

THE TECHNICAL PANELS – THE TECHNICAL PANEL FOR ENGINEERING EDUCATION EXPERIENCE

by

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Introduction

During the past decade, the educational system of the country has been undergoing some reforms as a result of a national policy to make the system more responsive to the needs of society. During this period, there has been some clamor to improve and upgrade the educational process from primary up to tertiary level. In consonance with the recommendations of the Presidential Commission to Survey Philippine Education, (PCSPE), and pursuant to some of the programs and projects as contained in Presidential Decree No. 6-A, the Department of Education and Culture (DEC) at that time (now the Ministry of Education and Culture, or MEC) formed a Technical Panel each for Agricultural Education, Engineering Education and Technician Education.

The Technical Panel for Agricultural Education (TPAE) was created by DEC Department Order No. 3-A series of 1977 (January 10, 1977), while the Technical Panel for Engineering Education (TPEE) and the Technical Panel for Technician Education (TPTE) were created by DEC Department Orders No. 35 series of 1977 (August 3, 1977) and No. 6 series of 1978 (March 13, 1978), respectively. These panels were created to fill the need for competent bodies to study and recommend to higher authorities strategies to rationalize and make more effective the existing and proposed agricultural institutions, engineering schools and technician institutes as regards their programs, facilities, personnel, organization, operation, funding and standards. Among the many problems that face these panels are the lack of well trained teachers, the lack of laboratory facilities, inadequate space, outdated curricula and, in general, the lack of basic standards for education.

The Technical Panel for Engineering Education

The TPEE operates and serves as an advisory and consultative body to the MEC. There are seven (7) members of the TPEE appointed by the Minister of Education and Culture as follows:

- a. The Director of the Bureau of Higher Education as Chairman;
- b. The Executive Director of the National Engineering Center (NEC) of the University of the Philippines, as Vice-Chairman;
- c. A representative from the National Economic and Development Authority (NEDA);

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- d. A representative from the Professional Regulations Commission;
- e. A representative from industry;
- f. Two (2) representatives drawn from the faculties of engineering schools.

A secretariat, headed by an Executive Secretary and composed of staff engineers and clerical staff, provides support services to the TPEE. Consultants, some working on full-time basis while others on part-time status also provide technical assistance to the TPEE.

The TPEE has the following duties and functions (subject to the authority of the Minister of Education and Culture).*

1. To study, in cooperation with the National Economic and Development Authority (NEDA) and other appropriate agencies, the current and prospective national and regional demand for, and supply of, engineering manpower in various specialization, and to formulate and recommend for adoption and implementation such development plans in engineering education that will provide the framework for determining the appropriate scope, type and number of engineering programs to be offered.

2. To formulate, and recommend for adoption and implementation, qualitative standards of education inputs, processes and outputs with respect to admission, enrollment, faculty, curricula and courses, facilities, student services, instructional equipment, library resources, management, financing and other related criteria, which shall be applicable to all engineering education programs in public and private colleges and universities through a national system of accreditation to be developed by this panel.

3. To provide technical assistance in the supervision, inspection and regulation of all existing institutions offering engineering courses, for purposes of the maintenance of government authority to operate therefore, and the grant of corresponding government authority to operate with respect to new schools or courses based on the standards approved by the National Board of Education and the Minister of Education and Culture.

4. To study and recommend action on application on tuition fees and such other school charges for engineering education programs offered in various engineering colleges and universities, based on standards approved by the Minister of Education and Culture.

5. To study and recommend the allocation of resources for public and private engineering education, including loans, grants and international assistance, to ensure the effective utilization thereof.

6. To study and recommend action on the budgets of public institutions offering engineering education programs on the basis of their development plans, regional role, program quality and resources.

7. Within approved budgets, to recommend grants for, and/or funding of the conduct, research and development of programs, facilities, staff, and instructional methodology and technology through a national and regional network of research and development centers.

*Taken from DEC Department Order No. 35, series of 1977 (August 3, 1977).

8. To formulate and recommend for adoption and implementation such rules and regulations governing all engineering education programs as may be necessary to carry out their purposes and function in accordance with the approved input, process and output standards set for obtaining government incentives and funds.

9. To review all programs initiated by regional directors, provide technical assistance if necessary, and recommend final action on such programs.

10. To do such other acts and to approve and make such expenditures as may be deemed necessary and proper for the attainment of its defined goals.

Among the different institutions and offices cooperating, either directly or indirectly, with the TPEE in the conduct of its functions and duties are the National Engineering Center in the University of the Philippines, the U.P. College of Engineering and other engineering schools designated as resource base schools.

Activities

Past and present activities of the TPEE include the following:

- The TPEE has engaged the services of a consulting firm (through EDPITAF) to undertake a financial study on engineering education, which focused on the current and projected financial requirements of the engineering schools and how best they could meet the cost of achieving and maintaining the standards prepared by the TPEE. The output of this study together with its review are contained in two volumes which summarize the findings and its review, and nineteen volumes which contain detailed analyses of the individual schools' financial data.

A supplementary Marginal Cost Analysis-Data Collection Worksheet has likewise been completed and is ready for distribution to various engineering schools. The general purpose of the survey is to estimate the added or marginal costs that may be involved in meeting the Basic Accreditation Standards that were approved by the TPEE and recommended to the Minister of Education and Culture. The data requested are expected to serve in two ways:

- for engineering schools, a review for costing and planning purposes; and
 - for the TPEE, an overview and awareness relating to financial impact of implementing the Basic Accreditation Standards.
- A Manpower Survey to undertake a study on the current and prospective national and regional demand for, and supply of engineering manpower in the various specializations with special emphasis in the four basic engineering courses namely; civil, mechanical, electrical and chemical engineering was contracted (through EDPITAF) by the TPEE. The Engineering and Technological Manpower Study is envisioned to assume a very important role in the development plan of the tertiary level educational system, particularly in engineering, to achieve an effective utilization of graduates.

The output of this study is contained in a 405-page volume which include both short-term and long-term recommendations to achieve effective utilization of engineering and technological manpower.

- The development* of the Manual of National Basic Accreditation Standards for Engineering Schools and Programs on September 1980 followed a year-long process which included: visits to over forty schools of engineering, about forty-five companies, around twenty professional organizations and offices and approximately one hundred thirty individuals; numerous revisions; multiple discussions and meetings of the TPEE; two major seminars attended by representatives from nearly one hundred schools of engineering, and the review and collation of dozens of extensively written comments received by the TPEE on the Basic Standards.

The process thus included extensive and intensive participation by all the sectors which might reasonably be concerned or affected by the Basic Standards.

The development process and the rationale behind each standard are based in a thorough study of conditions obtaining in the country, prevailing circumstances and existing constraints. Every effort was exerted to ensure that the Basic Standards developed were realistic, minimum, implementable and financially attainable.

Printed copies of the Manual of National Basic Accreditation Standards for Engineering Schools and Programs were submitted to the Minister of Education and Culture in September, 1980 for final approval and implementation.

- Preliminary work has started on the development of Advanced National Accreditation Standards for Engineering Schools and Programs. The following are the main criteria to be used in the development:
 - the standards would be applied to only a very limited number of schools in line with the "flagship" concept of the advanced standards;
 - the standards were to provide for the introduction of either thesis or non-thesis masteral degree to continue the upgrading of the bachelor's degree programs.

Under these criteria, six areas (faculty, curriculum, academic standards, library resources, administration, and laboratory and other physical facilities) have been considered in which accreditation standards are to be developed.

- Among the duties of the TPEE is to review the 1973 MEC-designed curricula for the various engineering undergraduate programs, and to recommend necessary revisions or changes in the light of current developments and future thrust of the country.

To undertake this task, it was thought that the BS degree programs in chemical engineering, civil engineering, electrical engineering and mechanical engineering be reviewed first, considering that these four programs constitute the bulk of the courses offered in all engineering schools in the country. Towards this end, four committees were formed, one for each program, in July 1980 and work on the review of curricula started on August 20, 1980.

To gather the views of various concerned sectors, relative to curriculum review/revision, it was felt that the composition of each committee should include the following representatives: one from the University of the Philippines, one from a private engineering school representing Luzon, one from a private engineering

*Taken from TPEE Executive summary of the development of the Basic Standards.

school representing Visayas and Mindanao, one from industry, one from a professional organization and one from the Professional Regulations Commission. The Vice-Chairman of the TPEE chaired each committee. The committees were free to seek the advice of consultants in their work.

The following criteria were formulated as guide to curricular revision:

- the different curricula are to be designed or redesigned to prepare graduates to cope with the dynamic characteristics of technology;
- there should be flexibility in the various curricula to allow for innovations in teaching, regional differences in resources and variations within a given degree-granting program;
- consideration be given to requirements of graduate programs;
- specify a minimum and a maximum load per semester per program, with not more than 30 hours of actual contact time per week for the students;
- make the first two years as common as possible for all four programs;
- communication skills development should be emphasized or re-emphasized; reduce the number of “government-required or legislated subjects”;
- each curriculum should develop a “mature, responsible and humanistic engineer”; and
- the various curricula should be made relevant for the next five to eight years.

The schedule of the TPEE on curricular revision calls for the following:

- July 1981, finalization of drafts of various curricula;
- August 1981, presentation of drafts to the Minister of Education and Culture for approval (Note: Legislation needed to implement proposals pertaining “government-required subjects” should be passed);
- June 1982, implementation of new curricula; and
- inspection and evaluation of schools are conducted following the general guidelines contained in Annex “A”. The information and data gathered are analyzed and are evaluated on the basis of MEC Order No. 36, Series of 1979.