

MEDICAL TECHNOLOGY



OVERVIEW

Applying leadership and 21st century skills, participants conduct research on a contemporary medical technology issue, related to the current year's theme, noted on the [TSA website](#) under *Themes & Problems*, and present their research through a static display and multimedia video. The entry may include student research, or a re-creation or simulation of research performed by the scientific community. A student-designed informational pamphlet will also be included as part of the display. Semifinalist teams participate in an on-site interview.

ELIGIBILITY

Three (3) teams per state; a minimum of two (2) members and a maximum of three (3) members per team.

TIME LIMITS

Five (5) minutes are allowed for the semifinal interview broken down as follows:

- A. One (1) minute for set-up
- B. Four (4) minutes to respond to questions from judges.

ATTIRE

TSA competition attire is required.

PROCEDURE

PRE-CONFERENCE

- A. Participants review the TSA Honor Statement for Competitive Events found in the General Rules and listed in the individual competitive event rules.
- B. Participants access the annual theme posted on the [TSA website](#) under *Themes & Problems*.
- C. Participants research the issue using credible sources.
- D. Participants prepare their multimedia video, display, and informational pamphlet according to the regulations.

PRELIMINARY ROUND

- A. No more than two (2) team representatives report at the time and place stated in the conference program to check in the display and the informational pamphlet.
- B. Entries are evaluated by the judges with neither students nor advisors present based on the following criteria:
 1. Judges score the static display criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.
 2. Judges score the informational pamphlet and multimedia video criteria of those top twenty-four (24) contestants to determine the top twelve (12) semifinalists.
- C. A list of twelve (12) semifinalist teams (in random order) is posted.

SEMIFINAL ROUND

- A. One (1) team representative reports at the time and place stated in the conference program to sign-up for an interview time.
- B. Up to three (3) team representatives report at least ten (10) minutes prior to their assigned time to the designated place for their interview.
- C. Semifinalist team representatives participate in the on-site interview.
- D. Team representatives pick-up their entry from the display area at the time and place stated in the conference program.
- E. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.



PRE-CONFERENCE

A. Students must understand the fundamental concepts and principles of the contemporary issue and medical technology they research. Research about the issue should focus on significant impacts (opportunities and risks) on the environment, economy, and society, as well as any important ethical considerations.

B. Display Guidelines:

1. The size of the display may not exceed 15" deep x 30" wide x 48" high.
2. The display should include information about the disease, condition, or problem addressed by the medical technology. Participants should prepare the display as if they were delivering a presentation on the particular issue at a medical conference. Information about the solution/medical technology should be reserved for the informational pamphlet and multimedia video.
3. Supporting materials, such as research, references, and resources, should be exhibited in a creative and effective manner on a stand-alone display and should include at a minimum:
 - a. Team identification number
 - b. Overview of the issue researched, including its prevalence in the United States, how it is diagnosed, and the science behind the disease state or condition.
 - c. Societal impact of the problem, including economic, social, environmental, and ethical considerations
 - d. Supporting information such as logs, graphs, sketches, drawings, illustrations, and photographs
 - e. The display must incorporate the use of design principles. Participants highlight the display with creative visual elements (e.g., photos, titles) to actively engage the audience. Participants may use images “labeled for “re-use,” but must properly cite the source.

- f. Copyright: Citation of all ideas, fonts, and images from sources other than the designer, and/or that are copyrighted (most fonts and images found on the web are copyrighted material unless purchased or offered as free-domain) and MUST be included on the back of the display. Clip art must be documented.
- g. Photo/Film/Video Consent and Release Forms. If the entry contains images of people (minors require parental consent), proof of consent must be included for each person and included on the back of the display (see 2026 & 2027 Forms Appendix).
4. A/C electricity may not be used.
5. If the display requires power, they must be powered by dry-cell batteries or photo-voltaic cells.
 - a. The power supply must physically fit within the display dimensions.
 - b. All power must be switched off once the team has completed set-up.
 - c. If teams want judges to activate any electronic device in their model/prototype/display, complete instructions must be provided to judges on how to power up the model/display.

C. Informational Pamphlet

1. Participants must create an informational pamphlet detailing the medical technology solution chosen
2. Physicians often give pamphlets to patients and their families as a means to disperse more information about a suggested treatment or procedure. Participants should design their informational pamphlet to be used in this setting.
3. The pamphlet should be folded and composed of one (1) sheet of paper not to exceed the size 8.5" x 11".

- 4. The pamphlet should include information about the chosen medical technology/solution, including how it works, its cost, its availability, and its overall impact on society.
- 5. A QR code linking the multimedia video should be included somewhere on the pamphlet. Judges should be able to scan the QR code with a smartphone.
- 6. Resources used by participants in the informational pamphlet must be cited using the same guidelines outlined for the display and included on the citation list adhered to the back of the display.

D. Multimedia Video

- 1. The participants should describe the medical technology/solution in the multimedia video as if they were describing it to a patient, who is considering this technology, or their family.
- 2. The video should include what to expect if the patient moves forward with the procedure/technology/solution, including associated risks, and any other treatment that will be required to supplement the technology.
- 3. Teams must demonstrate strong science communication skills by delivering the information in an accessible manner so that a general audience could understand it.
- 4. The length of the video should be no less than two (2) minutes and not exceed four (4) minutes.
- 5. Teams may use any editing software of their choosing along with features such as sounds and effects the software offers. The software and any effects/sounds/graphics used not belonging to the team must be appropriately cited according to procedures outlined for the display and included in the citation list adhered to the back of the display.
- 6. The multimedia video should be linked to a QR code, which should be included in the informational pamphlet.
- 7. The multimedia video accessed using the QR code cannot require any authorization, download, or password to view. If required, the multimedia video will not be judged. Tier 2 will not be judged without the video component.

- E. Once the display set-up time frame has closed, participants may not re-enter the event area.
- F. Violation of the following will result in disqualification:
 - 1. No liquids, viruses, live plants, or animals may be used as a part of the display.
 - 2. No harmful or illegal substances may be displayed.

SEMIFINAL ROUND

- A. The interview is limited to three (3) team representatives. Each member should be an active participant in the interview.
- B. Representatives may reference their display and informational pamphlet during the interview.
- C. Time limits:
 - 1. One (1) minute for set-up
 - 2. Four (4) minutes to respond to questions from judges
 - 3. A five-(5) point deduction will be incurred for any time infraction.

EVALUATION

PRELIMINARY ROUND

Tier 1

- A. The display

Tier 2

- B. The informational pamphlet/multimedia video

SEMIFINAL ROUND

- A. The interview

Refer to the official rating form for more information.

TSA HONOR STATEMENT

All work must be created and completed by individual competitors or teams. Plagiarism, the use of Generative Artificial Intelligence (GenAI) software, copyright violation, cheating, and falsification of information are prohibited. Participants may NOT use any generative artificial intelligence (GenAI) tools (e.g. ChatGPT, Google Gemini, GitHub Copilot, etc.). Any attempt to gain an unfair advantage will not be tolerated. Competitors at any level of TSA competition understand and agree to abide by the TSA Honor Statement.

If it is determined that a student violated the TSA Honor Statement, a rules violation of twenty percent (20%) will be incurred.

STEM INTEGRATION

This event has connections to the STEM areas of Science, Technology, Engineering, and Mathematics.

LEADERSHIP AND 21ST CENTURY SKILLS

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to – Communication, Collaboration/Social Skills, Initiative, Problem Solving/Risk Taking, Critical Thinking, Perseverance/Grit, Creativity, Relationship Building/Teamwork, Dependability/Integrity, and Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Dietitian
- Doctor
- Medical technologist
- Nurse
- Pharmacist
- Prosthetics practitioner

MEDICAL TECHNOLOGY

2026 & 2027 OFFICIAL RATING FORM

MIDDLE SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

TIER 1 – Display is present
 TIER 2 – Informational pamphlet is present and video is accessible through QR code
 ENTRY NOT EVALUATED

TIER 1 – DISPLAY (80 points)			
CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
Explanation of Impacts (X2)	Explanation is missing a discussion of the issue's relevance to environmental, economic, social, and/or ethical considerations.	Explanation addresses some of the issue's relevance to environmental, economic, social, and/or ethical considerations.	Explanation includes a full discussion of the issue's relevance to environmental, economic, social, and/or ethical considerations.
Supporting Information (X1)	Supporting information does not help to clarify the issue and/or it is of little significance to the issue.	Supporting information is somewhat appropriate and helps provide some clarity to the issue.	Supporting information is highly effective and of excellent quality.
Research, References, and Resources (X1)	Research is inadequate, and/or very few credible sources are referenced.	Research is conducted appropriately, with some adequate credible sources.	A comprehensive research base that includes credible sources is evident.
Communication of Issue (X2)	It is difficult to understand the issue being communicated; an illogical explanation is presented.	The issue is communicated and thoughts are somewhat organized.	The issue is communicated in an organized, clear, and concise manner.
Creativity (X1)	The display lacks creativity; no, or very few, design principles are integrated in the display.	Some elements of creativity exist in the display, and essential design principles are generally evident.	The display exudes creativity; essential design principles and elements are well integrated.
Aesthetics and Artisanship (X1)	Work is unorganized and sloppy; display seems to be an afterthought or thrown together.	Display generally depicts the issue.	Display is exemplary in logically communicating the issue.
TIER 1 – DISPLAY SUBTOTAL (80 points)			

Record scores in the column spaces below.

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: _____

TIER 1 – SUBTOTAL (80 points)

MEDICAL TECHNOLOGY

TIER 2 – INFORMATIONAL PAMPHLET (40 points)			
CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
Informational Pamphlet (X1)	Informational pamphlet is present but not complete, or is lacking in overall quality.	Informational pamphlet is good quality but missing detail(s) to adequately portray the project's focus.	Exemplary informational pamphlet is present and shows great detail in portraying the project's focus.
Communication of Solution (X1)	It is difficult to understand the solution/technology being communicated; an illogical explanation is presented.	The solution/technology is communicated and thoughts are somewhat organized.	The solution/technology is communicated in an organized, clear, and concise manner.
Creativity and Originality (X1)	There is little original thought or creativity in the information presented and how it is arranged.	The pamphlet demonstrates some original thought and creativity in the information that is presented and how it is arranged.	Originality and creativity are at the forefront of the pamphlet, both in content and style.
Aesthetics and Artisanship (X1)	Work is sloppy; informational pamphlet seems to be an afterthought or thrown together.	Informational pamphlet utilizes good design techniques for a visually appealing and somewhat informational resource.	Informational pamphlet uses exceptional design principles to produce a resource that is both visually appealing and informational.
TIER 2 – INFORMATIONAL PAMPHLET SUBTOTAL (40 points)			

Record scores in the column spaces below.

TIER 2 – MULTIMEDIA VIDEO (40 points)			
CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
Audio (X1)	The audio quality is poor, a result of primary use of the on-camera microphone for recording.	The audio quality is clear and reflects an appropriate use of microphones and audio techniques.	The audio quality is excellent, with use of additional audio clips/cues that enhance the video production.
Continuity and Pacing (X1)	The sequencing of the multimedia video is confusing or incomprehensible; transitions are distracting from the flow of the multimedia video.	The pace and timing are generally structured; there is a good use of transitions, allowing for an adequate flow of the multimedia video.	The pace and timing are exceptional; transitions provide a seamless flow for the multimedia video and give directionality to the work.
Lighting (X1)	The video reflects poor ambient lighting choices and/or the use of heavy backlighting.	The video reflects adequate lighting on subjects and the proper use of lighting techniques.	The video reflects and excellent use of lighting, which contributes to the effectiveness of the multimedia video.
Video Effectiveness (X1)	The work does not meet the project goals, has an unclear message, and reflects sloppy work.	The topic is presented with some insight, and the video meets most project goals.	The video is focused, with a clear message and a rich variety of supporting material.
TIER 2 – MULTIMEDIA VIDEO SUBTOTAL (40 points)			

Record scores in the column spaces below.

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.	
Indicate the rule violated: _____	

Record scores in the column spaces below.

PRELIMINARY SUBTOTAL (160 points)

SEMIFINAL INTERVIEW (40 points)			
CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
Knowledge (X1)	Participants seem to have little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit a basic understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of the project.
Articulation (X1)	Communication of the solution is unclear, unorganized, and/or illogical; leadership and/or 21 st century skills are not evident.	Communication of the solution is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the solution is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.
Team Participation (X1)	Majority of the interview is made by one member of the team; the partners may be disengaged from the presentation.	Team members generally are engaged in the interview, though one member may take on more responsibility than the other(s).	All team members are actively involved in the interview; there is shared responsibility among team members.
Delivery (X1)	The team is verbose and/or uncertain in its interview; participants' posture, gestures, and lack of eye contact diminish the presentation.	The team is somewhat well-spoken and clear in its interview; participants' posture, gestures, and eye contact are acceptable in the presentation.	The team is well-spoken and distinct in its interview; participants' posture, gestures, and eye contact result in a polished, natural, and effective presentation.

SEMIFINAL INTERVIEW SUBTOTAL (40 points)

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: _____

TIME DEDUCTIONS

A five-(5) point deduction will be incurred for any time infraction.

SEMIFINAL SUBTOTAL (40 points)

To arrive at the **TOTAL** score, add any subtotals and subtract rules violation points, as necessary. **TOTAL (200 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

JUDGE

Printed name: _____ Signature: _____

Record scores
in the column
spaces below.

MEDICAL TECHNOLOGY

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator, one (1)
- B. Judges:
 1. Preliminary round, two (2) or more
 2. Semifinal round, two (2) or more
- C. Assistants for check-in, two (2)

MATERIALS

- A. Coordinator's packet, containing:
 1. Event guidelines, one (1) for the coordinator and for each judge
 2. TSA Event Coordinator Report
 3. Stick-on labels for identifying entries
- B. Display tables for entries
- C. Table and chairs for team presentations, as needed
- D. Stopwatch
- E. Measuring tape
- F. Table and chairs for event coordinator and judges

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- E. At least one (1) hour before the event is scheduled to begin, meet with judges and assistants to review time limits, procedures, regulations, evaluation, and all other details related to the event. If questions arise that cannot be answered, speak to the event manager before the event begins.
- F. Ensure the judges have access to the online judging system.

PRELIMINARY ROUND

- A. Check in the entries at the time stated in the conference program.
- B. No more than two (2) team representatives set up and check in:
 1. The display
 2. The informational pamphlet
- C. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
- D. In order to compete, participants must be on the entry list or must have approval of the CRC.
- E. Each entry must include the team's identification number in the upper right-hand corner of the display and somewhere visible on the informational pamphlet.

PRELIMINARY ROUND

- A. Independently score the display, the informational pamphlet, and the multimedia video.
- B. Judges independently review the entries based on the following criteria:

Tier 1

Judges score the display criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.

Tier 2

Judges score the Informational Pamphlet/Multimedia Video criteria of those top twenty-four (24) contestants to determine the top twelve (12) semifinalist teams.

- C. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and the CRC manager to determine either:
 1. To deduct twenty percent (20%) of the total possible points in this round
 2. To disqualify the entry
- D. Create a sign-up sheet for semifinalist interviews.

SEMIFINAL ROUND

- A. Prepare a list of five to ten (5-10) standard interview questions to be asked of all participants.
- B. Semifinalists report to sign-up for the interview at the time and place stated in the conference program.
- C. Check in semifinalists and confirm with the teams their order of interview and the procedure. Team representatives should report at least ten (10) minutes prior to their assigned time to the designated place for their interview.
- D. Manage the interviews.
- E. Discuss rule violations and have all relevant parties initial the rating form.
- F. Judges independently assess the semifinal interview.
- G. If necessary, manage security and the removal of materials from the event area.