Chapter 9 – Technology and Engineering Program Evaluation

MISSOURI DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION
DIVISION OF CAREER EDUCATION

1 ─ Introduction

There are basically three types of evaluations a TE program can undergo: Local (internal) evaluation, school accreditation and state evaluation. Each Evaluation serves a different purpose but all focus on program improvement.

2 ─ Local (internal) Evaluation

These evaluations focus on the improvement of instruction and are conducted by school personnel. Such "in house" evaluations are often conducted three to five years. This type of evaluation should not be informal and incidental, but rather formal in nature. In other words the process should be conducted on a formalized, scheduled and official basis with the results recorded for the board of education's review. These internal program reviews allow school personnel to make adjustments to programming, facilities and equipment, often with the guidance of the TE partnership advisory team. The Missouri TE Standards (available from Missouri's TE Supervisor) are an excellent basic framework for this kind of evaluation.

3 ─ School Accreditation

Missouri schools may elect to pursue external and/or state accreditation. The North Central Association of Schools and Colleges (NCA) provides the mechanism for external accreditation. The accreditation process is voluntary and thus is quite flexible in permitting local procedures to vary considerably. However the basic elements and sequences are typically similar. They involve:

1. A request for accreditation to NCA
2. Conduct a self-study that involves:
    - Formation of a local committee
    - Self-evaluation of each program (TE is one)
    - Self-evaluation of school-and community-wide functions
    - Compilation of appropriate documentation
3. Establishment of a visiting team
4. Visiting team's review of self-study as prepared by the school's local team
5. Visiting team's on-site visit including:
    - Program by program review
    - Overall function review
    - Validation of documentation
    - Exit report
6. Visiting teams report of findings
7. Visiting team leader and local committee interaction establishing required follow-up
8. One year follow-up of required action.

It is important for TE instructors to consider such accreditation procedures as an opportunity—not a threat. Often such accreditation reports provide the kind of support that secures long-needed improvements. To facilitate this it is strongly encouraged that the local TE instructors nominate two or three highly respected technology educators to serve on the visiting team. Don't just select friends or colleagues who you think would be "easy" on the program.

The NCA does not mandate any given set of evaluation instruments. Instead it encourages local in-

stitutions to use standards of "appropriate professional organizations." To ease matters however, the NCA provides a set of evaluation criteria that are produced by the National Study of School Evaluation (NSSE). Because of the national process used, such criteria lag somewhat behind the profession's pulse so these criteria do not necessarily represent the profession's current thinking. Therefore it is recommended that for accreditation purposes, local schools update the NSSE criteria with the Missouri Technology and Engineering Program Standards and Quality Indicators Self-Assessment Tool (available from Missouri's Supervisor of TE). The combined use of these two sets of criteria would make for an exceptionally strong self-evaluation.

4 ─ Missouri Technology and Engineering Program Standards and Quality Indicators self-assessment tool

Missouri's Department of Elementary and Secondary Education recommends that all TE programs be evaluated every 3-5 years. For programs receiving special state and/or federal funding, such evaluations typically need to be conducted at least once every five years. The current program for such evaluations is called the Missouri School Improvement Program.

As with accreditation procedures, it is recommended that state evaluations begin with a systematic self-evaluation. To help in this, Missouri DESE's technology and engineering section provides the Missouri Technology and Engineering Program Standards and Quality Indicators self-assessment tool. They were subsequently endorsed by the Technology Education Association of Missouri (TEAM). State evaluation also involves a visiting team's on-site evaluation. As with accreditation assessment, it is strongly recommended that TE instructors present a fair and complete picture of their program's strengths and weaknesses.

The Missouri Technology and Engineering Program Standards

5 ─ Program Planning Quality Control

TE instructors who update their programs or who plan new ones often want to know if their plans align with the generally accepted standards of the profession. One efficient way of double-checking one's work is to use the Missouri TE Standards and Quality Indicators Program self-assessment tool.

180-Day Follow-up Evaluations with Former Students

As part of any of the types of evaluations (local, accreditation, state) a follow-up of students can provide many useful insights. Therefore it is recommended that each TE program conduct and maintain careful records of a follow-up of its students. Such a study should record:

♦ Data descriptive of the students flowing through the program, e.g., age, gender, GPA, socio-economic status, career aspirations, educational plans, test scores.

♦ Data showing what kind of educational experiences students had after participating in the TE program.

♦ Data showing what kind of work experiences they had during and after participating in the TE program.

♦ Similar data for comparable students without TE program experiences

To conduct follow-up evaluations, the TE instructor typically tracks students who have participated in TE—for several years after they have done so. Typical follow-up intervals are 1 year, 3 years, and 5 years after TE. In order for such evaluations to succeed the school must keep careful enrollment and address records both while the students are in school and for at least 5 years after they graduate or leave school.

Typically, because of costs and the work involved, one samples the students who have taken TE rather than surveying all of them. The actual survey method could be:

♦ Telephone interview
♦ Mail survey
♦ In-person interview (at home)

The following represents some typical questions that may be posed in various ways in a follow-up survey.

♦ What do TE students think of the program? Did students enjoy TE?
♦ How useful was the TE program in developing career and technology awareness?
♦ Did TE enhance their understanding of science and technology?
♦ What courses were taken after TE?
♦ How useful was TE in securing a job?
♦ Was TE helpful in identifying and preparing for advanced vocational-technical education?
♦ Did TE help them with consumer decisions?

National Technology Education Program Standards

A major national effort has produced a series of standards to facilitate technology education. These standards include:

♦ Content standards
♦ Assessment standards
♦ Program standards
♦ Professional development standards

Each of these is designed to improve the teaching and learning process in technology education programs. These standards may be obtained from the International Technology Education Association, 1914 Association Drive, Reston, VA 20191, or from their web site:

http://www.iteaconnect.org/

Figure 9-1

ITEA

Listing of *STL* Content Standards

The Nature of Technology

Standard 1.   Students will develop an understanding of the characteristics and scope of technology.

Standard 2.   Students will develop an understanding of the core concepts of technology.

Standard 3.   Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.

Technology and Society

Standard 4.   Students will develop an understanding of the cultural, social, economic, and political effects of technology.

Standard 5.   Students will develop an understanding of the effects of technology on the environment.

Standard 6.   Students will develop an understanding of the role of society in the development and use of technology.

Standard 7.   Students will develop an understanding of the influence of technology on history.

Design

Standard 8.   Students will develop an understanding of the attributes of design.

Standard 9.   Students will develop an understanding of engineering design.

Standard 10.   Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

Abilities for a Technological World

Standard 11.   Students will develop abilities to apply the design process.

Standard 12.   Students will develop abilities to use and maintain technological products and systems.

Standard 13.   Students will develop abilities to assess the impact of products and systems.

The Designed World

Standard 14.   Students will develop an understanding of and be able to select and use medical technologies.

Standard 15.   Students will develop an understanding of and be able to select and use agricultural and related biotechnologies.

Standard 16.   Students will develop an understanding of and be able to select and use energy and power technologies.

Standard 17.   Students will develop an understanding of and be able to select and use information and communication technologies.

Standard 18.   Students will develop an understanding of and be able to select and use transportation technologies.

Standard 19.   Students will develop an understanding of and be able to select and use manufacturing technologies.

Standard 20.   Students will develop an understanding of and be able to select and use construction technologies.