TRAINING FUTURE ENGINEERS AND TECHNOLOGISTS*

Anthony Joseph C. Ocampo

In response to the industrialization efforts of the Philippine government, the Department of Science and Technology's Science Education Institute (DOST-SEI) together with the Department of Education, Culture and Sports (DECS) selected several public high schools nationwide to take part in DOST-SEI's Engineering and Science Education Program (ESEP). This program aims to increase the number of high school graduates who will pursue science and technology careers.

The ESEP High Schools

One hundred ten (110) out of the more than 5000 public high schools throughout the country were selected for the program. These ESEP High Schools or Node Schools were chosen based on (1) population size, (2) science and technology orientation, and (3) strategic location (proximity to a Regional Science and Technology Center or RSTC like the University of the Philippines).

These Regional Science and Technology Centers were tasked to oversee the program. The UP College of Education and Ateneo de Manila University, for example, have been assigned to oversee 12 Node Schools in Region 3 and northern Metro Manila (collectively known as Node 4). These schools are Bataan National High School, Pampanga High School, Talavera National High School, Juan R. Liwag Memorial High School (Gapan, Nueva Ecija), Tarlac National High School, M. H. del Pilar High School (Malolos, Bulacan), Ramon Magsaysay High School (Cubao, Quezon City), Quezon City Science High School, Malabon High School, Caloocan City High School, Angeles City High School, and Olangapo City National High School.

Admission to the Special Classes

Every year, incoming freshmen of the various node schools are given a scholastic aptitude test. The test is a 180-item multiple choice test timed for 2.5 hours. The whole test consists of the following subtests:

Figural/Abstract Reasoning	20 items
Mathematics	40 items
Science	50 items
English: Grammar	
Correct Usage	20 items
Verbal Analogy	20 items
Reading Comprehension	30 items

Performance in this test determines a student's admission to the special classes. The number of classes in each school varies. Most schools opt to organize only one class while others organize two to four classes. Some schools like the Philippine Science High School used their own admission policies (i.e. primary school grades and admission test results) to organize their own special classes.

The Curriculum

The science and technology programs of these schools were designed by various universities, one of which was UP, in particular the College of Education and Institute for Science and Mathematics Education Development (ISMED).

Students who pass the screening are made to undergo an enriched SEDP

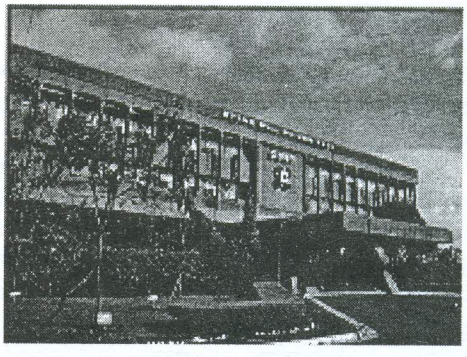
The program aims to increase the number of high school graduates who will pursue science and technology careers.

**based on an interview with Dr. Lilia Rabago, dean of the UP College of Education and Node 4 Coordinator and from unpublished technical reports made for the DOST by Dr. Milagros Ibe (UP College of Education).*

science and math curriculum. These students are also made to take electives such as Earth Science, Advanced Biology, Advanced Research I and Advanced Research II.

DOST Support

This science and technology (S&T) program demanded that teachers upgrade their skills. Regular teacher workshops funded by the DOST are held. Non-major teachers (teachers teaching outside of their field) are encouraged to undergo a certificate program in the field they are teaching with a scholarship from DOST.



Apart from teacher training, DOST also provides these schools with laboratory and multimedia equipment. If needed, DOST funds students' science and technology projects.

The Project's Status

The first batch of students who underwent the program graduated in March 1997. Studies have been done to measure the effectiveness of the special curriculum with regard to achievement test scores. Towards the end of each school year, achievement tests in Mathematics (50 items), Science (60 items) and English (50 items) were administered to the students of the various node schools. The test scores of the best special SEDP class (two classes for schools which organized three to four special classes) were compared with those of the best regular SEDP class(es) in the same node school.

Through the years, results have shown that, in general, the special SEDP classes significantly outperformed the regular SEDP classes. There were some node schools, however, where the difference was not significant. Researchers attribute this to a failure in instruction rather than to a failure in the curriculum.

Although the curriculum seems to work in terms of achievement test scores, it remains to be seen whether or not these graduates will indeed help engineer our economic growth and security.

Science Humor

More daffy definitions inadvertently made by students*

- The Natural Sciences are Byosophy, Histeria, Geomaphy, Cystonemy, Asstonemy, Cemetary and two others
- Entomology is the study of ents.
- Experiments have shown that white rats can masticate maize as well as humans.
- A horsepower is the amount of work a horse fifteen hands high can do in a second at the equator per second

*http://www.wkbradford.com.teachum.htm