

Quality Indicators for Technology Education

Directions: Check all criteria that the program or teacher has met and circle any criteria that the program or teacher has not met. Individual teacher award nominees should fill out only sections A, B, C, and G. Program award nominees should fill out all sections A through G.

Section A – Philosophy

Standard: A. Philosophy – A philosophy is developed and utilized in the technology education program.

Criterion: A.1. Content – The philosophy states the rationale for the technology education program. The philosophy also addresses the needs of society and the learner.

The philosophy incorporates the mission of technology education:

A.1.1 To develop “technological literacy” through experiences in which resources (people, information, tools, and machines, materials, energy, capital, and time) are used to solve problems and to meet human needs and desires.

A.1.2 To provide students with the basic understandings and current skills needed to function effectively in society.

A.1.3 To develop in all students the ability to reason, solve problems, create, construct, and use materials imaginatively.

A.1.4 To enable students to become wise consumers and productive members of the community.

A.1.5 To apply science, mathematics, language arts, social studies, and technological concepts to solve practical problems and extend human capabilities.

The philosophy:

A.1.6 Is consistent with the current state technology education philosophy.

A.1.7 Is consistent with state education goals and school improvement initiatives.

A.1.8 Reflects the State Approved Learner Outcomes (goals) for Technology Education. See *Technology Education – A Maryland Curricular Framework*.

Criterion: A.2 Development – The philosophy is developed by the technology education staff.

The statement of philosophy is:

A.2.1 Developed by the technology education staff using input from students, parents, administrators, supervisory personnel, and community members.

A.2.2 Reviewed periodically and revised when necessary to reflect relevancy of the program.

Criterion: A.3 Dissemination and Utilization – The philosophy is applied to all facets of the technology education program.

The philosophy is:

A.3.1 A statement in printed form, available and distributed to technology education staff, counselors, advisory committee members, appropriate administrators, and other interested persons.

A.3.2 Utilized for program planning, development, and implementation.

A.3.3 Utilized for evaluation of the program.

Section B – Standards-Based Curriculum

Standard: B. The curriculum is standards-based.

Criterion: B.1. The curriculum is based on the standards, objectives and indicators specified in the Maryland Voluntary Curriculum for Technology Education.

B.1.1 The Maryland voluntary state curriculum was used to develop curriculum for the course.

B.1.2 The course covers most, if not all, of the indicators and objectives in the Maryland VSC for the appropriate grade level.

B.1.3 CATTs, Project Lead the Way (PLTW), or other validated curriculum is used.

B.1.4 Valid and reliable assessments are used to measure student performance and achievement.

B.1.5 The appropriate five (5) overarching standards (The Nature of Technology, Impacts of Technology, Engineering Design and Development, The Core Technologies, The Designed World).

Directions: Complete for the appropriate grade level.

Section C – Instructional Program (Grades K-5)

Standard: C. Instructional Program – The instructional program reflects the state and local technology education philosophy.

Criterion: C.1. Instruction/Curriculum – Instruction is based on the learner outcomes for technology education.

Instruction is provided that enables students to:

C.1.1 Express that people have created technology systems to satisfy basic needs and desires.

C.1.2 Identify where technology is used in the school, home, and community.

C.1.3 Express that technology has the potential for both positive and negative impacts.

C.1.4 Identify formal and informal approaches to problem solving.

C.1.5 Identify the relationship between science, mathematics, and technology.

C.1.6 Describe examples of technology's role in shaping history.

C.1.7 Identify technology-related careers.

C.1.8 Express that technology is created by innovative men and women from diverse cultures.

C.1.9 Investigate how things (technology systems) work.

C.1.10 Apply knowledge, tools, and skills to solve practical problems.

Section C – Instructional Program (Grades 6-8)

Standard: C. Instructional Program – The instructional program reflects the state and local technology education philosophy.

Criterion: C.1. Instruction/Curriculum – Instruction is based on the learner outcomes for technology education.

Instruction is provided that enables students to:

C.1.1 Express that people have created technology systems to satisfy basic needs and desires.

C.1.2 Define a technology system as a combination of resources acting together to solve problems.

C.1.3 Identify the human institutions and enterprises that utilize technology including: manufacturing, construction, transportation, communication, health care, agriculture, commerce, law enforcement, education, family and household, etc.

C.1.4 Identify the resources used to create technology systems, which include: people, information, tools and machines, materials, energy, capital, and time.

C.1.5 Express awareness of the “core technologies” – the building blocks of all technology systems. They include mechanical technology, structural technology, fluid technology, electrical technology, electronics technology, optical technology, thermal technology, biotechnology, and materials technology.

C.1.6 Express awareness of the relationships and impacts among technological achievement, the environment, the advancement of science, the individual, and society.

C.1.7 Express awareness of technology-related careers.

C.1.8 Express awareness of the importance of the historical contributions of men and women of different cultures to the advancement of technology.

C.1.9 Apply knowledge and skills in the creation of simple technology systems and processes.

C.1.10 Apply knowledge and skill in the safe use of basic tools, machines, materials, and processes of technology.

C.1.11 Utilize a systems approach when using technology to solve problems.

C.1.12 Employ higher-order thinking skills for solving problems with technology.

C.1.13 Utilize individual ingenuity when using technology to solve problems.

C.1.14 Demonstrate the ability to work as a team member when using technology to solve problems.

C.1.15 Identify personal interests and abilities related to technology-based careers.

Section C – Instructional Program (Grades 9-10)

Standard: C. Instructional Program – The instructional program reflects the state and local technology education philosophy through its curriculum.

Criterion: C.1. Instruction/Curriculum – Instruction is based on the learner outcomes for technology education.

Instruction is provided that enables students to:

C.1.1 Demonstrate knowledge and skills related to the application of technology systems.

C.1.2 Demonstrate knowledge and skills related to the functioning of a variety of technology systems.

C.1.3 Demonstrate knowledge of the nature and characteristics of technology.

C.1.4 Demonstrate knowledge of the relationships and impacts among technological achievement, the environment, the advancement of science, the individual, and society.

C.1.5 Demonstrate knowledge of the evolution of technology.

C.1.6 Utilize a systems approach in solving problems with technology.

C.1.7 Employ higher-order thinking skills for solving problems with technology.

C.1.8 Use collaborative and individual ingenuity for solving problems with technology.

C.1.9 Utilize a variety of resources and processes to solve problems with technology.

C.1.10 Work as a team member in the solution of the problem.

C.1.11 Identify problems resulting from technological achievements.

C.1.12 Utilize resources to develop a knowledge base for making informed decisions about technological issues.

C.1.13 Assess the impact of technology on the individual, society, and the environment.

C.1.14 Make judgments about technological issues.

C.1.15 Create technology for human purposes through the skillful use of technological resources.

C.1.16 Use technology resources in a safe and responsible manner.

C.1.17 Apply mathematical concepts, processes, and skills while solving problems with technology.

C.1.18 Apply scientific concepts, processes, and skills while solving problems with technology.

C.1.19 Utilize communication skills while solving problems with technology.

C.1.20 Apply social studies concepts, processes, and skills to explore and evaluate the impacts of technology.

C.1.21 Identify personal interests and abilities related to technology-based careers.

C.1.22 Investigate educational opportunities and requirements related to technology-based careers.

C.1.23 Investigate career opportunities, trends, and requirements related to technology-based careers.

C.1.24 Identify and demonstrate factors for employability and advancement in technology-based careers.

C.1.25 Perform work tasks representative of those done by engineers.

C.1.26 Perform work tasks representative of those done by technologists.

C.1.27 Perform work tasks representative of those done by technicians.

C.1.28 Perform work tasks representative of those done by craftspersons.

C.1.29 Describes the contributions of men and women of different cultures to the advancement of technology.

C.1.30 Describes the current and future implications of multicultural contributions to the advancement of technology.

Section D – Advisory Committee

Standard: D. Advisory Committee – An advisory committee is organized and has the responsibility for advising and assisting school personnel concerned with the technology education program.

Criterion: D.1. Membership – An advisory committee is representative of the local community.

An advisory committee:

D.1.1 Exists with a minimum of three members, excluding technology education teachers.

D.1.2 Members are selected or recommended by technology education staff and administrators.

D.1.3 Includes representatives of the community, such as students, parents/guardians, business/industry persons, and representatives from community agencies.

Criterion: D.2. Meetings – An advisory committee operates within a planned program of work.

An advisory committee:

D.2.1 Meets formally at least once each year.

D.2.2 Has representatives that meet annually with the school administration to review and discuss concerns of the technology education program.

Criterion: D.3 Roles and Responsibilities – An advisory committee assists technology education staff regarding program improvement.

An advisory committee:

D.3.1 Makes recommendations to the technology education staff concerning new instructional programs and long-range planning.

D.3.2 Makes recommendations to the technology education staff concerning the selection and evaluation of instructional materials and equipment.

D.3.3 Evaluates new courses at the end of the first year and each ongoing course in a timely and periodic manner.

D.3.4 Makes recommendations concerning design, use, and updating of facilities.

D.3.5 Provides resources such as, guest speakers, demonstrations, field trips, and equipment.

Criterion: D.4 Program Promotion – An advisory committee shares responsibility for actively promoting the technology education program.

The advisory committee:

D.4.1 Takes an active role in interpreting and promoting the technology education program to persons and organizations within the community.

D.4.2 Actively supports and promotes the program with the school board and administrators when appropriate.

Section E – Facilities, Equipment, and Materials

Standard: E. Facilities/Equipment/Materials – Adequate and appropriate facilities, space, equipment, supplies, and materials are provided to enable students to achieve the learner outcomes for technology education.

Criterion: E.1. Facilities – The facilities are designed to provide for effective implementation of the technology education program.

E.1.1 Facilities, equipment, and materials support the teaching/learning strategies used.

E.1.2 Adequate space is provided for student and instructor work stations.

E.1.3 Facilities include adequate provisions for exhaust and ventilation, acoustics and illumination.

E.1.4 The appearance and arrangement of the laboratory reflect the mission of the program.

E.1.5 A telephone line is accessible for telecommunications activities.

E.1.6 The facility is accessible to disabled students.

E.1.7 The laboratory includes a classroom seating area.

E.1.8 The laboratory can facilitate small group meetings.

E.1.9 The laboratory includes a design area.

E.1.10 The laboratory includes a research area.

E.1.11 The laboratory includes a modular instructional activity area.

E.1.12 The laboratory includes a dynamic testing area.

E.1.13 The laboratory includes a production/fabrication area.

E.1.14 The laboratory includes teacher office space.

E.1.15 The laboratory includes material storage area.

E.1.16 The laboratory includes project storage area.

E.1.17 The laboratory includes a finishing area.

E.1.18 Illumination is sufficient and well placed.

E.1.19 Temperature, humidity, and air movement are within comfort limits.

E.1.20 Ventilation is adequate.

E.1.21 Cleanliness and sanitation are evident throughout the laboratory.

Criterion: E.2. Safety – Facilities, equipment, and materials meet safety standards.

E.2.1 Ample space is provided for machines and other equipment.

E.2.2 Work tables are secured to the floor and table tops are secured to legs or bases.

E.2.3 Permanently placed machines are fastened to the floor or bench.

E.2.4 Safety zones are clearly marked around each piece of equipment.

E.2.5 Safety posters are posted at each piece of fixed equipment.

E.2.6 Approved eye protection equipment is worn by each person who enters a laboratory where material is being formed or separated.

E.2.7 Eye protection equipment is properly maintained.

E.2.8 Face shields are worn when working with hot metal or power-driven machines.

E.2.9 Machine guards are utilized.

Criterion: E.3 Instructional Materials – Adequate instructional materials are provided to meet program goals.

E.3.1 Instructional materials are adequate to support current technology education teaching/learning strategies.

E.3.2 Audiovisual resources are relevant and readily available.

E.3.3 There is an ongoing review of instructional materials.

Section F – Administration and Supervision

Standard: F. Administration/Supervision – The administrative/supervisory staff has the responsibility to assist in management, evaluation, and promotion of the technology education program.

Criterion: F.1. Management – The administrative/supervisory staff manages the technology education program.

School-based administrative/supervisory personnel:

F.1.1 Organizes and utilizes a technology education advisory committee.

F.1.2 Manages the financial aspects of the technology education program.

F.1.3 Assists in planning facilities and makes recommendations for purchase and maintenance of equipment.

Central office-based administrative/supervisory personnel:

F.1.4 Directs long-range planning for the technology education program.

F.1.5 Assists in planning facilities and makes recommendations for purchase and maintenance of equipment.

F.1.6 Makes recommendations concerning staffing.

F.1.7 Manages the planning, implementation, and evaluation of in-service education programs for technology education.

Criterion: F.2 Evaluation – The administrative/supervisory staff has responsibility for directing evaluation activities.

Central office based and school based administrative/supervisory personnel:

F.2.1 Participated in the evaluation of the technology education program.

F.2.2 Utilize the results of evaluations to improve the technology education program.

Criterion: F.3 Promotion – The administrative/supervisory personnel promotes technology education by establishing a comprehensive public relations program.

Administrative/supervisory personnel:

F.3.1 Utilizes a variety to techniques to promote the technology education program, i.e., brochures, open-house.

F.3.2 Promotes technology education programs to persons in various educational settings, i.e., counselors.

F.3.3 Promotes the technology education program to persons in the community utilizing newspaper articles, exhibits, etc.

Section G – Instructional Staff

Standard: G. Instructional Staff – The instructional staff exhibits professionalism, is qualified, and assumes responsibility for conducting the instructional program.

Criterion: G. 1. Education/Certification – The instructional staff has the educational preparation necessary to conduct the instructional program.

Technology education teachers have:

G.1.1 A baccalaureate degree.

G.1.2 Certification in Technology Education. (Middle and High School Teachers)

G.1.3 A continuing professional development plan that includes appropriate baccalaureate and graduate programs.

G.1.4 Preparation in the philosophy of technology education.

G.1.5 Educational preparation in planning and implementing the curriculum.

G.1.6 Educational preparation in student assessment techniques.

G.1.7 Educational preparation to establish and utilize procedures that create a safe and positive learning environment.

G.1.8 Educational preparation to work with all population types.

G.1.9 Educational preparation to address current and future trends in technology education.

G.1.10 Educational preparation for integrating science, mathematics, language arts, social studies, and technological concepts into the program.

Technology education teachers:

G.1.11 Participate in professional organizations.

G.1.12 Contribute to staff development efforts.

Criterion: G.2. Instruction – The instructional staff facilitates learning through instructional activities.

The instructional staff:

G.2.1 Assumes responsibility for planning, organizing, and conducting instruction.

G.2.2 Assists in developing and revising the program curriculum, based upon local and state curriculum guides and policies.

G.2.3 Maintains a comprehensive list of community resources that may be used in the delivery of the program. (i.e., field trips, community service projects, speakers, and community agencies.)

Criterion: G.3. Management – The instructional staff manages the instructional program.

The instructional staff:

G.3.1 Maintains organized records and reports.

G.3.2 Makes and prioritizes recommendations for the purchase of material and equipment.

G.3.3 Assesses needs for supplies, materials, and equipment.

G.3.4 Establishes a classroom management system that promotes a safe and positive learning environment.

Criterion: G.4. Evaluation – The instructional staff assumes responsibility for evaluating the technology education program.

The instructional staff:

G.4.1 Conducts a formal self-evaluation of professional performance utilizing local and state technology education standards and other criteria.

G.4.2 Conducts an ongoing informal evaluation of the technology education program.