



# **State of Delaware Skilled and Technical Sciences (STS) Curriculum Standards**

## **STS: A New Name for Trade and Industrial Education**

On June 19, 2005 the National Association of State Supervisors of Trade and Industrial Education (NASSTIE) convened the second day of their Annual Conference at Bartle Hall in Kansas City, Missouri. One of the items on that day's agenda was the proposed merger of NASSTIE with the National Association for Trade and Industry Education (NATIE).

The Delaware Trade and Industrial (T & I) Supervisor, Dr. Dale Derrickson proposed, as part of this merger, that the name "Trade and Industrial" be updated to reflect all of the modern career pathways that currently fall under the heading of T & I, including trades, industrial, computer networking, medical occupations, human services, transportation, and others. Dr. Derrickson stressed that the words "Technical" and "Science" should be included in the new name.

The National Executive Director of SkillsUSA, Mr. Tim Lawrence, was also in attendance. At that time, SkillsUSA was a Career and Technical Student Organization serving T & I students. Mr. Lawrence clearly recognized that the word "Skills" also represented an important component of modern T & I education.

Officials from NASSTIE and NATIE met in Orlando, Florida in August of 2005. They decided that the new name for this branch of Career and Technical Education would be "Skilled and Technical Sciences" (STS) in conjunction with the name for the newly combined organization becoming the "Association for Skilled and Technical Sciences" (ASTS).

## Skilled and Technical Sciences Pathways

Skilled and Technical Sciences (STS) career pathways in Delaware should prepare secondary students for high-skill, high-wage skilled and technical employment in high-demand career areas in health sciences, skilled trades, and technical sciences. STS secondary programs at Area Career and Technical Education Centers are funded by the State of Delaware for the equivalent of three credits per year, enabling students to gain a skill preparation with intensity (although at a secondary level) that is comparable to many community college programs. Associated areas of employment for STS education programs may be expanded by and coordinated with allied postsecondary training and education opportunities; however, specific career pathways must first be aligned with high-demand career-ladder employment opportunities that are available directly after high school graduation in order to meet STS program qualifications.

Skilled and Technical Sciences (STS) programs are responsible for having an Advisory Council for the program. STS' Career Advisory Council membership should be highly related to each program's specific career pathway. The STS area of Career and Technical Education (CTE) is intended to utilize very close business and industry connections. These associations are vital to the STS mission of preparing highly skilled CTE students for high-demand, high-wage career areas with post-high school graduation employment prospects and cooperative education opportunities in each specific career pathway area.

Cooperative education opportunities are essential to the provision of capstone experiences that reinforce STS students' connections to the world of work and help them to hone their technical skills through professional practice. This real-life exposure (under CTE professionals' guidance and supervision) can also provide greater insight and motivation for STS students' post-high school career planning, as well as genuine experience that can demonstrate career-related maturity to employers. Cooperative education experiences can help recent high school graduates overcome an employer's age-based perception of their maturity level when they seek employment. With the exception of different State funding formulas for Delaware's Career and Technical Education Centers, cooperative education components of STS education programs are guided by the Delaware Department of Education's cooperative education regulations (**14 DE Admin Code 525 Career Technical Education Programs § 3.0-3.4**).

Postsecondary education and training opportunities for STS career pathway graduates can include connections such as apprenticeships, technical military training, on-the-job training, industry training, trade schools, technical schools, two-year colleges, and/or four-year colleges. Students should gain an awareness of associated postsecondary education opportunities, and these programs should align with related opportunities. However, STS secondary education programs should be, first and foremost, both designed and aligned to prepare graduates pursuing postsecondary education or training to gain fully relevant high-skill experience in high-demand occupations and to earn in high-wage occupations while they continue to learn.

The primary mandate of STS programs is to provide the skill competencies as well as the corresponding technical credentials needed for employment opportunities available to STS high school graduates in high-skill and high-wage occupations that are in high demand in the First State. Programs must be able to offer this direct link to sufficient post-high school employment opportunities along with appropriate technical skill assessment-based certification to meet the basic qualifications of STS. Two major demands of employers are employability skills and maturity. The learning and practice of employability skills must be an integral part of all STS programs. Related cooperative education must be planned as a capstone to the STS educational experience.

## Teacher Background

Since the Federal Vocational Education Amendments of 1968, Delaware State Plans for CTE required that programs connect to employment training requirements and opportunities in business and industry by mandating the inclusion of business and industry members on advisory committees. Active advisory committees are also required by Delaware Department of Education regulations (**14 DE Admin Code 525 Career Technical Education Programs § 2.5**).

The Delaware Department of Education (DDOE) takes this workforce connection to a higher level for Skilled and Technical Sciences by mandating that STS teachers additionally have an extensive business and industry background encompassing a full six years of work experience directly related to the specific career that they teach, as part of the Delaware STS' teacher certification process (**14 DE Admin Code 1559 Skilled and Technical Education Teacher**).

## Skilled and Technical Sciences' Career and Technical Education Requirements

Delaware high school graduation requirements specify that students must have at least three credits in specialized career pathway courses (**14 DE Admin Code 505 High School Graduation Requirements and Diplomas § 2.0-3.1**).

In recognition of the intensity of preparation needed by STS career pathways, Delaware Department of Education regulations additionally require local public education agencies to schedule STS courses for the equivalent of two regular consecutive periods, five days per week, for two or more years for a minimum of four credits of specialized career pathway courses (**14 DE Admin Code 525 Career Technical Education Programs § 2.11**). This requirement is unique to the STS programs. Due to the nature of their specific training and certification requirements, some STS career area standards may require even more training periods and/or hours than this minimum.

The Delaware Department of Education also requires local public education agencies with CTE programs to organize and support Career and Technical Student Organizations (CTSOs) as integral components of CTE programs. The CTSO for Delaware STS students is SkillsUSA (**14 DE Admin Code 525 Career Technical Education Programs § 2.9**).

## Graduate Follow-up

Dr. Melvin D. Miller and Dr. James A. Gregson were professors for the Oklahoma State University (OSU) College of Education. They declared that the philosophy of Career and Technical Education (CTE) is “pragmatism” (Paulter, pg. 24-26). Pragmatism is a practical philosophy that relates truth to its functional application and tests truth by observing its viable consequences.

Dr. Willard Daggett, President of the International Center for Leadership in Education, recommended that the practical consequences of education be analyzed using graduate follow-up data to track students after they leave high school (Daggett and Gray, pg. 34-35). This process was initiated by a Federal mandate by the third Perkins Act which passed in October of 1998 (Perkins III) and was reinforced in the fourth Perkins Act (Perkins IV) which was signed into law in August of 2006. The best test of the success of a secondary STS program is an examination of the rate of student post-graduate success in their high school career pathway.

## Career Clusters

The Career Clusters project ([www.careerclusters.org](http://www.careerclusters.org)) organized a classification system for occupations. All possible occupations were grouped into 16 Career Clusters. As part of this project, broad-based skill sets were developed. Career Clusters then listed these broad foundational skills that apply to all career areas within a cluster.

Items that constitute the main focus of Skilled and Technical Sciences Skill Standards are advanced and highly employment-related skills sets that lead to these items upon pathway completion and high school graduation:

- marketable technical skill proficiencies,
- industry-recognized credentials,
- national standards-based technical skill assessment passage, and/or
- test-based municipal license attainment.

## Skilled and Technical Sciences Standards

Dozens of very different Delaware STS career pathways are found in the Career Clusters. A single document that could sufficiently present each and every detail of individual curriculum standard items for all of the STS career areas would prove cumbersome. It is necessary to select suitable workplace-related, industry-recognized standards as a foundation for constructing proper STS curriculum alignment.

The complexity of STS is compounded by both the number and the variability of pathways. [See STS Pathways by clicking here.](#) The development of Delaware STS Curriculum Standards coincided with an initiative by the U.S. Department of Education's Office of Vocational and Adult Education (OVAE) to select appropriate CTE program technical skill assessments. These assessments are intended to align curriculum quality and standards with workforce requirements and credentials.

Individual STS Standards for each major career pathway include the requirements for assessment, curriculum, and specific teacher certification [See individual STS Standards by clicking here.](#) Applications for adding programs to a school's Career and Technical State Approved Courses list must follow approved STS Standards.

## References

Daggett, Willard R. and Gray, Kenneth C. "Educational Rigor & Relevance: An Interview with Willard Daggett" *Techniques* September 2005 Edition. Alexandria, VA: Association for Career and Technical Education, 2005.

Paulter, Albert J., Jr., Editor. *Workforce Education: Issues for the New Century*. Ann Arbor, MI: Prakken Publications, Inc, 1999.