

## Correlation of Standard 9.4 to Activities Conducted at State and National TSA Conferences

The Technology Student Association (TSA) is the only career and technical student organization dedicated exclusively to students enrolled in technology education and pre-engineering classes. Nationally TSA serves more than 150,000 students. Approximately 13,000 New Jersey students participate in TSA activities. This document identifies connections between 9.4 standards from the STEM strand and activities conducted at the New Jersey TSA leadership conference, the annual state TSA conference and the annual national TSA conference.

### Standard 9.4 Career and Technical Education

All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.

A complete list of the 9.4 Standards, content areas and Cumulative Progress Indicators (CPI's) for Strand O. Science, Technology, Engineering & Mathematics Career Cluster as well as Pathway (1) Engineering & Technology and Pathway (2) Science & Mathematics can be found at:

<http://www.state.nj.us/education/cccs/standards/9/9-4.htm>

#### I. Pre-conference Preparation

TSA members spend weeks and sometimes months preparing for the state and national conferences. As the students prepare for competitive events and related activities they are engaged in a wide range of individual and team activities that address many New Jersey Core Curriculum Content Standards. Content areas and Cumulative Progress Indicators (CPI's) typically addressed during pre-conference preparations are listed below.

<b>Academic Foundations</b>	
Academic concepts lay the foundation for the full range of career and postsecondary education opportunities within the career cluster.	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.1	Demonstrate language arts knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
9.4.12.O.2	Demonstrate mathematics knowledge and skills required to pursue the full range of postsecondary education and career opportunities.

9.4.12.O.3	Demonstrate science knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
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<b>Pathway (1) Engineering &amp; Technology</b>	
<b>CPI #</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(1).1	Apply the concepts, processes, guiding principles, and standards of school mathematics to solve science, technology, engineering, and mathematics problems.
9.4.12.O.(1).5	Explain relevant physical properties of materials used in engineering and technology.
9.4.12.O.(1).6	Explain relationships among specific scientific theories, principles, and laws that apply to technology and engineering.

<b>Pathway (2) Science &amp; Mathematics</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(2).1	Develop an understanding of how science and mathematics function to provide results, answers, and algorithms for engineering activities to solve problems and issues in the real world.
9.4.12.O.(2).2	Apply science and mathematics when developing plans, processes, and projects to find solutions to real world problems.
9.4.12.O.(2).3	Assess the impact that science and mathematics have on society when used to develop projects or products.

<b>Communication Skills</b>
All clusters rely on effective oral and written communication strategies for creating, expressing and interesting information and ideas that incorporate technical terminology and information.

<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.4	Select and employ appropriate reading and communication strategies to learn and use technical concepts and vocabulary in practice.
9.4.12.O.5	Demonstrate use of the concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.
9.4.12.O.6	Locate, organize, and reference written information from various sources to communicate with others.
9.4.12.O.7	Evaluate and use information resources to accomplish specific occupational tasks.
9.4.12.O.8	Use correct grammar, punctuation, and terminology to write and edit documents.
9.4.12.O.9	Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences.
9.4.12.O.10	Interpret verbal and nonverbal cues/behaviors to enhance communication.
9.4.12.O.11	Apply active listening skills to obtain and clarify information.
9.4.12.O.12	Develop and interpret tables, charts, and figures to support written and oral communications.
9.4.12.O.13	Listen to and speak with diverse individuals to enhance communication skills.
9.4.12.O.14	Exhibit public relations skills in order to increase internal and external customer satisfaction.
9.4.12.O.15	Prepare science, technology, engineering, and mathematics material in oral, written, or visual formats to provide information to an intended audience and to fulfill the specific communication needs of that audience.
9.4.12.O.16	Apply active listening skills to obtain or clarify information pertaining to plans, processes, projects, or designs.

<b>Problem-Solving and Critical Thinking</b>	
Critical and creative thinking strategies facilitate innovation and problem-solving independently and in teams.	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.17	Employ critical thinking skills (e.g., analyze, synthesize, and evaluate) independently and in teams to solve problems and make decisions.
9.4.12.O.18	Employ critical thinking and interpersonal skills to resolve conflicts.
9.4.12.O.19	Identify, write, and monitor performance goals to guide progress in assigned areas of responsibility and accountability.
9.4.O.20	Conduct technical research to gather information necessary for decision-making.
9.4.12.O.21	Effectively develop and apply the skills inherent in systems engineering in which requirements, configuration, integration, project management, quality assurance, and process applications are necessary.

<b>Pathway (1) Engineering &amp; Technology</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(1)7	Use mathematics, science, and technology concepts and processes to solve problems in projects involving design and/or production (e.g., medical, agricultural, biotechnological, energy and power, information and communication, transportation, manufacturing, and construction).

<b>Pathway (2) Science &amp; Mathematics</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(2).4	Use scientific and mathematical problem-solving skills and abilities to develop realistic solutions to assigned projects, and illustrate how science and

	mathematics impact problem-solving in modern society.
9.4.12.O.(2).5	Demonstrate critical thinking abilities and skills needed to review information, to explain statistical analyses, and to translate, interpret, and summarize research and statistical data collected and analyzed as the result of an investigation.

<b>Information Technology Applications</b>	
Technology is used to access, manage, integrate and disseminate information.	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O22	Employ technological tools to expedite workflow.
9.4.12.O23	Operate electronic mail applications to communicate.
9.4.12.O.24	Operate Internet applications to perform tasks.
9.4.12.O.25	Operate writing and publishing applications to prepare communications.
9.4.12.O.26	Operate presentation applications to prepare and deliver presentations.
9.4.12.O.27	Employ spreadsheet applications to organize and manipulate data.
9.4.12.O.28	Employ database applications to manage data.
9.4.12.O.29	Employ collaborative/groupware applications to facilitate group work.
9.4.12.O.30	Employ computer operations applications to manage tasks
9.4.12.O.31	Use computer-based equipment (containing embedded computers or processors) to control devices.
9.4.12.O.32	Effectively use information technology to gather, store, and communicate data in appropriate formats.
9.4.12.O.33	Evaluate and demonstrate skill with a range of technological tools designed to manipulate, report, or operate with data acquisition.

<b>Pathway (1) Engineering &amp; Technology</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(1).8	Select and use a range of communications technologies, including word processing, spreadsheet, database, presentation, email, and Internet applications, to locate and display information.

<b>Systems</b>	
<p>Roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment impact business operations.</p> <p>Key organizational systems impact organizational performance and the quality of products and services.</p> <p>Understanding the global context of 21<sup>st</sup>-century industries and careers impacts business operations.</p>	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.35	Describe and use quality control systems and practices to ensure quality products and services.
9.4.12.O.36	Examine and summarize roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment to understand the nature and scope of organizations in this cluster.

<b>Safety, Health, and Environment</b>	
<p>Implementation of health, safety and environmental management systems and organizational policies and procedures impacts organizational performance, regulatory compliance, and continuous improvement.</p>	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>

9.4.12.O.38	Demonstrate knowledge of personal and jobsite safety rules and regulations to maintain safe and healthful working conditions and environments.
9.4.12.O.40	Identify emergency procedures that are necessary to provide aid in workplace accidents.
9.4.12.O.44	Apply appropriate safety practices in environments in this cluster to ensure a safe workplace.
9.4.12.O.45	Develop an awareness of safety, health, and environmental hazards inherent in this cluster and apply appropriate precautions when solving problems, developing plans, implementing processes, or completing projects to proactively promote safety.

<b>Leadership and Teamwork</b>	
Effective leadership and teamwork strategies foster collaboration and cooperation between business units, business partners, and business associates toward the accomplishment of organizational goals.	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.46	Employ leadership skills to accomplish goals and objectives.
9.4.12.O.47	Employ organizational skills to foster positive working relationships and accomplish organizational goals.
9.4.12.O.48	Employ teamwork skills to achieve collective goals and use team members' talents effectively.
9.4.12.49	Establish and maintain effective relationships in order to accomplish objectives and tasks.
9.4.12.O.50	Conduct and participate in meetings to accomplish tasks.
9.4.12.O.51	Employ mentoring skills to assist others.

**Ethics and Legal Responsibilities**

Legal responsibilities, professional ethics, and codes of conduct affect management practices, business performance and regulatory compliance, as well as the confidence of customers, business partners and investors.

**Strand O. STEM Career Cluster**

<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.52	Apply ethical reasoning to a variety of situations in order to make ethical decisions.
9.4.12.O.54	Demonstrate workplace ethics specific to occupations in this cluster in order to reflect effective stewardship of resources.
9.4.12.O.55	Identify and demonstrate positive work behaviors and personal qualities needed to succeed.
9.4.12.O.56	Develop a Personalized Student Learning Plan to meet career goals and objectives.
9.4.12.O.57	Demonstrate skills related to seeking and applying for employment in a desired job.
9.4.12.O.58	Maintain a career portfolio to document knowledge, skills, and experience in a career field.
9.4.12.O.59	Demonstrate skills in evaluating and comparing employment opportunities in order to accept employment positions that match career goals.
9.4.12.O.60	Identify and exhibit traits for retaining employment.
9.4.12.O.61	Identify and explore careers in one or more career pathways to build an understanding of the opportunities available in the cluster.
9.4.12.O.62	Examine requirements for career advancement to plan for continuing education and training.
9.4.12.O.63	Research professional development opportunities needed to keep current on relevant trends and information within the cluster.
9.4.12.O.64	Examine licensing, certification, and credentialing requirements at the national, state, and local levels to maintain compliance with industry requirements.
9.4.12.O.65	Examine employment opportunities in entrepreneurship as an option for career



	planning.
9.4.12.O.66	Select, research, and examine critical aspects of career opportunities in one or more pathways to gain an understanding of the breadth of occupations within this cluster.

<b>Employability and Career Development</b>	
Employability skills and career and entrepreneurship opportunities build the capacity for successful careers in a global economy.	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.55	Identify and demonstrate positive work behaviors and personal qualities needed to succeed.
9.4.12.O.61	Identify and explore careers in one or more career pathways to build an understanding of the opportunities available in the cluster.
9.4.12.O.65	Examine employment opportunities in entrepreneurship as an option for career planning.
9.4.12.O.66	Select, research, and examine critical aspects of career opportunities in one or more pathways to gain an understanding of the breadth of occupations within this cluster.

<b>Technical Skills</b>	
Technical knowledge and skills play a role in all careers within the cluster and pathway.	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.67	Employ information management techniques and strategies to assist in decision-making.

9.4.12.O.68	Employ planning and time management skills and tools to enhance results and complete work tasks.
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<b>Pathway (1) Engineering &amp; Technology</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(1).9	Employ concepts and processes for the application of technology to engineering.
9.4.12.O.(1).10	Model technical competence by developing processes and concepts for using different technologies.
9.4.12.O.(1).11	Demonstrate understanding of processes and concepts that are key to understanding the design process.
9.4.12.O.(1).12	Model technical competence by developing and applying processes and concepts in the design process.

<b>Pathway (2) Science &amp; Mathematics</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(2).6	Demonstrate the knowledge and technical skills needed to obtain and succeed in a chosen scientific and mathematical field.

## II. Leadership Development

The mission of TSA is to prepare students for the challenges of a dynamic world by promoting technological literacy, leadership, and problem solving resulting in personal growth and opportunity. TSA provides students with the opportunity to develop leadership and problem solving skills through various avenues including student competitions and other conference activities. Because leadership development is a key component of the TSA mission it is addressed in multiple ways at the state and national level. National TSA has developed leadership lessons that correlate to the ten core leadership skills found in TSA competitions. These skills include communication, creative thinking, critical thinking, decision making, ethics, evaluation, organization, problem solving, self esteem and teamwork. A section of the national web site (<http://www.tsaweb.org/tsa-leadership-lessons>) includes a link to a useful document: *Leadership Skills Learned Through TSA High School Competitive Events*.

Each November New Jersey TSA holds its leadership conference. Approximately 200 students attend. Chapters are asked to bring a team of six students to the conference. In most cases this group of students is made up of the officers from the school's TSA chapter. Major activities conducted during the conference include an icebreaker, a team-building activity and a problem solving challenge. The students who attend use the knowledge and experience gained at the leadership conference to develop and implement similar activities for their home school TSA chapters.

Each year TSA holds a three hour leadership academy at the national conference. Activities conducted during the leadership academy are designed to help students learn how anyone can be a leader, regardless of age or experience. Students learn about the practices of exemplary leadership and are given tools to implement in their TSA activities and everyday lives. Advisors are also invited to participate in a separate track of the academy to learn new leadership activities that they can implement in their classroom and TSA activities.

Content areas and Cumulative Progress Indicators (CPI's) typically addressed during formal leadership training activities at the state and national TSA conferences are listed below.

<b>Academic Foundations</b>	
Academic concepts lay the foundation for the full range of career and postsecondary education opportunities within the career cluster.	
<b>Strand O. STEM Career Cluster</b>	
CPI#	Cumulative Progress Indicator (CPI)
9.4.12.O.1	Demonstrate language arts knowledge and skills required to pursue the full range of postsecondary education and career opportunities.

<b>Pathway (1) Engineering &amp; Technology</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(1).1	Apply the concepts, processes, guiding principles, and standards of school mathematics to solve science, technology, engineering, and mathematics problems.

<b>Pathway (2) Science &amp; Mathematics</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(2).1	Develop an understanding of how science and mathematics function to provide results, answers, and algorithms for engineering activities to solve problems and issues in the real world.

<b>Communication Skills</b>	
All clusters rely on effective oral and written communication strategies for creating, expressing and interesting information and ideas that incorporate technical terminology and information.	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.4	Select and employ appropriate reading and communication strategies to learn and use technical concepts and vocabulary in practice.
9.4.12.O.5	Demonstrate use of the concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.
9.4.12.O.9	Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences.
9.4.12.O.10	Interpret verbal and nonverbal cues/behaviors to enhance communication.
9.4.12.O.11	Apply active listening skills to obtain and clarify information.
9.4.12.O.13	Listen to and speak with diverse individuals to enhance communication skills.

9.4.12.O.16	Apply active listening skills to obtain or clarify information pertaining to plans, processes, projects, or designs.
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<b>Problem-Solving and Critical Thinking</b>	
Critical and creative thinking strategies facilitate innovation and problem-solving independently and in teams.	
<b>Strand O STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.17	Employ critical thinking skills (e.g., analyze, synthesize, and evaluate) independently and in teams to solve problems and make decisions.
9.4.12.O.18	Employ critical thinking and interpersonal skills to resolve conflicts.
9.4.12.O.19	Identify, write, and monitor performance goals to guide progress in assigned areas of responsibility and accountability
9.4.12.O.20	Conduct technical research to gather information necessary for decision-making

<b>Pathway (1) Engineering &amp; Technology</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(1).7	Use mathematics, science, and technology concepts and processes to solve problems in projects involving design and/or production (e.g., medical, agricultural, biotechnological, energy and power, information and communication, transportation, manufacturing, and construction).

<b>Pathway (2) Science &amp; Mathematics</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>

9.4.12.O.(2).4	Use scientific and mathematical problem-solving skills and abilities to develop realistic solutions to assigned projects, and illustrate how science and mathematics impact problem-solving in modern society.
9.4.12.O(2).5	Demonstrate critical thinking abilities and skills needed to review information, to explain statistical analyses, and to translate, interpret, and summarize research and statistical data collected and analyzed as the result of an investigation.

<b>Information Technology Applications</b>	
Technology is used to access, manage, integrate and disseminate information.	
<b>Strand O STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.24	Operate Internet applications to perform tasks.
9.4.12.O.25	Operate writing and publishing applications to prepare communications.
9.4.12.O.26	Operate presentation applications to prepare and deliver presentations.
9.4.12.O.29	Employ collaborative/groupware applications to facilitate group work.
9.4.12.O.30	Employ computer operations applications to manage tasks.
9.4.12.O.32	Effectively use information technology to gather, store, and communicate data in appropriate formats.

<b>Pathway (1) Engineering &amp; Technology</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(1).8	Select and use a range of communications technologies, including word processing, spreadsheet, database, presentation, email, and Internet applications, to locate and display information.

<p><b>Systems</b></p> <p>Roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment impact business operations.</p> <p>Key organizational systems impact organizational performance and the quality of products and services.</p> <p>Understanding the global context of 21<sup>st</sup>-century industries and careers impacts business operations.</p> <p><b>Strand O STEM Career Cluster</b></p>	
CPI#	Cumulative Progress Indicator (CPI)
9.4.12.O.36	Examine and summarize roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment to understand the nature and scope of organizations in this cluster.

<p><b>Safety, Health, and Environment</b></p> <p>Implementation of health, safety and environmental management systems and organizational policies and procedures impacts organizational performance, regulatory compliance, and continuous improvement.</p> <p><b>Strand O STEM Career Cluster</b></p>	
CPI#	Cumulative Progress Indicator (CPI)
9.4.12.O.42	Explain health, safety, and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
9.4.12.O.43	Evaluate organizational policies and procedures that contribute to continuous improvement in performance and compliance.
9.4.12.O.45	Develop an awareness of safety, health, and environmental hazards inherent in this cluster and apply appropriate precautions when solving problems, developing plans, implementing processes, or completing projects to proactively promote safety.

**Leadership and Teamwork**

Effective leadership and teamwork strategies foster collaboration and cooperation between business units, business partners, and business associates toward the accomplishment of organizational goals.

**Strand O STEM Career Cluster**

<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.46	Employ leadership skills to accomplish goals and objectives.
9.4.12.O.47	Employ organizational skills to foster positive working relationships and accomplish organizational goals.
9.4.12.O.48	Employ teamwork skills to achieve collective goals and use team members' talents effectively.
9.4.12.O.49	Establish and maintain effective relationships in order to accomplish objectives and tasks.
9.4.12.O.50	Conduct and participate in meetings to accomplish tasks.
9.4.12.O.51	Employ mentoring skills to assist others.

**Ethics and Legal Responsibilities**

Legal responsibilities, professional ethics, and codes of conduct affect management practices, business performance and regulatory compliance, as well as the confidence of customers, business partners and investors.

**Strand O STEM Career Cluster**

<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.52	Apply ethical reasoning to a variety of situations in order to make ethical decisions.
9.4.12.O.53	Interpret and explain written organizational policies and procedures to help employees perform their jobs according to employer rules and expectations.
9.4.12.O.54	Demonstrate workplace ethics specific to occupations in this cluster in order to reflect effective stewardship of resources.



<b>Technical Skills</b>	
Technical knowledge and skills play a role in all careers within the cluster and pathway.	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.67	Employ information management techniques and strategies to assist in decision-making
9.4.12.O.68	Employ planning and time management skills and tools to enhance results and complete work tasks.

<b>Pathway (1) Engineering &amp; Technology</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(1).9	Employ concepts and processes for the application of technology to engineering.
9.4.12.O(1).10	Model technical competence by developing processes and concepts for using different technologies.
9.4.12.O.(1).11	Demonstrate understanding of processes and concepts that are key to understanding the design process
9.4.12.O.(1).12	Model technical competence by developing and applying processes and concepts in the design process.

<b>Pathway (2) Science &amp; Mathematics</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(2).6	Demonstrate the knowledge and technical skills needed to obtain and succeed in a chosen scientific and mathematical field.

### III. General Sessions

Every national TSA includes four general sessions. The opening general session begins with a “Parade of State Flags” ceremony that includes a Presentation of Colors by a local Honor Guard. The NJ-TSA Sergeant-at-arms carries the New Jersey state flag during this activity. This is followed by an address by a keynote speaker. The second general session is a recognition assembly. National TSA officer candidates deliver their campaign speeches. Also, national membership awards are presented. General session III is the annual business meeting. It includes the election of the National TSA officers by voting delegates. States have one vote for each state officer in attendance plus two additional votes for each chapter in the state delegation. A registered parliamentarian is present. The highlight of the national conference is the awards ceremony, general session IV, which recognizes all national competitive event finalists. Trophies are awarded to the top three finalists in each category. A similar award program is held at the conclusion of the New Jersey annual state conference.

Content areas and Cumulative Progress Indicators (CPI’s) typically addressed during general sessions are listed below.

<b>Communication Skills</b>	
All clusters rely on effective oral and written communication strategies for creating, expressing and interesting information and ideas that incorporate technical terminology and information.	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.8	Use correct grammar, punctuation, and terminology to write and edit documents.
9.4.12.O.9	Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences.
9.4.12.O.10	Interpret verbal and nonverbal cues/behaviors to enhance communication.
9.4.12.11	Apply active listening skills to obtain and clarify information.
9.4.12.O.13	Listen to and speak with diverse individuals to enhance communication skills
9.4.12.O.16	Apply active listening skills to obtain or clarify information pertaining to plans, processes, projects, or designs.

**Problem-Solving and Critical Thinking**

Critical and creative thinking strategies facilitate innovation and problem-solving independently and in teams.

**Strand O. STEM Career Cluster**

<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.17	Employ critical thinking skills (e.g., analyze, synthesize, and evaluate) independently and in teams to solve problems and make decisions.
9.4.12.O.18	Employ critical thinking and interpersonal skills to resolve conflicts.
9.4.12.O.20	Conduct technical research to gather information necessary for decision-making.

**Leadership and Teamwork**

Effective leadership and teamwork strategies foster collaboration and cooperation between business units, business partners, and business associates toward the accomplishment of organizational goals.

**Strand O STEM Career Cluster**

<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.46	Employ leadership skills to accomplish goals and objectives.
9.4.12.O.47	Employ organizational skills to foster positive working relationships and accomplish organizational goals.
9.4.12.O.48	Employ teamwork skills to achieve collective goals and use team members' talents effectively.
9.4.12.O.49	Establish and maintain effective relationships in order to accomplish objectives and tasks.
9.4.12.O.50	Conduct and participate in meetings to accomplish tasks.
9.4.12.O.51	Employ mentoring skills to assist others.

**Ethics and Legal Responsibilities**

Legal responsibilities, professional ethics, and codes of conduct affect management practices, business performance and regulatory compliance, as well as the confidence of customers, business partners and investors.

**Strand O STEM Career Cluster**

CPI#	Cumulative Progress Indicator (CPI)
9.4.12.O.52	Apply ethical reasoning to a variety of situations in order to make ethical decisions.
9.4.12.O.53	Interpret and explain written organizational policies and procedures to help employees perform their jobs according to employer rules and expectations.

**Technical Skills**

Technical knowledge and skills play a role in all careers within the cluster and pathway.

**Strand O. STEM Career Cluster**

CPI#	Cumulative Progress Indicator (CPI)
9.4.12.O.67	Employ information management techniques and strategies to assist in decision-making.
9.4.12.O.68	Employ planning and time management skills and tools to enhance results and complete work tasks.

#### **IV. Informal Learning**

Informal learning opportunities for students at state and national TSA conferences include meeting and interacting with students from other schools and other states as well as attending special interest sessions and viewing exhibits. Approximately 50-60 New Jersey high schools attend the state conference. At the national conference the Annual Mixer serves as the unofficial start of the event. During the mixer students have an opportunity to connect with old friends and make new friends. This is also the night of the traditional trading of pins. New Jersey TSA has an annual pin design contest and each New Jersey TSA member attending the national conference is given a supply of pins to trade. During the mixer members learn about TSA activities and life in other states.

The day long Education Fair held at the national TSA conference gives attendees an opportunity to view exhibits and meet leaders from business, industry and education from the STEM areas. During the Education Fair attendees also have a chance to meet and interact with national TSA officer candidates at their campaign booths. During one or more evenings at the national conference New Jersey TSA holds a delegation meeting for students, advisors and parents. This provides an opportunity to address individual concerns and for everyone to learn about important conference details. Throughout the entire conference students have an opportunity to meet and learn from others as they participate in competitive events and attend special interest sessions on timely STEM topics. During the open viewing of competitive students have an opportunity to see live events and displays of the work done by others.

Content areas and Cumulative Progress Indicators (CPI's) typically addressed during informal learning activities at the state and national TSA conferences are listed below.

<b>Communication Skills</b>	
All clusters rely on effective oral and written communication strategies for creating, expressing and interesting information and ideas that incorporate technical terminology and information.	
<b>Strand O STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.9	Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences.
9.4.12.O.10	Interpret verbal and nonverbal cues/behaviors to enhance communication.
9.4.12.O.13	Listen to and speak with diverse individuals to enhance communication skills.
9.4.12.O.16	Apply active listening skills to obtain or clarify information pertaining to plans, processes, projects, or designs.

**Problem-Solving and Critical Thinking**

Critical and creative thinking strategies facilitate innovation and problem-solving independently and in teams.

**Strand O STEM Career Cluster**

<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.17	Employ critical thinking skills (e.g., analyze, synthesize, and evaluate) independently and in teams to solve problems and make decisions.
9.4.12.O.18	Employ critical thinking and interpersonal skills to resolve conflicts.

**Pathway (2) Science & Mathematics**

<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(2).5	Demonstrate critical thinking abilities and skills needed to review information, to explain statistical analyses, and to translate, interpret, and summarize research and statistical data collected and analyzed as the result of an investigation.

**Information Technology Applications**

Technology is used to access, manage, integrate and disseminate information.

**Strand O STEM Career Cluster**

<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.26	Operate presentation applications to prepare and deliver presentations.
9.4.12.O.32	Effectively use information technology to gather, store, and communicate data in appropriate formats.

<b>Pathway (1) Engineering &amp; Technology</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(1).8	Select and use a range of communications technologies, including word processing, spreadsheet, database, presentation, email, and Internet applications, to locate and display information.

<b>Systems</b>	
<p>Roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment impact business operations.</p> <p>Key organizational systems impact organizational performance and the quality of products and services.</p> <p>Understanding the global context of 21<sup>st</sup>-century industries and careers impacts business operations</p>	
<b>Strand O STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.36	Examine and summarize roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment to understand the nature and scope of organizations in this cluster.
9.4.12.O.37	Identify how key organizational systems affect organizational performance and the quality of products and services to demonstrate an understanding of how systems are managed and improved in this cluster.

<b>Safety, Health, and Environment</b>	
<p>Implementation of health, safety and environmental management systems and organizational policies and procedures impacts organizational performance, regulatory compliance, and continuous improvement.</p>	
<b>Strand O STEM Career Cluster</b>	

CPI#	Cumulative Progress Indicator (CPI)
9.4.12.O.45	Develop an awareness of safety, health, and environmental hazards inherent in this cluster and apply appropriate precautions when solving problems, developing plans, implementing processes, or completing projects to proactively promote safety.

<b>Leadership and Teamwork</b>  Effective leadership and teamwork strategies foster collaboration and cooperation between business units, business partners, and business associates toward the accomplishment of organizational goals.  <b>Strand O STEM Career Cluster</b>	
CPI#	Cumulative Progress Indicator (CPI)
9.4.12.O.46	Employ leadership skills to accomplish goals and objectives.
9.4.12.O.47	Employ organizational skills to foster positive working relationships and accomplish organizational goals.
9.4.12.O.49	Establish and maintain effective relationships in order to accomplish objectives and tasks.
9.4.12.O.50	Conduct and participate in meetings to accomplish tasks.
9.4.12.O.51	Employ mentoring skills to assist others.

<b>Ethics and Legal Responsibilities</b>  Legal responsibilities, professional ethics, and codes of conduct affect management practices, business performance and regulatory compliance, as well as the confidence of customers, business partners and investors.  <b>Strand O STEM Career Cluster</b>	
CPI#	Cumulative Progress Indicator (CPI)



9.4.12.O.52	Apply ethical reasoning to a variety of situations in order to make ethical decisions.
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<b>Employability and Career Development</b>	
Employability skills and career and entrepreneurship opportunities build the capacity for successful careers in a global economy.	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.55	Identify and demonstrate positive work behaviors and personal qualities needed to succeed.

<b>Technical Skills</b>	
Technical knowledge and skills play a role in all careers within the cluster and pathway.	
<b>Strand O. STEM Career Cluster</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.68	Employ planning and time management skills and tools to enhance results and complete work tasks.

<b>Pathway (1) Engineering &amp; Technology</b>	
<b>CPI#</b>	<b>Cumulative Progress Indicator (CPI)</b>
9.4.12.O.(1).10	Model technical competence by developing processes and concepts for using different technologies.
9.4.12.O.11	Apply active listening skills to obtain and clarify information.