

Biotechnology

Participants (three teams per state) conduct research on a contemporary biotechnology issue of their choosing, document their research, and create a display. The information gathered may be student-performed research or a re-creation or simulation of research performed by the scientific community. If appropriate, a model or prototype depicting some aspect of the issue may be included in the display. Semifinalist teams make a presentation and are interviewed about their topic.

CAD Foundations

Participants (two individuals per state) have the opportunity to demonstrate their understanding of CAD fundamentals as they create a two-dimensional graphic representation of an engineering part or object.

Career Prep

Participants (one individual per chapter) conduct research on a selected technology-related career and use the knowledge gained to prepare a letter of introduction and a chronological skills resume. Semifinalists participate in a mock interview.

Catapult Design

Participants (three teams of up to four individuals per state) design and produce a working catapult that is adjustable and propels hollow plastic golf balls at a scoring target.

Challenging Technology Issues

Participants (three teams of two individuals per state) prepare and deliver an extemporaneous, debate-style presentation with team members explaining opposing views of a current technology issue that is randomly selected on site.

Chapter Team

Participants (one team of six individuals per chapter) take a written parliamentary procedures test to qualify for the semifinalist level of competition. Semifinalist teams perform an opening ceremony, dispose of three items of business, and close the ceremony within a specified time period.

Children's Stories

Participants (one team per chapter; a team of one individual is permitted) create an illustrated children's story that will incorporate educational and social values. The story must revolve around the theme for a given year that is posted on the TSA website.

Community Service Video

Participants (one team per chapter; entries may be submitted by an individual or group) create and submit a video that depicts the local TSA chapter's service with the American Cancer Society, national TSA's community service partner.

Construction Challenge

Participants (one team per chapter) submit a scale model/prototype with a portfolio that documents the use of their leadership and technical skills to fulfill an identified community need related to construction. Semifinalists discuss their projects in a presentation and an interview.

Digital Photography

Participants (three individuals per state) produce an album of color or black and white digital photographs (representing or relating to a chosen theme) and place the album on a storage device for submission. Semifinalists produce a series of digital photographs taken at the conference that are edited appropriately for an on-site task.

Dragster

Participants (two individuals per chapter; one entry per individual) design and produce a CO₂-powered dragster according to stated specifications, using only specified materials.

Electrical Applications

Participants (two individuals per chapter) take a written test of basic electrical and electronic theory. Semifinalists assemble a specific circuit from a schematic diagram using a provided kit, make required electrical measurements, and explain their solution during an interview.

Environmental Engineering

Participants (one team per chapter) conduct research on a posted environmental engineering topic, document their research, and develop a multimedia presentation on the topic. Semifinalists participate in a presentation and will be interviewed.

Essays on Technology

Participants (three individuals per state) conduct research on specified subtopics of a broader technological area and, using the knowledge and resources gained through that research, write a comprehensive essay on one subtopic that is designated on site.

Flight

Participants (two individuals per chapter, one entry each) study the principles of flight and design in order to fabricate a glider that stays in flight for the greatest elapsed time. Flight duration of the gliders and documentation of the design process are the primary elements of evaluation.

Forensic Technology

Participants (one team of two individuals per chapter) take a written test of basic forensic science theory to qualify as semifinalists. Semifinalists demonstrate their ability to use forensic technology and skills by collecting evidence from – and analyzing – a mock crime scene.

Geospatial Technology

Participants (one team of two to five members per chapter) explore and gain an understanding of how geospatial data and related technology are used to prepare a profile of a geographic area of interest. Semifinalists create a presentation for an on-site problem.

Inventions and Innovations

Participants (one team of at least three individuals per chapter; one entry per team) investigate and determine the need for an invention or innovation of a device, system, or process, and then brainstorm ideas for a possible solution. Semifinalists make an oral presentation to a panel of judges (who act as venture capitalist investors) to persuade the panel to invest in their invention/innovation.

Junior Solar Sprint

Participants (one team per chapter, one entry per team) apply STEM concepts, creativity, teamwork, and problem-solving skills as they design, construct, and race a solar-powered model car.

Leadership Strategies

Participants (one team of three individuals per chapter) demonstrate leadership and team skills by preparing a presentation based on a selected challenge the officers of a TSA chapter might encounter.

Mass Production

Participants (one team of at least two individuals) manufacture a marketable product related to the current year's theme. The team submits a documentation portfolio of the activities involved and three identical products made during the manufacturing process.

Medical Technology

Participants (three teams of at least two individuals per state; one entry per team) conduct research on a contemporary medical technology issue of their choosing, document their research, and create a display. If appropriate, a model or prototype depicting an aspect of the issue may be included in the display. Semifinalists give a presentation.

Microcontroller Design

Participants (one team of three to five individuals per chapter) develop a working digital device with real-world applications. Through a multimedia presentation, product demonstration, and documentation, the team demonstrates in detail its knowledge of microcontroller programming, simple circuitry, product design, and marketing.

Prepared Speech

Participants (one individual per chapter) deliver a speech that reflects the theme of the current year's national conference.

Problem Solving

Participants (one team of two individuals per chapter) use problem solving skills to develop a finite solution to a problem provided on site.

Promotional Marketing

Participants (one individual per chapter, one entry per individual) design a three-part TSA Marketing Toolkit that must include a national conference promotional poster, a state delegation fact sheet, and a chapter t-shirt design. Semifinalists develop a solution to a problem provided on site.

STEM Animation

Participants (three teams per state, one entry per team) use computer graphics tools and design processes to communicate, inform, analyze, and/or illustrate a STEM topic, idea, subject, or concept. Semifinalists give a presentation.

Structural Engineering

Participants (one team of two individuals per chapter) apply the principles of structural design and engineering through basic research, design, construction, and destructive testing to determine the design efficiency of a structure. Semifinalists participate in an on-site problem.

System Control Technology

Participants (one team of three individuals per state, one entry per team) develop a computer-controlled model solution to a problem provided on site; typically, the problem is one from an industrial setting.

Tech Bowl

Participants (one team of three individuals per chapter) take a written objective examination to qualify for the oral question/response, head-to-head team competition phase of the event.

Technical Design

Participants (one team of two individuals per chapter) demonstrate their ability to use the technical design process to solve an engineering design problem.

Video Game Design

Participants (one team of two to six individuals per chapter) develop, build, and launch an E-rated game that focuses on the subject of their choice. The game should be interesting, exciting, visually appealing, and intellectually challenging. The game and all required documentation will be evaluated pre-conference. Semifinalists participate in an on-site conference interview.

Website Design

Participants (one team of three to six individuals per chapter, one entry per team) design, build, and launch a website that features the team's ability to incorporate the elements of

website design, graphic layout, and proper coding techniques. Semifinalists participate in an on-site conference interview.