

Standards-Based Career and Technical Education Curriculum Model

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**COMMONWEALTH OF PENNSYLVANIA
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Overview and Purpose

Career and Technical Education (CTE) in Pennsylvania provides students with the opportunity to pursue an educational pathway that includes technical skills, rigorous academics, real world knowledge and work-based learning experiences that prepare students for success in postsecondary education and their chosen career. Key to student achievement in CTE is the delivery of a comprehensive standards-based curriculum and instructional model. As required in the Pennsylvania School Code, the Pennsylvania Department of Education (PDE) is responsible for oversight of CTE in schools throughout the state. The following links to the Pennsylvania Code are specific to CTE. They provide specific requirements that can be used as a framework for developing and implementing a CTE program:

[22 Pa. Code § 4.31. Career and technical education.](#)

[22 Pa. Code Chapter 339. Vocational Education.](#)

The purpose of a Standards-Based CTE (SBCTE) Curriculum Model is to provide a framework for developing standards-based curriculum. The curriculum framework is based on PDE-approved Programs of Study (POS) and, with the exception of teacher prepared learning guides, every component of the SBCTE Curriculum Model can be found on the PDE's website. CTE programs that do not have a PDE-approved POS can be developed locally, using a task list that has been validated by another school, an incumbent worker survey, or the Develop A Curriculum (DACUM) process. Locally developed programs of study, including task lists and standards, must be approved by the occupational advisory committee (OAC).

Curriculum Development Process: Ten Steps

1. Determine the program to be offered based on the [Classification of Instructional Program \(CIP\) Code](#).

Program Approval – Program approval in Pennsylvania uses the federal CIP Code system. The CIP is a code system of instructional programs with the purpose to facilitate the organization, collection, and reporting of fields of study and program completions.

2. Complete an occupational analysis. A PDE-approved POS is based upon a validated Occupational Analysis.

Occupational Analysis – The occupational analysis is an examination of the jobs, tools, trends, and outlooks of a profession (resource links below).

- [Department of Labor and Industry \(Youth and Education page\)](#)
- [O*NET Online \(Occupational Information Network\)](#)
- [CETES \(Career and Technical Education Consortium of States\)](#)

3. Follow the steps for [PDE Program Approval](#).
4. Prepare a course description.

The course description is a brief overview of the course that describes the philosophy, goals, and objectives of the program. The description should highlight duty areas, as well as employment and postsecondary opportunities.

5. Adopt a PDE [Program of Study](#) Secondary Competency Task List if available. (The POS is a secondary competency task list and is referred to as a “Task List” in this document.) The task list is developed using a hierarchy framework for cognitive skills, such as Bloom’s Taxonomy. Additional tasks may be added based on the OAC recommendations.

Note: An OAC may not recommend any tasks be deleted from a PDE-approved POS. PDE may revise, add or delete tasks in an approved POS during a statewide committee revision process.

When a POS is not available, develop a local task list aligned to, and approved by business and industry representatives/OAC members.

The job-specific competencies or tasks are performance-based and written in measurable terms using the highest cognitive domain possible. Related tasks are grouped to form a duty area or heading. The task list and duty areas define the program of study or course.

6. Determine career objective/goals (SOC Code) through the [O*NET Crosswalk](#).
 - SOC Code – The Standard Occupational Classification (SOC) is the United States system of classifying occupations for collecting data and comparing occupations. The program of study CIP code is entered into the education section on the O*NET Crosswalk website. After clicking enter, the corresponding SOC codes will appear.
 - Use the following link for the [CIP to SOC crosswalk](#) spreadsheet.
7. Develop a crosswalk using the task list and career objectives (by job titles and SOC Code).

Task Grid – The task grid provides a crosswalk of the performance tasks and the SOC Codes. It provides specific information as to what tasks need to be mastered for a specific SOC Code. The task grid also shows the common or core tasks essential to the SOC codes in a particular program.

- Common Tasks – Those tasks required by two or more SOC Codes (job titles).
 - Core Tasks – Those tasks required by all SOC Codes (job titles).
8. Complete, in cooperation with students, an *Annual Educational and Occupational Objectives for Students Enrolled in a Secondary Career and Technical Education (CTE) Approved Program* [Career Objective Form \(PDE-408\)](#).

The Career Objective Form, per Chapter 339, helps students determine learning goals and focus on completing the program of study.

9. Develop learning guides based on the POS task list or local task list (one for each task). The learning guide is a student-centered, teacher-developed plan of instruction designed to independently move the student through a series of learning activities necessary to attain proficiency or competence on a performance task. The learning guide is designed to promote self-directed learning or student-centered instruction. The structure of the learning guide allows students to complete learning activities and competencies based on

performance standards at their own pace. The learning guide provides the basis for individualized instruction, which benefits all students and is essential to support students with disabilities. The components of the learning guide are:

- Heading (used for filing or identification)
- Task
- Purpose
- Performance Objective (exit outcome)
- Supporting Objectives (technical knowledge, academic concept, guided practice, employability skills)
- Required Resources
- Safety Factors
- Learning Activities/Assessment
- Performance Assessment

10. Task Tracking – Task Tracking is an educational tool to account for the completion of performance objectives or tasks. The student’s technical skills are assessed based on the tasks completed as “Satisfactory” within a particular marking period. The POS task lists provide a check-off section for student management of tasks. Most schools have an online student management system that teachers, students, and parents may use to monitor a student’s progress.

Task Tracking provides a list of each student’s completed tasks/competencies. It can be used as an indicator of a student’s progress toward attaining their occupational/ educational objective/goal. Students should include their list of completed competencies when applying for employment or postsecondary education.

Detailed Directions for Step 9: Developing Learning Guides

The learning guide is a student-centered, teacher-developed plan of instruction designed to independently move the student through a series of learning activities necessary to attain proficiency or competence on a performance task. Below is a template explaining how to develop a learning guide, an in-depth description of the Performance Assessment component of a learning guide, and a template to use in performance evaluation.

SBCTE Curriculum Model Learning Guide Template

CIP Code: (Optional)

Area: Course/Lab Name

Task No.: From task list

Date: Date written

Hours: Instructional and
Student Mastery Time

Task: A short statement of the skill/competency to be performed (taken directly from the task list).

Purpose: A brief statement as to why the task is essential in the occupation (relative to the world of work).

Performance Objective: The performance objective includes three elements: Performance/task, Condition, and Standard. The performance objective reflects industry standards.

1. **Performance** – A description of the task, exactly what is to be done (taken from the task list).
2. **Condition** – Under what conditions the student must perform the task (using references, or denied references, using a live work project, using a simulator or mockup, etc.).
3. **Standard** – How well the task must be accomplished (the degree of accuracy or proficiency). The program of study identifies proficiency level as the industry standard.

Note: The OAC must validate the task list and the performance standards. Each CTE program performance objective includes a task, condition, and standard.

Supporting Objectives: Supporting objectives reflect teacher or industry expectations. While the Performance Objective describes student performance at the completion of the lesson, or instruction on the task, the supporting objectives describe a student's interim performance after participating in one or more learning activities. A supporting objective must be explicit and have the same essential parts as a performance objective (performance, condition, standard). In addition, each supporting objective must move learners toward fulfilling the final performance objective.

In general, there should be a minimum of three supporting objectives. Knowledge, Academic Concepts or Standards, and Guided Practice. Supporting objectives must include a measurable standard and provide the teacher and student with formative assessment data on the student's performance of each supporting objective. A supporting objective for employability skills may be added, such as information use or critical thinking skills. An employability skills objective may not be required for every performance objective or task.

Knowledge: The knowledge supporting objective focuses on information or theory, such as reading a chapter in a textbook, a worksheet assignment, a presentation, project, etc.

The formative assessment of student knowledge is essential for teachers and students to determine their understanding of essential knowledge required to complete the task.

Academic Concept: The academic supporting objective integrates the [Pennsylvania Academic Standards](#) or other academic concepts that are necessary to perform the performance objective.

- Use the POS Crosswalk to identify essential Pennsylvania Academic Standards. When a crosswalk is unavailable for a program, teachers must identify relevant academic standards that are essential to understanding the theoretic concepts and skill performance.
- The student should understand the importance of the academic concept as it applies to the performance objective. A student's ability to apply essential academic standards or concepts must be assessed prior to completing guided practice or the performance objective using the [PDE Crosswalks of Academic Standards for the POS Task Lists](#).

Employability Skills: The employability skills supporting objective represents the desirable attributes of an individual to gain and sustain employment. Employability skills or standards that are necessary for the completion of each task are listed under this heading. Pennsylvania and Perkins employability skills standards links are: [Pennsylvania Career Education and Work Standards](#) and the US Department of Educations, Perkins Collaborative Resource Network: [USDE PCRN Employability Skills](#).

Guided Practice: The guided practice supporting objective focuses on teacher supported practice needed to perform the task or performance objective to the specified standard. A criterion checklist/rubric is given to the student for practicing the procedure or developing the product. The guided practice provides the student with the opportunity to receive feedback prior to assessment of the final performance objective.

Resources Required: List reference books, textbooks, software, training aids, videos, and online resources that specify the information necessary to complete the task. In some subject areas, it may be desirable to list essential tools and materials for the task.

Safety Factors: Identify relevant safety practices, accident prevention, precautions, and essential safety clothing or equipment needed to complete the task.

Learning Activities (Assignments): Learning activities detail the instructional and learning assignments required for the student to master the core knowledge, essential academics, relevant employability skills, and the performance objective to meet industry standards.

Each supporting objective requires a minimum of one corresponding learning activity. Learning activities inform the student of the assignments to be completed to attain proficiency on the supporting objective. Students are assessed on the learning activities or assignments. This is the formative assessment that determines when a student is ready to proceed with the final performance objective evaluation.

Points to consider when preparing student learning activities:

1. Provide necessary background information to perform the task. For example: information in the learning guide (information, job or procedures sheets, drawings, etc.); audio-visual aid

references; references to a specific place in a textbook or repair manual; required research for specifications or specific procedures; and workbook or homework assignments.

2. Participation in work-based learning activities.
3. Provide learning activities that reinforce the academic standard or concept. (When possible, refer to academic standards that may be on Keystone Exams.)
4. Provide a learning activity on relevant employability skills (if applicable).
5. Stress the importance of the performance objective to the end of program assessment (NOCTI® or NIMS®).

The learning guide is developed by the CTE teacher to provide the students with the resources necessary to practice, complete the task and performance objective independently, or with minimal help from the teacher.

Optional learning activities may be provided to reinforce the student's knowledge in the task or higher-level activities may be provided to enrich the student's knowledge beyond the essential level of understanding.

Accommodations for special needs students can be modified or additional learning activities can be provided to accommodate various learning styles of special needs students. All adaptations are made by the CTE teacher with advice from special education teachers or the instructional support team. A paraprofessional can assist the student during or after the teacher has taught the knowledge or skill.

Grading learning activities such as tests or quizzes on the knowledge, academic, and employability supporting objectives should be graded using letter or percentage grades. Other factors such as attendance, attitudes, general safety, etc. should be assessed as defined in your school's grade policy or guidelines. Grading the final performance on the task or competency is outlined in the Performance Evaluation component below.

Performance Evaluation

The performance evaluation is considered the summative assessment for the task or performance objective. If the student completes the performance to industry standard, the student is considered to have attained proficiency. A performance evaluation is developed by the teacher listing the criteria needed to reach proficiency.

An evaluation checklist or rubric is used to rate the student's performance on the task or performance objective. The student should be able to use the checklist for self-evaluation on the task during guided practice, prior to the teacher evaluating the final performance.

The performance evaluation is NOT a measure of the number of completed learning activities. It is an assessment of the final performance objective.

Students can be evaluated at each step of a procedure, or the product produced by the student can be measured against specific criterion. The most desirable rating scale for each step in a procedure is "Needs Practice" or "Satisfactory" versus pass/fail, which is negative reinforcement. The overall rating of the task or competency should be the same ("Needs Practice" or "Satisfactory" or "Met Standard"). The student must complete all steps satisfactorily to be signed-off on the performance objective. The following graphic provides a template to

provide measurable steps or criteria of the task performance and evaluation of each step in the procedure or the criteria for evaluating the final product completed by the student.

Performance Evaluation/Performance Objective Assessment Template

	<i>Needs Practice</i>	<i>Met Standard</i>
1.		
2.		
3.		
4.		
5.		
6.		

All items must be marked “Met Standard” for task or competency completion and sign-off. Items marked “Needs Practice” must be performed again until the student meets the specified standard.

Note: Criteria or steps in a procedure sheet, or a recipe, or factory specifications, etc. can be used as evaluation criteria in performance assessment. The assessment criteria must be clear and objective.

Examples of Curriculum Products (Steps 4-10)

Example – Course Description (Step 4)

WELDING TECHNOLOGY

Sedans and trucks, railroads and bridges, airplanes, and trains – welders help make them all. In a Welding Technology program, students explore how these skilled workers shape the nation and its economy. While learning about the indispensable roles welders play in construction, manufacturing, and other industries, they master the following skills:

- Shielded metal, gas metal, flux cored and gas tungsten arc welding
- Manual oxyfuel and mechanized oxyfuel gas cutting
- Manual plasma and manual air carbon arc cutting
- Silver oxyfuel brazing and silver soldering

Core skills begin with safety, metallurgy and joint geometry as entry-level welders weld butt joints, corner joints, T-joints, lap joints, and edge joints. Before advancing to more complex techniques, they learn to recognize welding symbols and interpret drawings or sketches.

Working in a program lab outfitted with Air Concoa, ESAB, Lincoln Electric, Miller, Thermal Dynamic and Victor welding and cutting equipment, entry level welders develop their skills through a combination of expert instruction and hands-on training. Welders routinely team up with other metal trades/occupations, such as, precision machining, computer-aided drafters, and engineers to design and fabricate custom parts. Plus, entry level welders are encouraged to bolster their skills and their resumes by securing internships, apprenticeships, or cooperative education positions with local companies.

Industry Credentials

Welding Technology students can earn the following certifications and credentials in high school: Certified Welder via American Welding Society, OSHA Certification via CareerSafe®, Pennsylvania Skills Certificate via NOCTI®.

College Credits

Local and statewide articulation agreements known as SOAR allow students to earn college credit for their work in the Welding Technology program. This program also has an articulation agreement with the community college and the welding institute.

Career Paths

With industry credentials: Brazier/Solderer, Cutter, Fabricator/Welder

With industry credentials and experience: Cutting Machine Operator, Welding Inspector, Welding Machine Operator

With postsecondary training or a college degree: Industrial Designer, Materials Engineer/Metallurgical Engineer

Example – POS Secondary Competency Task List (Step 5)

This is a partial list of tasks.

Unit/ Standard Number	High School Graduation Years 2019, 2020 and 2021	Proficiency Level Achieved: (X) Indicates Competency Achieved to Industry Proficiency Level
	Dental Assisting/Assistant CIP 51.0601 Task Grid	
Secondary Competency Task List		
100	INTRODUCTION TO DENTAL ASSISTING	
101	Identify career: role, function, obligations and limitations of the dental care provider as a member of the dental team.	
102	Define dental related terms and abbreviations.	
103	Practice appropriate personal hygiene, dress practices, personal qualities/characteristics.	
200	PRINCIPLES OF INFECTION CONTROL	
201	Wash hands and follow gloving procedures.	
202	RESERVED	
203	Prepare and bag/wrap instruments for sterilization.	
204	Use and care for ultrasonic cleaner.	
205	Use chemicals to sterilize and disinfect instruments.	
206	Sterilize instruments using autoclave and maintain equipment.	
207	Perform disinfection and sterilization procedures on dental equipment.	
208	Practice OSHA regulations with respect to dental occupations.	
209	Use Safety Data Sheets (SDS) sheets and label appropriate materials.	
210	Dispose of sharps, infectious and hazardous wastes.	
211	Maintain evacuation system.	
212	Maintain dental handpieces.	
213	Use infection control procedures to send/receive dental laboratory items.	
300	SAFETY AND EMERGENCY PROCEDURES	
301	Practice general/personal safety standards/precautions.	
302	Practice proper body mechanics.	
303	Perform CPR/AED procedures..	
304	Prepare and recognize various medical emergencies.	
400	ETHICAL/LEGAL RESPONSIBILITIES	
401	Practice legal and ethical standards of behavior and compliance, including HIPAA policies	
402	RESERVED	
500	ANATOMY AND PHYSIOLOGY	
501	Identify parts, names, shapes and surfaces of teeth.	
502	RESERVED	
503	Identify basic head and neck anatomy.	
504	Describe disturbances in dental development.	
505	Identify landmarks and structures of the face.	
506	Identify landmarks, structures and normal tissues of the mouth.	
507	Identify primary and permanent teeth - arches/types.	
508	Use Universal, Palmer and FDI Designation Systems for permanent and primary teeth.	
600	OFFICE PROCEDURES	
601	Demonstrate the use of dental software system.	
602	Maintain inventory system.	
603	Process insurance claims.	
604	RESERVED	
605	Preparing and maintaining patient's file/ file systems.	
606	RESERVED	
607	Use written and verbal communication.	
608	Schedule and maintain appointment book/daily schedule.	
700	PHARMACOLOGY	
701	Describe methods of pain, anxiety control and pre-meds used in dentistry.	
702	Use Physician's Desk Reference (PDR) as a resource.	
703	Recognize pharmacology terms and abbreviations, related to the field of dentistry.	

Example – Locally Developed Secondary Competency Task List (Step 5)

Hometown Career & Technology Center

Advertising and Design Program: CIP Code: 50.0402

Task Grid

Duty	Task Number	Duty and Task List	Competency Marked with an X
001		Safe and proper use of tools and equipment	
	1-001	Demonstrate use and of a ruler	
	1-002	Demonstrate use and care of a copy machine	
	1-003	Demonstrate use and care a mat cutter	
	1-004	Demonstrate use and care of a heat press	
	1-005	Demonstrate use and care of a laminating machine	
002		Safe use of chemicals	
	2-001	Demonstrate the safe use of fixatives	
	2-002	Demonstrate the safe use of adhesives	
	2-003	Follow a SDS form	
003		Layout	
	3-001	Design layout for print production	
	3-002	Design layout for product display	

Example – Career Objectives/Goals Identified Through CIP to SOC Crosswalk (Step 6)

50.0402	Commercial & Advertising Art	27-1014	Special Effects Artists & Animators
50.0402	Commercial & Advertising Art	27-1019	Artists & Related Workers, Other
50.0402	Commercial & Advertising Art	27-1021	Commercial & Industrial Designers
50.0402	Commercial & Advertising Art	27-1024	Graphic Designers
50.0402	Commercial & Advertising Art	43-9031	Desktop Publishers

Example – Task List and SOC Crosswalk (Step 7)

This process assists in determining the core and common tasks and can determine the tasks to be taught in each level/year.

A	B	C	D	E	F	G	H
1	High School Graduation Years 2020, 2021 and 2022						
Unit/Standard Number	Plumbing Technology/Plumber CIP 46.0503 Task Grid	Proficiency Level Achieved: (X) Indicates Competency Achieved to Industry Proficiency Level	47.01011 Front line supervisors of construction trades and extraction workers	47.01011.3 Solar Energy Installation Managers	47.2152.00 Plumber, Pipefitters and Steam Fitters	47.2152.04 Solar Thermal Installers and Technicians	47.4071.00 Septic Tank Services and Sewer Pipe Cleaners
2	Secondary Competency Task List						
3	100 SAFETY						
4	101	RESERVED					
5	102	RESERVED					
6	103	RESERVED					
7	104	RESERVED					
8	105	RESERVED					
9	106	RESERVED					
10	107	RESERVED					
11	108	RESERVED					
12	109	RESERVED					
13	110	RESERVED					
14	111	RESERVED					
15	112	RESERVED					
16	113	Follow OSHA safety standards as it relates to the industry.	X	X	X	X	X
17							
18							
19	200 RESERVED						
20	201	RESERVED					
21	202	RESERVED					
22	203	RESERVED					
23							
24	300 BLUEPRINTS AND SKETCHING OF PIPE SYSTEMS						
25	301	Interpret types of drawings.	X	X	X	X	X
26	302	Interpret various lines used on drawings.	X	X	X	X	X
27	303	Interpret specifications, and dimensions.	X	X	X	X	X
28	304	RESERVED					
29	305	Interpret piping systems according to color-coding.	X	X	X	X	X
30							
31	400 PIPE SPECIFICATIONS AND SYSTEMS						
32	401	Install pipe and connections according to manufactures' specifications.	X	X	X	X	X
33	402	Follow plumbing standards, codes and specifications.	X	X	X	X	X
34	403	RESERVED					
35	404	RESERVED					

Example – PDE Career Objective Form (Step 8)

This link provides an [electronic fillable form](#).

Example – Teacher Prepared Completed Learning Guide (Step 9)

CIP Code:51.0601
Program: Dental Technology
Duty Area: Radiology Skills
Task: POS 811
Date: 3/1/2021
Hours: 2 hours

Task: Duplicate Dental Radiographs

Purpose: Radiographs are often needed by insurance companies and specialty offices.

Originals are not sent to these groups; therefore, it is necessary to send duplicate copies. A dental auxiliary must know how to duplicate a radiograph to send them when requested.

Performance Objective: Given a full-mouth series of radiographs, duplicating film, and duplicating machine, the student will duplicate three full mouth series of radiographs to the American Dental Association Standards, following the duplicator manufacturer's recommendations and process.

Note: The American Dental Association (ADA®) sets standards for nearly every tool of dentistry, ensuring the safety, reliability and efficacy for dentists and the public.

Supporting Objectives:

Knowledge: The student will read the appropriate chapter assigned by the teacher, define the terms, and complete all worksheets without error (all answers must be correct).

Academic Concept:

Language Arts:

1.2.12 – Read and understand essential content of informational texts and documents.
1.6.11 – Identify and define new words and concepts.

Science:

3.2.12 – Apply scientific processes to improve and better understand how things work.

The student will read and follow the procedure for duplicating a dental radiograph using dental terminology according to industry standard.

Guided Practice: Using the competency sheet, the student will duplicate three full mouth series Radiographs consisting of one Panorex size film and two duplicates on size 2 duplication films, following the duplicator manufacturer's recommendations and process and the ADA standards.

Employability Skills: Employability skills enable employees to successfully perform tasks by managing time and other resources. Pre-requisite Employability Skills include Use Technology, Information Use, Communications Skills, Critical Thinking Skills, and Applied Academic Skills.

Resources Required:

1. Textbook: *Dental Radiography*
2. Handouts: Information and procedure sheet *Duplicating Radiographs*

Safety Factor:

1. All general program/lab safety rules and procedures must be followed.
2. Do not splash solutions on clothing, floors, or counters.
3. Do not handle the duplicating film more than necessary.
4. Use safe light when required.
5. Wear glasses and masks.
6. Read and follow the duplicator manufacturer’s recommendation/instructions.

Learning Activities:

1. Attend *Duplicating Radiographs* theory lesson and demonstration.
2. Participate in classroom discussion and watch *Duplicating Radiographs* video.
3. Read Chapter 9 in the *Dental Radiography* textbook.
4. Explain why duplicating film differs from regular film.
5. Practice duplicating radiographs.
6. Submit one full mouth on panorex-size duplicating film and two single films on size two duplicating films.
7. Attach processed film to guide and turn in.

Performance Assessment/Evaluation: Duplicate Dental Radiographs

Performance Assessment Criteria	Needs Practice	Satisfactory
1. Inserted the plug of the duplicator into the electronic outlet.		
2. Placed the mode switch on “View.”		
3. Placed the films to be duplicated onto the glass in the proper position, with the raised dots facing down.		
4. Switch was set to “Duplicate.”		
5. The timer dial was set to the desired or specified exposure time.		
6. Turned the lights off while using the safe light, and when the duplicating film was removed from the box (purplish colored side).		
7. Placed the emulsion side down over the film to be copied (raised dot down).		
8. Secured the cover latch.		
9. Pressed the exposure button on the center of the timer dial.		
10. When the red exposure light went off (end of exposure), it was covered, raised and the exposed duplicating film removed.		
11. Processed the duplicating film.		
12. Returned the original films to the patient’s record.		

All items must be marked Satisfactory for mastery.

Example – Teacher Prepared Learning Guide (Step 9)

CIP Code: 46.0503

Area: Plumbing and Heating

Task No.: POS 501

Date: 4/30/2021

Hours: 4 Hours

Task: Light and adjust an oxy acetylene torch

Purpose: An oxy acetylene torch is used to perform various tasks in Plumbing and Heating such as soldering. To ensure the safety of everyone in the area, all connections must be checked for leaks and the torch and tanks must be regulated to the proper settings.

Performance Objective: Given the tools and equipment, the student will light, adjust the oxy acetylene torch, and shut down the torch following all safety precautions and the correct tank and torch settings, as defined in the procedure sheet.

Supporting Objectives:

Knowledge: The student will read the textbook chapter Plumbing Tool and Equipment Safety and answer the review questions at the end of the chapter with a grade of 100%.

Academic Concept:

Language Arts:

1.1.11C – Use knowledge of root words and words from literacy works to recognize and understand meaning of new words during reading. Use these works accurately in speaking and writing.

R11.A.2.1.1 – Identify and define the appropriate meaning of multiple meaning words used in texts. Use the words correctly in context during classroom and lab

The student will read the textbook chapter, complete the job sheets, and use the plumbing vocabulary to 100% accuracy.

Guided Practice:

Given the material and tools necessary and the performance checklist, the student will demonstrate the proper procedure for lighting and adjusting an oxy acetylene torch two times in the presence of the teacher with 100% accuracy.

Employability Skills:

The employability skills supporting objective represents the desirable attributes of an individual to gain and sustain employment. Employability skills or standards that are necessary for the completion of each task are listed under this heading. Pre-requisite Employability Skills include Information Use, Communications Skills, Critical Thinking Skills, and Resource Management.

Resources Required:

1. Air-acetylene torch outfit.
2. Acetylene tank valve wrench.

3. Stricker.
4. Safety glasses.
5. Lab uniform – helmet, gloves, apron with leather sleeves, hard shoes/boots.
6. Clear work area.

Safety Factor:

1. Safety glasses must always be worn.
2. Follow procedure for proper personal protective equipment (PPE) of work shoes, welding helmet, apron and gloves, lab uniform pants, hair tied back, and no loose clothing.
3. Follow the manufacturer’s instructions for the torch operation and precautions.
4. Remove all flammable and combustible material from work area.
5. Check all connections for gas leaks prior to lighting the torch.
6. If the torch does not light immediately, turn off the valve at the handle.
7. Extinguish the flame by turning off the gas.

Learning Activities:

1. Read Unit 9 (pages 145-148) in *Modern Plumbing* text on joining and installing pipes.
2. Answer job sheet questions.
3. Observe instructor’s demonstration.
4. At least 15 times, practice lighting and adjusting acetylene torch.
5. At level two-four students must evaluate the student before the instructor.

Performance Evaluation/Exit Outcome Assessment: Light and Adjust an Oxyacetylene Torch

Performance Criteria	Needs Practice	Meets Industry Standards
1. Safety glasses were worn while performing the task.		
2. The tank valve was opened ¼ of a turn.		
3. The tank key was left on the tank when using acetylene.		
4. All connections for acetylene gas leaks were checked by smelling within a ¼ of an inch of the regulator.		
5. Opened the torch handle valve ¼ of a turn.		
6. Stricker was struck immediately.		
7. If flame did not ignite immediately, the valve was shut off on handle. *Delayed ignition could cause an explosion.		
8. The flame was adjusted to run at full capacity.		
9. The flame was extinguished by closing the tank valve (first).		
10. The flame burned itself out.		
11. Closed the torch handle valve.		
12. Rolled up the hose and hung it on the torch stand.		
13. Stowed the equipment in the proper location of the lab.		

All items must be marked Meets Industry Standards (satisfactory) for mastery.

Task Tracking (Step 10)

An example of Task Tracking has not been included in this SBCTE Curriculum Guide because PDE Program of Study Task Lists provide a check-off section for student management of tasks and most schools have an online student management system that includes task tracking. Student management or learning management systems are used by teachers, students, and parents to monitor students' progress.