reinvigorate our educational system. President Gloria Macapagal-Arroyo called for its restructuring during the First Biennial Education Congress early last year, an event dubbed as a "turning point" in Philippine education and a meaningful, tangible testament of the collective desire of all sectors to improve and update the country's educational system.

It has been said much too often that our educational system has fundamental resource gaps. And such gaps have led to the lower-than-desirable number of science and technology graduates the country has. An all-encompassing environment conducive to the pursuit of programs and projects necessary to promote reforms and attain the targets has now been laid down, and we are witnessing a more unified effort to apply stronger and more resolute quality intervention measures on our most crucial educational resource: the teacher.

Technology Assistance Programs

Mobile Information Technology Classrooms (MITC) in the Regions

Three of the five MITC units were pulled out from regional deployment during the last quarter of 2007 to undergo the needed body repair and engine maintenance. DOST-SEI conducted a bidding procedure on the basis of a cost estimate submitted earlier by Filipinas Daewoo Industries, Corp., the fabricator of the units.

With funding charged to the 2008 allocation, bidding for the repair started in February and was awarded to J&J Liner Services, which commenced repair in April. MITC unit with plate number SFK 514 was fully repaired on June 15, 2008 while MITC with plate number SFK 534 was repaired on July 19, 2008. The SGJ 141 MITC unit, which required overhauling of its air-con sub-engine in addition to body repair, was fully restored on September 4, 2008.

The Partido Development Authority (PDA) of the third district of Camarines Sur submitted a proposal for a three-year deployment of MITC units. Upon approval and subsequent training of the designated driver and assigned staff, the MITC unit with plate number SGJ 141 left Bicutan, Taguig City for Tigaon, Camarines Sur on November 9, 2008. The unit managed to train 265 students, 45 teachers, in 4 schools in the third district of Camarines Sur from December 2 to 19, 2008.

A similar proposal for short-term deployment of MITC with SFK 514 plate number was scheduled for January 2009.

Meanwhile the MITC units in Siargao Island of Caraga and in Region XI continued implementing the project despite their conditions. The unit in Caraga, the very first MITC deployed in 2000, has been serving the region continuously for 8 years. By 2007, its air-conditioning system and its body needed repairs as well, along with its onboard facilities such as the public address system, VHS, and some computer notebooks that need to be replaced.

Top: Panelists comprising of representatives from the public and private sectors, academe, and higher education institutions give their assessment during the Science and Mathematics Education Summit. Left: Dr. Ester B. Ogena gives her remarks before the Summit panelists.

Despite these, the unit served 6,775 students and 207 teachers in 16 schools and 18 officials of Barangay Roxas from January to October 2008.

Curriculum Development Programs

Science and Mathematics Frameworks for Basic Education and Teacher Education.

SEI conducted a seminar on "Science and Mathematics Education Summit: Assessing the Proposed Science and Mathematics Frameworks for Basic Education and Teacher Education" on Sept. 17, 2008 at the Angelo King International Center, De La Salle-College of St. Benilde. The proposal covered the following topics:

- Science Framework for Teacher Education
- Science Framework for Basic Education
- Philippine Mathematics Framework for Basic Education
- Framework for Mathematics Teacher Education

These topics were presented to various stakeholders from the academe, government, private and selected higher education institutions, all of whom were asked to comment on the documents presented. The role of the Panelists was to assess the papers and provide their recommendations.

These observations were then compiled in a draft entitled "Science and Mathematics Education Frameworks." The University of the Philippines-National Institute for Science and Mathematics Education Development (UP-NISMED) next conducted the consultative workshop on the Science Curriculum Framework for Basic and Teacher Education on December 9-10, 2008 at the UP-NISMED auditorium in Diliman, Quezon City. The documents are to be published in 2009.

Item Analysis and Validation of Admission Test for Entrants to S&T Oriented High Schools

Three (3) sets of test items developed in 2007 were validated in selected schools in Region I, CARAGA and NCR from April to May 2008. The test items will be endorsed to SepEd for their consideration to be used as Admission Test of first year students of the S&T Oriented High Schools.

Developing a Model S&T Enhanced Curriculum for Pre-School (A Pilot Project)

The objective of this project was to develop a science-based pre-school course syllabus for DOST Day Care Center. Consultants from Labworks Education Services with the support of the teachers developed the curriculum for nursery and kindergarten and implemented it at the DOST Day Care Center starting June 2008. Basic equipment and materials related to the curriculum were also provided.

Scriptwriting of Lessons in English and Filipino with Mathematics and/or Science Content in Grades 1-4 for CAI Development

This project was implemented in collaboration with the Reading Association of the Philippines (RAP). Scripts for 10 modules, out of a target of 40 modules in both English and Filipino, were written, ready for digitization and development into courseware or computer-aided instructional (CAI) materials.

Development of Interactive Science and Mathematics Courseware for Second Level Schools

Pre-development activities were conducted to facilitate the digitization of 300 science lessons and 260 mathematics lessons in the high school levels. These included setting up of space for staff at ASTI, the recruitment and hiring of staff, gathering of preliminary data and resources, and procurement and setting up of facilities for digitization.

The Advanced Science Technological Institute (ASTI) developed a website that will house all courseware modules, which will be made available for download 24/7. It also conducted the quality assurance testing of website functionalities based on installed components and plug-ins, front-end users' experience, and secured back-end administration.

Below: The ASTI website that will house over 550 science and mathematics courseware modules for downloading 24/7.

CHAPTER
3

Strengthening Capabilities in Science Education and Research

The interaction between scientific research and technological advancement is becoming more and more evident as social and economic growth attends to any country that nurses a strong synergy in these areas. Dr. Josette Biyo, 2002 Intel International Excellence in Teaching Awardee, warned that "No country will move forward until it develops a scientific culture." She stressed the need to develop a "science and research culture" that would lead to a genuine science education. "Science education is not education at all unless we develop among our students the basic skills and attitudes such as observing, gathering correct information, interpreting data, curiosity, open-mindedness, and resourcefulness among others," she said.

The National Integrated Basic Research Agenda (NIBRA), which was finalized and published last year, presents a highly practicable roadmap for attaining this culture of Basic Research, one that is geared towards national development and extends knowledge on emergent S&T fields and priority areas that will have the most impact on the country's current situation. This presents a framework to channel our limited resources on the most relevant and promising research proposals that impact on the social, economic, political and scientific level. Developments like these are encouraging signs of a unified determination to move the country to where we truly want to go.

Teaching-Learning Enhancement Programs

E-Training for Science and Mathematics Teachers 2008

The e-Training for Science and Mathematics Teachers, which was designed as a 10-month online training course for teachers who were not able to be physically present to attend trainings, began in December 2007 and completed its duration in September 2008. The trainees were entitled to the following benefits:

1. Waived Training Fee;
2. Internet allowance;
3. Reimbursement of actual transportation expenses (and per diem for those who live in remote areas) during orientation and examinations;
4. Training modules developed for the project; and
5. ICT grant amounting to 50% of the cost, to purchase PC ng Bayan if the participants wished to avail, with the assistance of the Department of Budget and Management and the DOST Regional Offices.

Among the 450 available slots, 401 completed the course, 41 dropped out or discontinued; 7 did not meet the criteria to receive certificates, and 1 passed away. The participants who completed the course and met the set criteria received Certificates of Attendance, Completion and Proficiency depending on their individual final grade/performance.

Two hundred twenty five (225) participants availed themselves of the ICT grant, which was 50% of the total cost of the PC ng Bayan unit, at the Procurement Service of the DBM Regional Offices in coordination with the DOST Regional Offices nationwide.

Mindanao Opportunities for Vitalized Education and Upgrading of Science (MOVE UPS)

Project MOVE UPS conducted a teacher training program for elementary teachers and the Principals of the feeder schools in regions X and ARMM, which are Muslim-

BREAKDOWN OF 2008 E-TRAINING PARTICIPANTS		
Course/subject area	**Training Institution**	**No. of participants**
Elementary Math 3 & 4	Mariano Marcos State University (MMSU), Laoag City	25
	Central Luzon State University (CLSU), Muñoz, Nueva Ecija	21
	Mindanao State University (MSU), Marawi City	19
Elementary Math 5 & 6	Saint Mary's University (SMU), Bayombong, Nueva Vizcaya	24
	West Visayas State University, (WVSU), Iloilo City	22
	Western Mindanao State University (WMSU), Zamboanga City	18
	Xavier University (XU), Cagayan de Oro City	21
	Ateneo De Davao University (ADDU), Davao City	24
	Notre Dame of Marbel University (NDMU), Koronadal City, South Cotabato	18
Elementary Science 3 & 4	Bicol University (BU), Legaspi City	25
	West Visayas State University (WVSU), Iloilo City	17
	Xavier University (XU), Cagayan de Oro City	22
	Mindanao State University (MSU), Marawi City	19
Elementary Science 5 & 6	Saint Louis University (SLU), Baguio City	21
	Central Luzon State University (CLSU), Muñoz, Nueva Ecija	22
	University of San Carlos (USC), Cebu City	19
	Western Mindanao State University (WMSU), Zamboanga City	23
	Ateneo De Davao University (ADDU), Davao City	18
	Notre Dame of Marbel University (NDMU), Koronadal City, South Cotabato	23
TOTAL		**401**

dominated areas. This three-year program aims to strengthen the capabilities of the 60 identified feeder elementary schools of the Philippine Science High School-Central Mindanao Campus (PSHS-CMC) in Balo-I, Lanao del Norte.

Project MOVE UPS aims to:

1. provide a favorable learning environment in Muslim dominated schools, unique in their culture, that will encourage and help students to understand, appreciate and value the importance of science;
2. develop more relevant approaches and strategies for more effective teaching and learning, particularly in Science, Mathematics and English subjects in the identified Muslim-dominated schools;
3. improve student performance in Science and Mathematics education in these schools.

The Principals of the 60 feeder schools attended training at the Mindanao State University (MSU), Marawi City on February 25-27, 2008. In the next two years, they are to attend a one-day conference at a designated venue.

From May 19 to June 7, 2008, a total of 120 science and 120 mathematics teachers were trained at the MSU.

A workshop on the development of aptitude test items were conducted on April 24-26, 2008 at the MSU-Iligan Institute of Technology (MSU-IIT). The draft test items were reviewed and tested at Banggulo Elementary School and MSU-Integrated Laboratory School (MSU-ILS) on October 7 and 8, 2008, respectively.

The handbooks for Principals and parents and the project manual are currently being formatted for final printing. ICT equipment composed of laptop computer, LCD projector and screen were turned over to the 60 recipient feeder schools on December 10 and 15, 2008 in Cotabato City and Cagayan de Oro City, respectively. Bidding for science laboratory equipment was held on December 11, 2008 while provision of the library and reference materials is set in 2009.

Mathematics Investigation Training

Sixty (60) Mathematics teachers and educators from 14 different cities and provinces across the Visayas region were trained in the use and integration of Mathematical Investigation to teach mathematics concepts, theories and principles. The objective was to develop deeper awareness and appreciation among teachers of the power of Mathematical Investigation as a tool for teaching that will translate into improved achievement and interest among students.

The training was held from October 13-17, 2008 at the Institute of Information and Communications Technology Building at West Visayas State University, Iloilo City. At the end of the program, the 4 trainers presented the outputs in a poster format and submitted their outputs as a group.

Digital Electronics Design Camp with Blended Learning Component

To provide curriculum enrichment for teachers and students in the field of digital electronics, this training was successfully conducted on two batches from April 24-30 and May 6-12, 2008 at the Philippine Science High School, Diliman, Quezon City. It was attended by 31 teachers and 62 students from selected science high schools and PSHS Campuses. The trainers were experts from PSHS Diliman Campus and the Instrumentation, Robotics and Control Laboratory of UP Engineering in Diliman, QC. Each school received the Microcontroller Training Kit fabricated at the Advanced Science Technological Institute (ASTI), and other electronic peripherals and materials.

Among the project components is the training of teachers in Learning Management Systems (LMS), which was conducted on December 5-6, 2007. LMS are software for delivering and managing training and Moodle, an open source software used in the DED Camp. The specific Moodle sites set up and used in the Camp were: 1) Advanced Programming; 2) Embedded Systems Design and Programming; and 3) Digital Circuit Theory and Design. A Digital Electronics Design class was opened for on-line dissemination and uploaded as a beta version hosted by PSHS servers. The PSHS Main Campus is taking care of its maintenance and the materials can be accessed through ***www.pshs.edu.ph/moodle***.

1st Samahang Pisika ng Pilipinas Physics Education Festival

SEI Sponsored 10 of its scholars majoring in Physics to the 1st Physics Education Festival held at the Ateneo de Manila University on May 26-28, 2008. The aim was to update physics educators and specialists on trends and issues in Physics education and research, and expose physics teachers to physics content and teaching approaches that can be applied in the classroom.

The festival featured researches and lectures in different topics in Physics, namely: Physics Online; Building and Programming a Wheeled Robot; Need for Speed: Using Computer Games to Teach Kinemetics; Wave Demonstrations Using Improvised Ripple Tank and Projector; A Crash Course on Inquiry and Ergonomics of a Computer Work Station.

Support for Mentoring Program in Biology and Physics of DepEd Region 8

This program supported the efforts of mentors of teachers who are non-majors in the subject areas they are teaching. For DepEd Region 8, SEI supported 17 mentors in Biology and 17 mentors in Physics by providing them with laptors, printers and internet connectivity. Likewise, the teachers under them were provided with internet allowance to have access to new trends and teaching techniques in science teaching.

Rediscovering the Philippine Setting: Mining, Mineralization, and Tectonics Meeting

SEI-DOST supported the registration fee of 20 teachers who attended this scientific meeting which aimed to re-evaluate the geologic setting of the Philippines with regards to new exploration models, alternative tectonic models and the deposition to accumulation of resources. Held on October 2-4, 2008 in Quezon City and Batangas, the seminar also featured topics on meteorological factors, geologic hazards and other environmental concerns.

Training on Robotics Application in Teaching High School Physics

The aim of this program is to provide selected Physics teachers and students with training on the use of computers and robots and how to integrate these in their curriculum.

Hosted by the Philippine Science High School Main Campus-Advanced Science and Technology Building, the program trained 36 participants comprising of 26 teachers and 10 students belonging to 16 schools, 3 of which were under the PSHS System and 13 were public high schools.

Held on September 19-20, 2008, the seminar covered the following topics: Robotics in the Curriculum; the Robolab Environment; Designing Projects with Lego Mindstorms RCS; and Programming Data Structures in Robolab.

The main output for the two-day training were the Laboratory Challenges described below:

Challenge 1: Stop at Black
(using the light sensor)
Robot must stop completely when it senses a black line.

Challenge 2: Escape from box
(using the touch sensor)
Robot must find its way out of a simple trap, like a box enclosure or any 3-walled space.

Challenge 3: Spiral behavior
Mobot (mobile robot) must move in either increasing or decreasing "circles," meaning that the radius of the path has to change focusing on its motor speed.

Challenge 4: Inclined plane obstacle
Mobot must complete the single or double inclined plane race track, focusing on its gear ratio/torque.

Challenge 5: Spot at nth line
Given a number of parallel black lines (perpendicular to the robot), the robot has to stop at the 5th line, focusing on its light sensor/counter.

International Conference on Science and Mathematics Education

SEI sponsored the participation of 10 teachers to the International Conference on Science and Mathematics Education with the theme "Innovations in Action: Meeting the Challenges in Science and Mathematics Education."

Held at the UPNISMED on October 27-29, 2008, the conference gave teachers an opportunity to share innovative and creative solutions to problems/challenges in teaching and learning science and mathematics, and provided an exchange of exemplary practices and research results to improve teaching in these subjects.

2nd National Tri-Level Conference for Educators

SEI also sponsored the participation of 40 teachers to the National Tri-Level Conference of Teachers and Educators organized by the Metrobank's Foundation Network of Outstanding Teachers and Educators. Held on October 23-24, 2008 at the Manila Hotel, the plenary sessions covered Environmental Issues and Initiatives, Government Legislations and Policies, and Best Practices and Success Stories.

CHAPTER
4

Promoting Science & Technology Awareness & Consciousness

It takes more than just academic proficiency to ascertain that the young generation will take up courses in science and technology. Imparting science knowledge and skills is one thing; engaging students' real interest in science and science-related careers is another. Hands-on exposure to science is all the more important then in supplementing classroom pedagogy, since learning, for instance, can take place with just two minutes of exposure to science exhibits.

DOST-SEI believes that creating a steady supply of domestic scientists is dependent as much on our society's ability to generate and sustain young people's interest through direct science exposures. As Filemon Berba, president of the Philippine Foundation for Science and Technology, said: "It's easier to learn and understand things if they are experienced. This is why supplementing discussions of theories and principles with actual exposure to interactive exhibits can really help them appreciate science better."

The call for the creation of more science centers nationwide is one step to attaining this, for it brings not just S&T to the regions but also growth through investments and infrastructure – a vital ingredient in the country's pursuit of what President Macapagal-Arroyo said was a vision to join the first world in 20 years.

S&T Promotions Programs

Gawad LIDER

This biennial program, which stands for Leadership & Innovations for Development Relevant to Science Education, gives recognition and incentives to individuals and/or institutions that made exemplary contributions to the development of science education, or through the development of science and technology-based innovations or inventions that improved education.

Implemented in 2007, the 1st Gawad LIDER Award identified the following winners who were awarded during the Closing Ceremonies of the National Science 7 Technology Week (NSTW) in July 2008:

Individual Category:

- Dr. Flordeliza R. Mayari of DepEd Marikina City for Exemplary Leadership Award
- Mr. Virgilio P. Samonte of Don Eulogio De Guzman Memorial National High School, Bauang, La Union for Innovation Award

Institutional Category:

- Philippine Foundation for Science and Technology (PFST) for Exemplary Leadership Award
- UP National Institute for Science and Mathematics Education Development (UP NISMED) for Exemplary Leadership Award

In the year 2010, the 2nd Gawad LIDER will be awarded by SEI-DOST to another batch of distinguished science educators in cooperation with selected agencies.

Pinoy SciTek Challenge- Math Edition

The sequel to the 2006 S&T radio competition program called Pinoy SciTek Challenge (PST Challenge) was conducted once again to sustain the interest of the youth in science and technology through a radio quiz show. This second season, aired over DZMM/ABS-CBN Foundation program called "BagoYan Ah!" highlighted Mathematics to stimulate the interest of the youth in this subject, promote mathematics education, and encourage secondary school students to take up S&T careers. S&T news and developments were aired in segments that were either station-produced or fed by the different DOST agencies and other institutions, which included the private sector.

Junior to senior high school students from 27 secondary schools in Metro Manila and nearby provinces vied for the weekly competition. The PST Challenge was conducted every Sunday of the month from December 2007 to March 2008. The grand

Top: A Water-Rocket Competition launches World Space Week 2008 at the UPNISMED on 6 October, 2008.
Left: Dr. Ester B. Ogena awards a Certificate to a Pinoy SciTek Challenge participant.

were also awarded with cash prizes and certificates.

Philippine Space Education Program

Designated as the Secretariat and National Coordinator of the Philippine Space Education Program by the National Advisory Committee on Philippine Space Education Program, SEI-DOST implemented the following major activities for the year in review.

2008 World Space Week Celebration.

The 2008 World Space Week Celebration opened on October 6, 2008. The University of the Philippines National Institute for Science & Mathematics Education Development (UPNISMED) hosted the Opening Ceremony and other activities such as Lecture Demonstration on Water Boosted Rocket Making and Water Rocket Competition.

On October 10, 2008, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) hosted the Planetarium Show, Lecture Series on Astronomy and Awarding and Closing Ceremony.

Around 300 students, science teachers, and other guests attended these activities in Metro Manila.

Regional activities meanwhile were also organized and implemented by the following institutions on October 4-10, 2008:

1) **Philippine Foundation for Science and Technology** - (National Capital Region – Marikina City)
   The PFST is on its 3rd year of implementation in organizing educational space activities for pre-schoolers, students (public and private schools), teachers and the general public. Some of the activities conducted were: a) Encounter with a Space/Astronomy Hobbyist (lecture/demonstration on water rocket); and b) Space Gallery Educational Tour. The week long celebration had 2,407 visitors including the participants in the lecture/demonstration on water rocket.
2) **Bicol Science & Technology Centrum** (Region 5 – Bicol Region)
   The activities conducted were:
   a) Open house for educational tours on space/astronomy galleries;
   b) Teachers-students space related activities;
   c) Water rocket making and launching contest;
   d) Planetarium viewing;
   e) Balloons and upper balloon flying; and
   f) Regional Educators Seminar on Space Science and Technology. Live interview segments and coverage were also aired over radio station RMN DWNX and TV station ABS-CBN. A total of 6,176 students, teachers and other guests attended these activities.
3) **RECORD Foundation, Inc.** (Region 11 – Davao)
   The activities conducted were: a) Symposium on Space Technology and Its Utilization; b) Trainers' Training on the Use of the PAGASA-donated telescope; c) Stargazing; d) Film showing on Space Exploration; e) Design of a Space Capsule; and f) WSW Information Bulletin Board Display Design Contest. These activities attracted 250 elementary, high school and college students, university faculty and high school teachers and Mindanao Science & Technology Centrum staff.

2008 Australian Mathematics Competition (AMC)

The 2008 Australian Mathematics Competition (AMC), the annual international correspondence mathematics competition administered by the non-profit Australian Mathematics Trust (AMT), drew the participation of 2,373 elementary and high school students. This was held simultaneously at St. Stephens High School and Grace Christian College for Metro Manila, and at various schools in the rest of the regions on July 31, 2008.

The recipients for the AMC Prize Awards were:

finals were held in March 2008 with the following competitors for the Grand Prize:

1. Mr. Kevin Jonathan Dy
   – St. Stephen's High School
   – Mr. Tom Chu (coach)
2. Mr. Hanz Martin Cheng
   – UNO High School
   – Mr. Kurt Byron Ang (coach)
3. Ms. Stephanie Anne Oliveros
   – PSHS Diliman
   – Mr. Fortunato Tacuboy III (coach)

The grand winner, Kevin Jonathan Dy, of St. Stephen High School received a cash prize of P30,000. 00 while his coach, Mr. Tom Chu, received P15,000.00. The other grand finalists and their respective coaches

Middle Primary Division	Upper Primary Division	Junior Division	Intermediate Division
Vince Say *St. Jude Catholic School*	Austin Chua Seanne Ng Mikaela Angelina Uy *St. Jude Catholic School*	Henry Jefferson Morco *Chang Kai Shek College* Carmela Antoinette Lao *St. Jude Catholic School*	Manuel Encarnacion *PSHS- Diliman* John Russel Virata *Gideon Academy* Jose-Enrico Leceta *PSHS Diliman* Dann Julius Tan *Chang Kai Shek College*

Other participants garnered Certificates of High Distinction, and Certificates of Prudence.

The awardees were honored in the 2008 AMC Philippine Awarding Ceremonies held at the Manila Grand Hotel on October 15, 2009. DOST Secretary Estrella F. Alabastro, Australian Ambassador Rod Smith, AMT Executive Director Prof. Peter J. Taylor, DOST Assistant Secretary Dr. Carol M. Yorobe, and Mathematics Trainers' Guild of the Philippines President Dr. Simon L. Chua handed out the awards. Also in attendance were the awardees' math coaches, other school mentors, and their parents.

The project was successfully implemented with the Australian Mathematics Trust, public and private schools, Mathematics Trainers' Guild of the Philippines, and some of the DOST and MTG Regional Test Centers.

Youth Excellence in Science (YES) Awards 2008

The YES Award is a DOST institutional award for exemplary achievement of the youth in the fields of science and mathematics. Awarded with a medal of distinction, the recipients of this award are Filipino students who are able to win gold, silver and bronze medals in the individual or team category in international science and mathematics competitions. They are considered to be of value to DOST's quest for excellence and shall be included in the roster of honorable young men and women of science.

Awarded with the YES Medal in 2008 were 218 winners in various international competitions, 155 awardees from the National Capital Region (NCR) and 63 awardees from the regions.

ASEAN Youth Science Summit (AYSS)

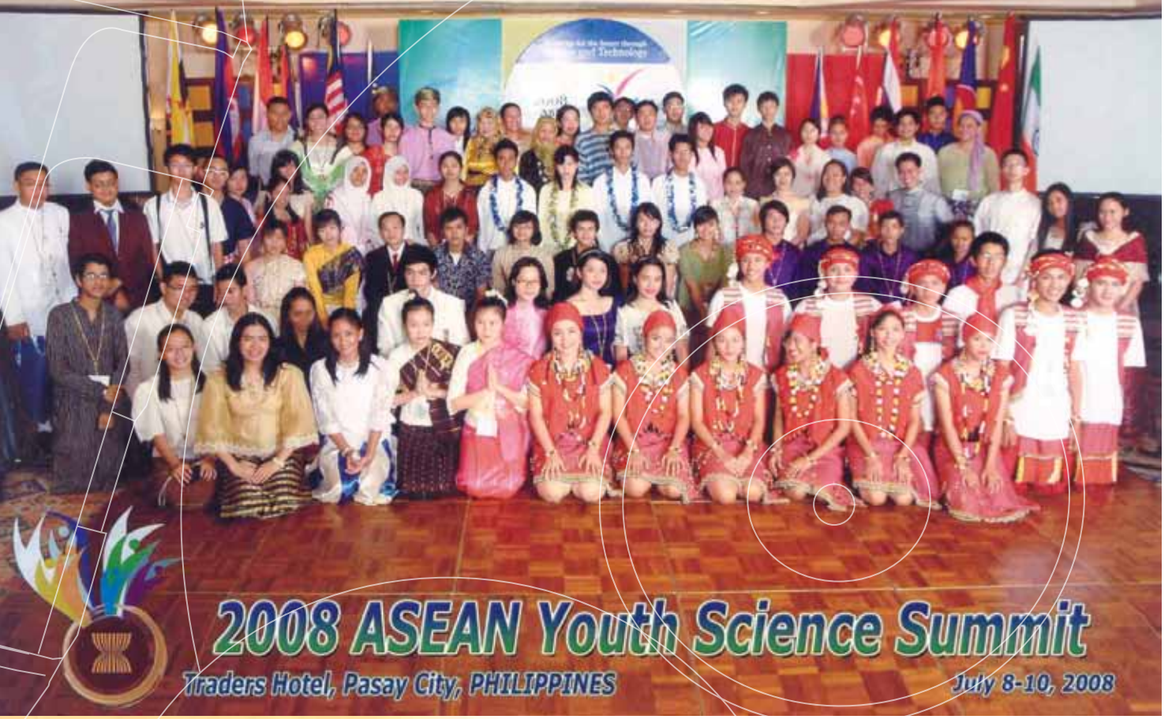
The AYSS was a two-day summit aimed at raising student awareness on the global, regional and national issues that affect the Southeast Asian region and the world. It brought together representatives from twelve (12) nations, consisting of the ten (10) ASEAN-members and two (2) dialogue partners.

Last year's summit brought in 149 participants, consisting of 98 youths and 51 teachers. Local representatives came from the Philippine Science High School (PSHS) System, selected Metro Manila and Regional schools. Majority (97 or 65.1%) came from the Philippines while the remainder came from ASEAN Member Countries and Dialogue Partners. The participants sponsored by the ASEAN Foundation were 40 students and 10 teachers from the ten (10) ASEAN member countries.

Specifically, the Summit aimed to:

a) empower the students to plan for their future with the end in view of using science and technology to harness the region's natural resources wisely;
b) serve as a venue to discuss the need

Below: Third from left, DOST Undersecretary Fortunato T. dela Peña, DOST Secretary Estrella F. Alabastro, SEI Director Ester B. Ogena and MTG President Simon Chua, pose before the YES Medal Awardees of 2008.



to act, with resolve and urgency, on the global and regional issues affecting present and future generations;

c) enhance cooperation, networking and coordination among the youth towards greater involvement in issues of regional and global concern; and

d) entice the youth to be more reflexive and aware of their capacity to act on present as well as future problems and solicit their commitment and participation towards addressing such problems, now and in the future.

With the theme "Power up for the Future through Science and Technology," the summit featured areas of discussion within the ASEAN-COST Sub-Committee priority areas. The areas were:

1) *Spatial Science: The View from Above (Disaster Mitigation through Space Technology Application)*;
2) *Extreme Games (the Science of Computer Game Animation)*;
3) *Going Nuclear (Energy); and*
4) *GourMet Talk (Genetically Modified Food for Food Security).*

Mr. Lance Co Ting Keh from the Philippine Science High School (PSHS)–Diliman Campus was appointed by the Organizing Committee as the AYSS Secretary General, being from the host country. He presided over the Plenary Sessions and presented the outputs of the body to the ASEAN COST representative and the ASEAN Secretary General during the last Plenary Session.

Plenary Speakers presented 4 papers on the 4 major areas during the Plenary Session:

1. *Genetically Modified Food for Food Security* by **Dr. Ruud Valyasevi**, Deputy Director, National Center for Genetic Engineering & Biotechnology, Thailand
2. *Space-Based Technology and Application in Malaysian Meteorological Department for Weather and Climate Monitoring and Prediction* by **Ms. Maznorizan Mohammad**, Director, Malaysian Meteorological Department, Malaysia
3. *Nuclear Power – Challenges and Opportunities* by **Dr. Kerstin Dahlgren Persson**, Division of Nuclear Engineering, Department of Nuclear Energy of the International Atomic Energy Agency (IAEA), Vienna
4. *2008 Extreme Games: Trends in Computer Games Development* by **Mr. Hampus Soderstrom**, Chief Executive Officer, Nabi Studios, Singapore

For the Parallel Sessions, selected students from participating countries presented their papers in the four topics.

Gourmet Talk (Genetically Modified Food)

1. Tan Joon Han (Singapore) - *Genetically Modified Food: A Singapore Perspective*
2. Nguyen Thanh Mai (Vietnam) – *Food Security in Vietnam*
3. Mrittunjoy Guha Majumdar (India) – *GM Food Prospects and Problems in India*
4. Yan Cheng (China) - *Safety Evaluation of Transgenic Food*
5. Jobi Subosa (Philippnes) - *The GourMet Buffet: Whats' on the Farmer's Table?*
6. Eleanor Gemida (Philippines) – *GM Foods: Key to Future Food Security*
7. Darrel Then (Philippines) - *Children's International Perspective on GourMet Food*

Space Science

1. Mg Min Thura (Myanmar) – *Electronic Engineering*
2. Donnalyn S. Trimidal (Philippines) - *Brilliant Assemblage: A Presentation of Cosmic Facts*

Going Nuclear

1. Sourojit Das (India) – *Nuclear Energy Utilization: A Survey of the Past & Dreams of the Future*
2. Nguyen Hoang Thuy Duong (Vietnam) – *Nuclear Energy*

Extreme Games

1. Zhao Yuniiang (China) – *The Influence of the Net Games on Learning & Behavior of the Students*
2. Diangchay Xaiyalath (Lao PDR) - *The Effects of Computer Games on Learning*

In a special session, teachers also presented their country papers on the following topics: 1) Best Practices in Teaching Science Research to Students; 2) Gifted Education in Science & Mathematics; 3) Best Practices in Using Information Technology in Teaching Science and Mathematics; and 4) The effects of Computer Games on Learning/Behavior of Students.

1. Najeema Unnikammu (India) – *Integration of School Curriculum with the Main Stream Development Process: A Noval Experimentation*
2. Aimee Marie Chamen Gragasin (Philippines) – *Conceptual Development of A Giftedness Program to Address Socio-Emotional Needs of Under-Achieving Gifted Students*
3. Fely Buera (Philippines) – *Guided Inquiry Laboratory Physics: Conceptual Understanding, High Thinking Skills, Science Process Skills and Attitudes of Students*
4. Zennifer Oberio (Philippines) – *The Team Teaching-Guided Independent Project Combo: A Strategy for Teaching High School Science Research*
5. Juluis Centina (Philippines) – *Desirable Practices in Teaching Science Research to Fourth Year Students in Digos City*
6. Nino Espinas (Philippines) – *Creating a Field Biology Program for Your School: Lessons for the PSHS Main Campus Experience*
7. Nor Ibrahim (Brunei Darussalam) – *Gifted & Talented Educational Programme in Brunei Darussalam: A General Overview*

The major output of each Parallel Group was the drafting of a Resolution concerning their respective topics including the issues and their recommendations. A Mother Resolution, which was read and signed by the AYSS Secretary General, was presented to Dr. Carol M. Yorobe, DOST Assistant Secretary; Mr. Surim Pitsuwan, ASEAN Secretariat Secretary General; and Dr. Ester B. Ogena, AYSS Chair and SEI-DOST Director.

National Biotechnology Week

The Lecture Forum on Biotechnology was conducted last November 26, 2008 at the Philippine Nuclear Research Institute. There were 107 attendees of the lecture forum which include high school students, teachers, DOST staff and media.

The forum touched on various topics covering these three spectra of biotechnology: GM Food, Health and Energy. SEI-DOST Director Dr. Ester B. Ogena opened the session by providing the rationale of the forum and its importance in the celebration of the National Biotechnology Week.

An inspirational message followed from Dr. Mark Pierre Dimamay, the youngest member of the Research and Biotechnology Division of St. Luke's Medical Center, with a Ph.D. in Molecular Biology and Biotechnology from the University of the Philippines in Diliman. He did a dissertation work in Germany as a fellow under the German Academic Exchange Program (DAAD), and is responsible for the Stem Cell Research Laboratory of St. Luke's, where he is working on the use of adult stem cells for medical applications. In June 2006, he was able to conduct transplantation of laboratory grown stem cells to restore sight on eyes damaged by chemical injury. He provided inspiration to the students on venturing into science careers.

Dr. Antonio Laurena of the UP College of Agriculture and Dr. Nina Gloriani of the UP College of Public Health discussed issues concerning GM Food including issues on bioethics and biosafety. Dr. Laurena provided information on GM Papaya and the progress the Philippines has in its research. Dr. Gloriani talked about researches on animal cloning and bioethics.

Covering topics on health and biotechnology, Prof. Maria Luisa Daroy of St. Luke's Medical Center delivered a talk on the Human Genome Project and its applications to medical research. Meanwhile, Dr. Thelma Tupasi of the Makati Medical Center focused on the gains of biotechnology in relation to researches conducted to mitigate tuberculosis, a tropical disease prevalent in the country.

Energy from organic sources, particularly from jatropha and sweet sorghum, was discussed by Engr. Joan Cecilia Catubig of the Philippine Council for Industry and Energy Research and Development. Eng. Capt. James Fos Reamon informed the students on the Philippines' progress in producing bioethanol and lectured on the practical applications of biotechnology, particularly on vermiculture.

ASEAN Youth Science Summit Secretary General Lance Co Ting Keh capped off the forum summarizing the proceedings. Dr. Reynaldo Ebora, Director of the Philippine Council for Advanced Science and Technology Research and Development and the co-chair of the 2008 NBW celebration, gave the closing remarks by highlighting the importance of biotechnology in society and the need to have more students going into this field.

S&T Culture Development

BPI-DOST Best Project of the Year Award

For the school year 2007-2008, the DOST-BPI Best Project of the Year Awards, a joint project of DOST and BPI Foundation Inc., garnered the participation of 30 students from the 10 BPI-accredited universities who submitted their research papers for preliminary screening. This program aims to give recognition and

Below: Dr. Ester B. Ogena delivers her opening remarks during the Educational Forum, which is the highlight of the 2008 National Biotechnology Week.

incentives to students who excel in the fields of science, namely: mathematics, physics, chemistry, engineering, computer science and biology.

The papers were evaluated by 5 DOST experts who focused on the technical aspect. They selected the top 12 projects during the preliminary screening. Then with the BPI judges, they selected the 6 finalists for oral presentation that was held on January 18, 2008 at the Vigan Room, BPI Bldg., Makati City. After the oral presentation, 3 winners were chosen by the Board of Judges (see **Table A**).

Below: The first, second and third place winners of the DOST-BPI Best Project of the Year Awards for 2007-2008 pose with Dr. Ester B. Ogena.
Bottom: Participants vie in the 2008 Philippine Mathematical Olympiad, which commemorated its 11th year.

Philippine Mathematical Olympiad (PMO)

The PMO, the oldest and most prestigious nationwide mathematics competition among secondary school students, entered its 11th year in 2008. Organized and implemented by the Mathematical Society of the Philippines (MSP), the program was sponsored by the SEI-DOST in cooperation with the Department of Education (DepEd).

The following are the 2008-2009 PMO winners:

AWARD	NAME OF STUDENT/SCHOOL	COACH
First	Carlo Francisco E. Adajar PAREF Southridge School Alabang, Muntinlupa City	Ariel Marcera
Second	Carmela Antoinette S. Lao Saint Jude Catholic School Manila	John Michael Capili
Third	Aldric Cristoval C. Reyes Chiang Kai Shek College Manila	Frederick Buiza

TABLE A: 2007-2008 DOST-BPI Best Project of the Year Awards

AWARD WON/AMOUNT	NAME OF STUDENT/SCHOOL	PROJECT TITLE	ADVISER
Best Project of the Year/ P50,000.00 (from DOST-SEI) Plus trophy & certificate from BPI	Carla Gisela Ysabel P. Concepcion/ UP-Diliman	Cloning of Alcyonium Green Fluorescent Protein (GFP) as a Potential Tracker of Cancer Metastasis	Dr. Cynthia P. Saloma
1st Runner-up/ P30,000.00 (from DOST-SEI) Plus trophy & certificate from BPI	Christina Lora M. Leyson/ UP – Diliman	Molecular Cloning & Heterologous Expression of the Abaca Bunchy Top Virus (ABTV) Coat Protein (CP) Gene & Production of Antibodies for the Early Detection of ABTV	Dr. Vermando M. Aquino
2nd Runner-up/ P10,000.00 (from DOST-SEI) Plus trophy & certificate from BPI	Juan Paulo M. Antonio/ UST – Manila	Extraction, Transesterification and Characterization of Bitaog (Calophyllum Inophyllum) Seed Oil as Source of Biofuel	Dr. Maria Natalia R. Dimaano

Participation to the International Mathematical Olympiad (IMO)

The 49th IMO last year presented an especially difficult challenge for the Philippine team. The largest, most prestigious and the most difficult mathematics competition among the best secondary students in the world featured a set of problems far above the level given in Philippine classrooms in terms of depth and difficulty, covering topics that are not part of our high school curriculum. Thus, students who formed the pool of candidates for our Philippine team needed to be selected very well, and those selected were given intensive and extensive training.

The IMO was held in Madrid, Spain on July 10-22, 2008. The Philippine team was composed of 3 students: Jeffrey Kenneth L. Go (Xavier School), Mark Benedict C. Tan (Xavier School), and Diogo Miguel S. Moitinho de Almeida (Ateneo de Manila High School). Their Deputy Team Leader was Dr. Julius M. Basilla of UP-Diliman while the Team Leader was Dr. Ian June L. Garces of Ateneo de Manila University. The Mathematical Society of the Philippines (MSP) took charge of the selection of delegates.

The event drew the participation of 102 countries and territories, with 535 student-contestants. As an IMO rule, to get a medal, the participant must belong to the top 50% of the contestants and the number of bronze, silver and gold medalists must be in the ratio of 3:2:1. Diogo Miguel S. Moitinho de Almeida (Ateneo de Manila High School) was awarded a bronze medal.

The Philippine participation to the IMO was jointly sponsored by SEI-DOST and the Mathematical Society of the Philippines (MSP) in cooperation with other mathematics organizations in the country.

Philippine Robotics Olympiad

The Philippine Robotics Olympiad (PRO), the preparatory competition that determined the delegates to the World Robot Olympiad, aims to challenge the intellectual and critical thinking skills of elementary and high school students. The competition is open to elementary students aged 10-12 years old and high school students aged 13-15 years old.

Last year's two categories were Regular and Open, which had the theme "Saving Global Environment." There were forty (40) high school teams and twenty-five (25) elementary teams from public and private schools in the first preliminary competition. The Board of Judges selected 20 teams from high school level and 13 teams from elementary level to compete in the final judging (**Table B** shows the 2008 PRO winners).

2008 World Robot Olympiad

The first and second placers from elementary and secondary levels both for regular and open categories in the Philippine Robotics Olympiad represented the Philippines in the World Robotics Olympiad held in Yokohama, Japan on October 31-November 2, 2008.

The Philippine delegation included students from the following schools:

Elementary Level- Regular Category:
1. Nemesio Yabut Elementary School (Team A)
2. Nemesio Yabut Elementary School (Team B)

Elementary Level – Open Category:
1. International School Manila
2. Grace Christian College

High School Level – Regular Category:
1. Phil. Science HS – Bicol Campus
2. First Asia Institute of Technology & Humanities

High School Level – Open Category:
1. Benigno Aquino HS
2. First Asia Institute of Technologies and Humanities

Three elementary pupils from the Grace Christian College composed of Edrich Hans Chua, Honefer L. Amancio and Dominique Hannah SY won the silver medal, trophy and certificate in the Open Category. Their project entitled, "Green Whiz Community and the G-Tech Robot Engineering a Better World," featured 12 robots doing various tasks to help save the environment. The coach of the team was Ms. Melanie Tizon.

Students from Benigno Aquino High School and the International School of Manila both won certificates in the Open Category of the High School and Primary Levels, respectively. Likewise, Ms. Ruby R. Cristobal of SEI received the Best Judge Trophy award as one of the WRO judges.

Felta Multi-Media, Inc and DOST sponsored the Philippine delegates' participation, including airfare and hotel accommodation for the duration of the activity.

TABLE B: 2008 Philippine Robotics Olympiad Winners

Regular Category (Elementary Level)	Regular Category (Secondary Level)	Open Category (Elementary Level)	Open Category (Secondary Level)
1st Place Nemesio Yabut Elem. School Team A	1st Place Philippine Science High School - Bicol Campus	1st Place International School Manila	Benigno "Ninoy" S High School
2nd Place Nemesio Yabut Elem. School Team B	2nd Place First Asia Institute of Technologies & Humanities	2nd Place Grace Christian College	2nd Place First Asia Institute of Technologies & Humanities

International Earth Science Olympiad (IESO)

For the first time in history, the Philippines hosted an International Science Olympiad – the 2nd International Earth Science Olympiad (2nd IESO) --- with the theme, "Cooptition in Addressing Climate Change." Held on August 31 to September 8, 2008, the event had two main activities: the "competition" (written and practical tests) and the so-called "cooperation" (field investigation).

The competition phase was held at the UP National Institute for Science and Mathematics Education Development (UP NISMED), Diliman, Quezon City from September 1 and 2. All the participants then flew to Legazpi City on September 3 to commence the cooperation phase of the Olympiad. Besides the local delegates, others came from the USA, Japan, South Korea, Taiwan, Singapore, and Indonesia. Each delegation was composed of four high school students, two mentors and observers. In total, there were 67 international participants.

The final day in Bicol featured the highlight of the cooperation aspect of the Olympiad – the Round Table Discussion on Climate Change. Local high schools in Bicol, including Tabaco National High School, MORMS, Philippine Science High School-GOA, Legazpi City High School, Aquinas Science Oriented HS, BUCE-ILTS, among others, joined the international teams. The participants enjoyed the discussion with Hon. Gov. Joey Salceda who talked on the initiatives of the Province of Albay on Climate Change adaptation and mitigation. Each group presented their outputs to address various issues of Climate change.

The most awaited part of the Olympiad was the awarding ceremonies. Like the first International Earth Science Olympiad in Korea in 2007, Taiwan and Korea again bagged the gold medals. Our very own Philippine team who were winners of the 8th Earth Science Quiz sponsored by the Earth Science Teachers Association of the Philippines (ESTAP) received bronze medals.

Prof. Miguel C. Cano, faculty of Bicol University served as chairman of the event.

International Museum Day

The International Museum Day (IMD) was a one day event held at the Ablaza Hall, National Museum on May 16, 2008 with a press conference held at the NCCA lobby on May 22, 2008. The event was composed of four (4) activities:

1. Lecture Symposium with the theme "Social Change and Sustainable Development"
2. Inauguration of National Museum's Bone Collection Gallery
3. Cocktail Reception and Launching for the Sub-Committee on Science & Technology Museum's latest project-Halcon Heritage Forest Museum in San Teodoro Town, Oriental Mindoro
4. Post Event Media Briefing for the project.

The Lecture-Symposium covered 5 topics on Science & Technology with 5 lecturers namely:

1. Mr. Benito Vergara – National Scientist
2. Dr. Quenna Lee Chua - Ateneo
3. Ms. Penelope Reyes - Happy Earth
4. Dr. Cristina Yuson – Museo Pambata
5. Dr. Ester B. Ogena - SEI

The keynote speaker was Ms. Mikaela Fudolig – UP Summa Cum Laude & Science wiz kid. The event was attended by 86 participants from different agencies.

26th Samahang Pisika ng Pilipinas (SPP) Physics Congress

The 26th SPP Physics Congress, an annual event for sharing the latest results and techniques in physics and physics education among physicists in the academe, industry and government, was held at the University of the Philippines-Baguio on October 22 to 24, 2008 with the theme, "Taking Physics to the Summit."

This year's congress drew 300 students, 49% of whom were from UP-Diliman, 12% from Ateneo De Manila University, 6% from UP-Baguio and 5% from UP Los Baños. SEI-DOST sponsored the participation of 25 undergraduate students, most of whom presented papers in the conference.

Best Poster Award. SPP also gave a best poster award this year. The winning piece featured the performance of a two-photon fluorescence (2PF) microscope with a virtual pinhole. The virtual pinhole removes scattered signals resulting to improved contrast and the visibility of details masked by scattered signals. The presenters were PC. Hilario, G. Bautista and V. Daria of the UP-National Institute of Physics.

Career Orientation. The SPP also organized a career orientation program for Baguio City National High School and CAR Regional Science High School. Dr. Amador Muriel, a Balik-Scientist awardee and Dr. Raphael Guerrero, NAST Young Talents awardee inspired students to take up Physics in college.

National Training Course on Design & Development of Kit/Apparatus for Teaching Optics & Lasers in Introductory Physics

This training course, held on May 5-9, 2008 in Sorsogon City, aimed to develop work skills, attitudes and knowledge about the use and construction of optics/apparatus in introductory physics in secondary and tertiary levels. The activity was attended by 63 physics teachers/instructors from Region 4, 5, 8, NCR and CARAGA (see **Table C** for the winners).

Conduct of Lecture Series for Teachers & Students on the Occasion of the National Science & Technology Week/DOST 50th Anniversary In Eastern Visayas

One of the major activities of the 2008 National Science & Technology Week (NSTW) Regional Celebration in Eastern Visayas (coinciding with the DOST 50th Anniversary) was the Science Education Lecture Series for Teachers & Students held on July 30, 2008 at the Kanhuraw Convention Center, Tacloban City. As one of the initiatives to boost science

Uppermost: Students of Grace Christian College, together with Dr. Ester B. Ogena, pose with their environmentally-themed winning entry for the 2008 World Robot Olympiad.
Above: DOST and SEI personnel present the winners of the 2008 World Robot Olympiad while (opposite page) Pres. Gloria Macapagal-Arroyo graces their recognition ceremony in Malacañang Palace.

TABLE C: Winners of the National Training Course on Design & Development of Kit/Apparatus for Teaching Optics & Lasers in Introductory Physics			
Winners in the Design of Improvised Apparatus			
Award	**Name**	**School**	**Prize Received**
First	Pio G. Panti Jr.	Catanduanes Stage College	P 2,000.00 & Certificate
Second	Rowena C. De Leon	Gubat National High School	P 1,500.00 & Certificate
Third	Federico P. Ganaden	Ramon Magsaysay Tech. University, Zamables	P 1,000.00 & Certificate
Winners in the Construction & Design of Inquiry Lesson Plan			
Award	**Name**	**School**	**Prize Received**
First	Erick John Marmol	Philippine Science High School - Bicol	P 5,200.00 & Certificate
Second	Ester T. Gonzales	Gallanosa National High School	P 4,700.00 & Certificate
Third	Jennifer J. Dugan	Juban National High School	P 4,200.00 & Certificate
Fourth	Ma. Cecilia G. Alama/Ria Vargas	Sorsogon National High School/Camp Aguinaldo High School, QC	P3,700.00 & Certificate
Fifth	Evelyn M. Ecleo	Tabuena Memorial High School	P 3,200.00 & Certificate
Consolation	Jocelyn B. Panduyos	Surigao Del Sur Polytechnic State College	P 1,500.00 & Certificate
Consolation	Andrew S. Tenorio	La Consolacion College	P 1,500.00 & Certificate
Consolation	Dino Manuel Prestado	Partido State University	P 1,500.00 & Certificate

& technology in the region, it aimed to encourage more students to take science or science-oriented careers.

The event was attended by 65 science & mathematics teachers from different secondary schools in the region. The topics and resource speakers were as follows:

- **MS. LILIA R. LAURON**
  Chief, STED – SEI-DOST
  Status of Science & Mathematics in the Philippines
- **MS. LOURDES Q. VALLAR**
  Education Supervisor II/DepEd 8
  Status of Science & Mathematics in Eastern Visayas
- **MS. AMPARO F. OLARTE**
  Supv. SRS, STED-SEI-DOST
  Computer Aided Instruction in Science

The Lecture on Science Education for Students drew 72 student-participants from different high schools, colleges & universities in Region 8. The topics and resource speakers were as follows:

- **ENG. JOSEPH JENNIFER M. ESGUERRA**
  SRS II, STII-DOST Software
  Quality Assurance
- **ENGR. LAILAN M. DE PADUA**
  Tech. Support Engineer/Zilog Phils. Inc.
  Introduction & Building Robotics
- **MR. JOSE TIMOTEO S. VERGEL DE DIOS**
  Academic Developer Evangelist/Microsoft Phils.
  Microsoft in Education

In total, the Lectures for Science in Education for both teachers & students captivated 192 participants from 23 high schools, colleges and universities, both in public and private schools in Region 8.

Undergraduate Student's Food & Nutrition Research Competition

SEI-DOST sponsored the cash prizes given in this competition that was conducted by the Food and Nutrition Research Institute (FNRI-DOST) on July 15-16, 2008 at the FNRI Auditorium, Bicutan, Taguig City. This annual competition, which is open to all universities/schools teaching nutrition and food technology, is held to encourage students to do research.

It has 2 categories: a) Nutrition and b) Food Technology.

Seven entries were received, with 4 from the University of the Philippines-Los Banos, 1 from the Polytechnic University of the Philippines (PUP)-Manila, 1 from University of Santo Tomas (UST), and another 1 from Bicol University College of Industrial Technology (BUCIT). The entries were judged by FNRI technical staff.

The winners were:

- First Prize: **Joanna Mae Millan** - UST
  Project Title: "Development of Ready-to-Drink (Tamarindus indica L.) Juice"
- Second Prize: **Hansel L. Duro** - UPLB
  Project Title: "Functional Components, Sensory Qualities and General Acceptability of Yacon (Polymnia sonofolia, L.)Chips"
- Third Prize: **Mel Jay Santos** - PUP Manila
  Project Title: "Development of Yacon (Smallanthus sonchifolius) Ice Cream as Functional Dessert Product"

All participants received Certificates of Participation while the winners received cash awards and Plaques of Recognition.

Micro Week

MICROWEEK 2008 was a week-long event in November 2008, sponsored by SEI-DOST and organized by the UP-Los Baños Microbiological Society (MICROSOC) as part of the latter's 25th anniversary celebration. With the theme "Ensuring the Future: Innovating the World through Microbiology," the event consisted of an exhibit, symposium, quiz contest on "Mikrobyo," Biology quiz, Essay Writing and Poster Making Contest and Open Taumbayan.

Winners in the different events were as follows:

1) **Mikrobyo: A General Information Quiz Contest.** Participated by 80 students.
   1st Prize: Moy-Moy Palaboy Team
   2nd Prize: Team Ba
   3rd Prize: Henyo Kami
2) **Essay Writing Contest** - Participated by students from Regions IV and NCR
   1st Prize: Cavite National Science HS
   2nd Prize: Grace Christian College
   3rd Prize: Lourdes School of Mandaluyong
3) **Poster Making Contest** - Participated by students from Regions IV and NCR
   1st Prize: Pedro Guevarra Memorial National HS
   2nd Prize: Grace Christian College
   3rd Prize: Vicente Madrigal National HS
4) **Inter High School Biology Quiz Contest** - Participated by more than 30 students from Regions IV and NCR
   1st Prize: Lipa City Science High School
   2nd Prize: Laguna College
   3rd Prize: Cavite National Science HS

ChemCamp

ChemCamp is an annual summer enrichment program for senior high school students with high aptitude in the Sciences, especially those with keen interest in Chemistry. Last year's three-week program featured a comprehensive view of the fields in Chemistry, and included discussions, demonstrations, and hands-on laboratory activities.

Two sections of classes were opened to accommodate a larger number of participants composed of 59 students from the public and private high schools in the National Capital Region. The program was implemented by the Department of Chemistry of the Ateneo de Manila University and was held at the Schmitt Hall, School of Science and Engineering from April 14-30, 2008.

Philippine Association for the Advancement of Science (PHILAAS)

SEI-DOST supported PhilAAS as one of the co-sponsors in the Career Planning Lecture held on June 26, 2008 at the Thomas Aquinas Research Complex (TARC), UST, Manila and on July 21, 2008 at Mindanao Polytechnic State College in Cagayan De Oro City. The lecture aimed to create an interest in a scientific or engineering career among high school students by presenting to them successful scientists or engineers who can serve as a role model and can inspire them to pursue a career in science.

Attendees included 226 high school students from Metro Manila and suburbs and 137 high school students from Region 10.

Mathematical Society and Applied Physics Society of the College of Science, UST

SEI-DOST extended financial support to the Society to cover expenses for the medals and cash prizes for the various competitions held during the mathematics and physics week celebration on November 24-29, 2008.

Physiklaban

Physiklaban was conducted on February 9, 2008 at the University of Santo Tomas, (UST) Manila by the Samahang Mag-aaral para sa Pagpapaunlad ng Pisika (SMPP), an alliance of different collegiate physics-oriented student organizations in the Philippines. This whole day event featured not only physics contest for high school and college students but also career talks and research symposia provided by professors and researchers coming from SMPP member universities and private companies.

Both contests for high school and college students were held at the UST Tan Yan Kee Auditorium while the talks were conducted at the Thomas Aquinas Research Center. The judges for both contests were Dr. Dickerson Moreno of the DLSU-Manila Physics Department, Engr. Angelina Silverio of UST Physics Department, Mr. Joel Maquiling of ADMU Physics Department and Mr. Arwin Borja of PNU Physics Department.

Participants included 33 public and private high schools and 39 colleges/universities.

Winners in the **High School Category**:

- First – Team from Quezon City Science High School
- Second - Team from Adamson University High School Dept.
- Third - Team from Southville International School

College/University Category:

- First – DLSU-Manila
- Second – UST
- Third – UP-Diliman

National Science Club Month (NSCM)

For the whole month of September 2008, various activities were conducted around the country to celebrate the National Science Club Month, which carried the theme "Science Clubbing Optimized: Igniting and Innovating!" Approximately 4,040 elementary and high school students participated in the month-long celebration.

The activities done at the national level were: a) National Science Club Summits; b) PSYSC Science Olympiad; c) MATH-SCI-A-KA; and d) Beginners' Appreciation Of Science Clubbing (Basic).

The main event of the NSCM was the 5th PSYSC Science Olympiad, which consisted of Elimination Rounds held in various regions of the country and the National Finals held at the PHIVOLCS Auditorium.

The Judges were : a) Dr. Rosanelia T. Yangco for Biology, Life Science, Health Science; b) Mr. Chito Angeles for Information Technology and Basic IT; c) Engr, Vincent Lao for Astronomy; d) Mr. James Kevin Ty for Astronomy; e) Dr. Jose Perico Esguerra for Physics; f) Dr. Christine Hernandez for Chemistry; g) Dr. Allan Gil Fernando for Earth Science; and h) Mr. Michael Reuben Solis for Physics and Physical Science. The following were the winners:

Bracket I: Elementary
Champion: The Learning Tree Child Growth Center Inc., NCR
2nd Place: Albert Einstein School, Region XI
3rd Place: Ateneo de Zamboanga, Region IX
Bracket II: High School
Champion: Philippine Science High School- Bicol Campus, Region V
2nd Place: Kidapawan City National High School
3rd Place: Philippine Science High School – Central Mindanao Campus, Region X

Top scorers during the PSO National Eliminations held simultaneously in 11 sites nationwide were:

- **Bracket I** - David Laureta of The Learning Tree Child Growth Center, Inc.
- **Bracket II** - Joshua Lopez of Philippine science High School - Bicol Campus

The NSCM was implemented by the Philippine Society of Youth Science Clubs, Inc. (PSYSC), with the SEI-DOST as its cooperating agency.

2008 Summer Youth Science Camp

The Summer Youth Science Camp was conceptualized as a response to a growing need for activities that will promote interest in science, technology and environment among elementary and high school students. It is designed to provide fun and interaction among students to occupy their time in summer while learning science concepts particularly those that concern the environment. Last year's science camp was held at the Mindanao Science & Technology Centrum, Tugbok District, Davao City on May 22-25, 2008.

With The theme, "Space Technology Education, A Tool for Agri-forest and Watershed Development," the camp focused on the basic concepts of space technology and one of its important and environmentally related application, the use of global positioning system (GPS) and geographic information system (GIS) in agri-forest and watershed development. Conducted in partnership with RECORD Foundation, Inc., the science youth camp was attended by 72 participants from different schools in Davao City and nearby provinces.

CHAPTER
5

Creating Communication and Information Links

With a predominantly English-speaking, highly educated, easily trainable, and skilled workforce, the Philippines enjoys significant comparative advantages in ICT. For this reason, SEI-DOST is giving its full support to government investments in education such as the computerization of all public schools and the adoption of e-learning in urban areas, which are scheduled to be completed by 2010.

Leveraging and harnessing the tools of ICT for education and development can result in widened access to knowledge and increase in opportunities and incomes.

Clearly, measures that enable greater ICT integration in the earliest educational stage possible need to be intensified if the government is to meet its 2009 objectives of fostering lifelong learning skills among students and adult learners. The Information and Communications Technology Plan is nearing the end of its Phase II, the implementation stage (2002-2008) and is about to be followed by Phase III, the Evaluation stage.

SEI-DOST, along with the concerned agencies and cooperative partners, is confident of having significantly contributed to the development of physical infrastructure and technical support necessary to make ICT accessible and useful to students, teachers, administrators, and support staff in order to improve the state of science education in the country.

Philippine S&T Education Database Updates

science-scholarships.ph. This website introduced a new blog site to assist visitors on their inquiries about the scholarship program, clearance application and monitoring of the status of their grades and stipends. The site registered an additional 43,814 visitors seeking scholarships in the undergraduate and graduate levels.

The Scholar-Grad database also had additional 1,620 records of 2005-06 scholar-graduates to help private institutions in their search for possible recruits for employment in their respective companies and agencies.

New inventory were also added to the Human Resources Research Information System, such as Inventory of SEI publications, S&T Exhibits and AV materials and SEI On-the-job-training students. The existing databases of Youth Competition winners were also uploaded under the S&T Youth Program Information System. There were also 12,086 records updated in the SEI E-Directory that includes government agencies, academe and private institutions.

STedNet website. This website recorded an additional 5,083 hits from online users in 2007, and added more teaching modules for teachers to access following the observation that site users frequently want to find resources for teaching. S&T education information were also uploaded to the databases including 45 new tables of tertiary enrollment and graduate data, Science and Engineering Indicators and DOST Scholars data. To help users easily download huge files from the server, its hardware processor was upgraded into a new Quad Core processor while maintaining its 256K bandwidth.

Forty-one (41) existing partners were maintained and data sharing was facilitated through the distribution of 17 SEI articles on Science education among the STEDnet E-group members. Every month, the URL on the different partners' websites is indexed by the STedNet webmaster to update its search engine.

Coordination with the Philippine E-lib Project Team was also undertaken to support the national program for maintaining local S&T databases like the Thesis & Dissertation, Investigative projects, Action Research of Teachers, and other science-related materials.

financial report

DISTRIBUTION OF FY 2008 DOST-SEI EXPENDITURES

By S&T Activity, Source of Funds and Expense Classification

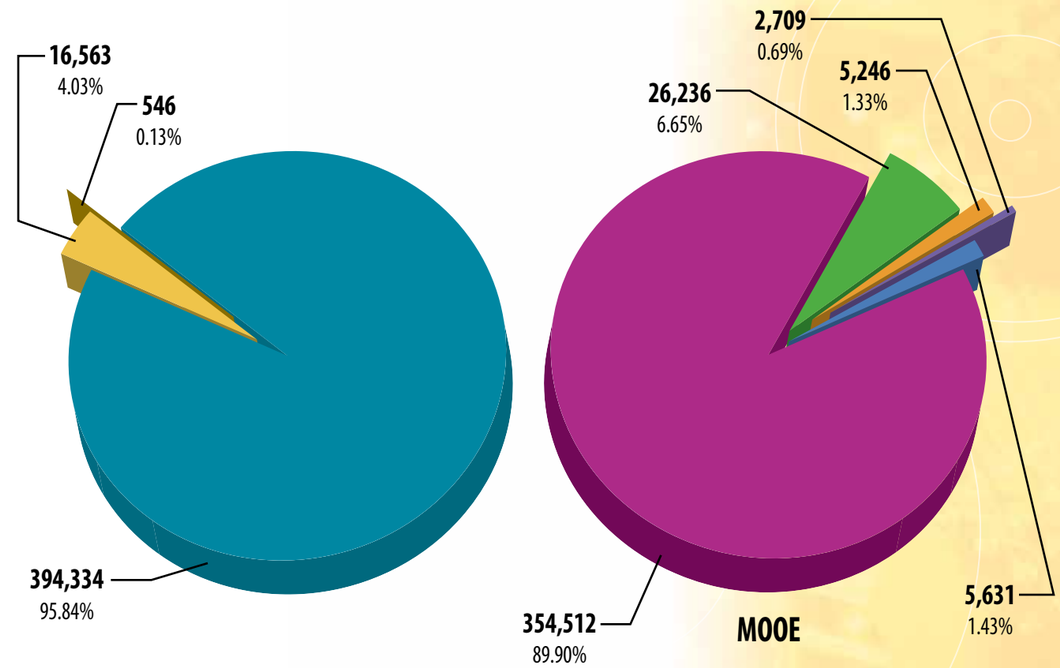
(Amount in Thousand Pesos)

S&T ACTIVITY	TOTAL EXPENDITURES				EXPENDITURES BY SOURCE OF FUND							
	Total (Regular + Other Sources)				Regular Appropriation (GAA)				Other Sources			
	TOTAL	PS (a)	MOOE (b)	CO	TOTAL	PS (a)	MOOE (b)	CO	TOTAL	PS (a)	MOOE (b)	CO
TOTAL	669,340	16,869	651,925	546	411,443	16,563	394,334	546	257,897	306	257,591	-
Researches/Studies/Surveys	2,709	-	2,709	-	2,709	-	2,709	-	-	-	-	-
Technology Delivery	-	-	-	-	-	-	-	-	-	-	-	-
S&T Services (a+b)	12,603	2,487	10,116	-	7,733	2,487	5,246	-	4,870	-	4,870	-
• Information System • Technical Services and Science Promotion	458 12,145	- 2,487	458 9,658	- -	458 9,658	- 2,487	458 9,658	- -	- 4,870	- -	- 4870	- -
S&T Innovation, Science Education Capacity Building and Development and Training	35,086	1,617	33,469	-	27,853	1,617	26,236	-	7,233	-	7,233	-
S&T Scholarship Program	602,090	2,090	600,000	-	356,602	2,090	354,512	-	245,488	-	245,488	-
General Administration and Support Services	16,852	10,675	5,631	546	16,546	10,369	5,631	546	306	306	-	-

MAJOR EXPENDITURES BY EXPENSE CLASS PER REGULAR APPROPRIATIONS

FY 2008 GAA

(Amount in Thousand Pesos)



logical framework

SOCIETAL GOAL
Sustainable Economic Growth Towards Poverty Reduction

SECTORAL GOAL
Sustainable Economic Growth Towards Poverty Reduction

ORGANIZATIONAL OUTCOMES
Sustainable Economic Growth Towards Poverty Reduction

MAJOR FINAL OUTPUTS

Administration of S&T Scholarship Programs	Innovations, Research, Promotion and Development of Science Education and Culture Programs

PAPs

• General Administration and Support Services • Development, Utilization and Implementation of the Science and Technology Scholarship	• General Administration and Support Services • Science Culture Development and Promotion • Research, Innovations and Training of Science Education

PERFORMANCE INDICATORS

• Number of scholars supported - Undergraduate Program - Master's Program • Number of scholars tracked/monitored/ deployed	• Number of trainees/recipients/beneficiaries of the specialized programs • Number of researches/studies conducted • Number of science and mathematics competitions conducted/participated • Innovations and alternative delivery programs in Science Education

organizational chart

Office of the Director

Office of the Deputy Director

SUPPORT DIVISION

- **Finance & Administrative Division**

TECHNICAL DIVISIONS

- **Scholarship & Training Division**
- **Science & Technology Education Division**
- **S&T Manpower Assessment Division**

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