Y1 Q3 Unit 3 Plumbing Basics

Content Area: **Integrated Technical Arts**
Course(s): **Fix It**
Time Period: **March**
Length: **6 weeks**
Status: **Published**

Unit Overview & Pacing Outline

In this unit of study, students will explore the maintanence of home systems technology.

- Personal and lab safety will be emphasized as various tools are introduced into lab sessions.
- Students will engage in career research relative to this unit of study.
- Environmentally friendly themes are discussed in this unit.
- Plumbing math and calculations.
- Safety, tools, and careers related to plumbing.
- Print reading and pipe fitting.
- Soldering and brazing.
- Supply and drain lines.

Approximate Time Frame:

Week 1: Plumbing math and calculations. Safety, tools, and careers related to plumbing.

Week 2: Print reading and pipe fitting via lab stations. Pex fittings, copper fittings, pvc fittings.

Week 3: Soldering copper fittings.

Weeks 4-5: , Toilet assembly, faucet assembly, shower & tub assembly.

Enduring Understandings

Through the delivery of the unit outlined above, students will understand:

- the contractual relationships between all parties involved in the building process.
- scheduling practices which ensure the successful completion of a construction project.
- the importance of maintaining jobsite safety.
- how to safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.
- troubleshooting procedures when solving a maintenance problem in buildings.
- the importance of preventative maintenance activities to service existing buildings.

Essential Questions & Skills

- What general shop safety rules can be applied to the practice of plumbing? Whyis it necessary to develop safe working habits?
- Recognize the name and purposes of a variety of general plubing tools.
- Demonsate the ability to accuratey measure and calculate pipe lengths and read pipe schedule information.
- Incorporate the use of levels to ensure drainage in a plumbing system.
- Recognize print symbols and interpret a schematic plumbing diagrams.
- Understand concepts of welding and fusing materials together)plastics, copper, etc.).
- Assemble and test common household plumbing fixtures for leaks.

Standards/Indicators & SLOs

PATHWAY: CONSTRUCTION (AC-CST)

9.3.12.AC-CST.1 Describe contractual relationships between all parties involved in the building process.
9.3.12.AC-CST.2 Describe the approval procedures required for successful completion of a construction project.
9.3.12.AC-CST.3 Implement testing and inspection procedures to ensure successful completion of a construction project.
9.3.12.AC-CST.4 Apply scheduling practices to ensure the successful completion of a construction project.
9.3.12.AC-CST.5 Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.6 Manage relationships with internal and external parties to successfully complete construction projects.
9.3.12.AC-CST.7 Compare and contrast the building systems and components required for a construction project.
9.3.12.AC-CST.8 Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-CST.9 Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.

PATHWAY: MAINTENANCE/OPERATIONS (AC-MO)

9.3.12.AC-MO.1 Recognize and employ universal construction signs and symbols to function safely in the workplace.
9.3.12.AC-MO.2 Use troubleshooting procedures when solving a maintenance problem in buildings.
9.3.12.AC-MO.3 Apply construction skills when repairing, restoring or renovating existing buildings.
9.3.12.AC-MO.4 Determine work required to repair or renovate an existing building.
9.3.12.AC-MO.5 Plan and practice preventative maintenance activities to service existing buildings.
9.3.12.AC-MO.6 Maintain and inspect building systems to achieve safe and efficient operation of buildings.

Lesson Titles

3-way switch, outlet configurations. Volts, amperage, ohms, watts, calculation.

Electrical lamp fixtures and smoke detectors in series.

Electrical motor basics, magnetism, and applications.

Plumbing math and calculations. Safety, tools, and careers related to plumbing.

Print reading and pipe fitting via lab stations. Pex fittings, copper fittings, PVC fittings.

Soldering copper fittings.

Toilet assembly, faucet assembly, shower & tub assembly.

Career Readiness, Life Literacies, & Key Skills

TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).
TECH.9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

Inter-Disciplinary Connections

- CAEP.9.2.12.C Career Preparation
- CAEP.9.2.12.C.1 Review career goals and determine steps necessary for attainment.
- CAEP.9.2.12.C.3 Identify transferable career skills and design alternate career plans.
- CAEP.9.2.12.C.4 Analyze how economic conditions and societal changes influence employment trends and future education.
- CAEP.9.2.12.C.2 Modify Personalized Student Learning Plans to support declared career goals.
- CAEP.9.2.12.C.5 Research career opportunities in the United States and abroad that require knowledge of world languages and diverse cultures.

Anticipatory Set

Stated in daily lesson plans and posted via Smartboard, blackboard, or as per teacher instructions.

- Prop: A prop can be a physical item that relates to your subject and objectives. Display it museum style, encourage interaction with the object and/or use it for a show and tell. You can have them walk through the "museum" and make observations and connect it what they think they might learn.
- Media: A video, audio, newspaper articles or images can enhance your hook. With websites like brainpop, youtube, discovery science, etc. there isn't a shortage of media that can be used.
- Story: You can tell a personal story, a story that relates to the objectives, describe a scene or event from history; read a passage with the target grammar (mentor texts), etc.
- Analogy: Analogies make concepts easier to understand and more relatable. To come up with a good analogy, list characteristics of the concept, list characteristics of something relatable to your student's lives and then find relationships between them.
- Challenge: Design a game, riddle, or something that needs to be solved.
- Survey: Create a survey.
- Scenario: Set a scene for a problem and have the students brainstorm possible answers.
- Experiment: Conduct an experiment.
- Word Associations: Give students a set of vocabulary words and have them make a connection.
- Dress up: Find a costume or create a skit based on what students will be learning.
- Writing Prompt: Students will answer a question, brainstorm, activate prior knowledge, etc. about the topic.
- Scavenger Hunt: Students will gather information on topic.
- Joke: Telling a joke related to the topic will get kids laughing and get the brain activated!
- Assembly Line: Use your imagination to create this set. The purpose is the process in which students will add something until there is a finished piece.
- Picture Puzzle: Take an image and cut it up, students will put it together to find out what they are learning about.

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK

Group students based on topic knowledge

Create pods with student captains

Create tiered lessons

Create handouts for common questions

Include hands-on activities and projects

Provide study guides, worksheets, and notes

Flip your classroom

Use the Think-Pair-Share method

Try digital curriculum

Modifications: At Risk Learner

- Additional time for assignments
- Adjusted assignment timelines
- Agenda book and checklists
- Answers to be dictated
- Assistance in maintaining uncluttered space
- Books on tape
- Concrete examples
- Extra visual and verbal cues and prompts
- Follow a routine/schedule
- Graphic organizers
- Have students restate information
- No penalty for spelling errors or sloppy handwriting
- Peer or scribe note-taking
- Personalized examples
- Preferential seating
- Provision of notes or outlines
- Reduction of distractions
- Review of directions
- Review sessions
- Space for movement or breaks
- Support auditory presentations with visuals
- Teach time management skills
- Use of a study carrel

- Use of mnemonics
- Varied reinforcement procedures
- Work in progress check

Modifications: ELL

- Choice of test format (multiple-choice, essay, true-false)
- Continue practicing vocabulary
- Provide study guides prior to tests
- Read directions to the student
- Read test passages aloud (for comprehension assessment)
- Vary test formats

Modifications: 504 & IEP

- Allow for redos/retakes .
- Assign fewer problems at one time (e.g., assign only odds or evens) .
- Differentiated center-based small group instruction .
- Extra time on assessments .
- Highlight key directions .
- If a manipulative is used during instruction, allow its use on a test .
- Opportunities for cooperative partner work .
- Provide reteach pages if necessary .
- Provide several ways to solve a problem if possible .
- Provide visual aids and anchor charts .
- Test in alternative site .
- Tiered lessons and assignments .
- Use of a graphic organizer .
- Use of concrete materials and objects (manipulatives) .
- Use of word processor .

Modifications: G&T

- Alternate assignments/enrichment assignments
- Enrichment projects

- Extension activities
- Higher-level cooperative learning activities
- Pairing direct instruction with coaching to promote self-directed learning
- Provide higher-order questioning and discussion opportunities
- Provide texts at a higher reading level
- Tiered assignments
- Tiered centers

Benchmark Assessment

Skills-based assessment

Reading response

Writing prompt

Lab practical

Formative Assessment

Unit formative assessments are drawn from, but not limited to:

- Observations during in-class activities; of students' non-verbal feedback during lecture.
- Homework exercises as review for exams and class discussions.
- Reflections journals that are reviewed periodically during the semester.
- Question and answer sessions, formal—planned and informal—spontaneous.
- Conferences between the instructor and student at various points in the semester.
- In-class activities where students informally present their results.
- Student feedback collected by periodically answering specific question about the instruction and their self-evaluation of performance and progress.

Alternative Assessments

Performance tasks

Project-based assignments

Problem-based assignments

Presentations

Reflective pieces

Concept maps

Case-based scenarios

Portfolios

Summative Assessment

Summative assessments are related specifically to material covered in the current unit of study.

- Quiz, Test, MP Assessment.
- Final examination (a truly summative assessment).
- Term papers (drafts submitted throughout the semester would be a formative assessment).
- Projects (project phases submitted at various completion points could be formatively assessed).
- Portfolios (could also be assessed during its development as a formative assessment).
- Performances, Speeches, Critiques.
- Student evaluation of the course (teaching effectiveness).
- Instructor self-evaluation.

Resources & Materials

- • Construction Technology 4th Edition
- • Core Curriculum 5th Edition
- • Hand and Power Tools as Needed
- • Instructional videos from various sources

Technology

- Chromebooks, Google Drive Storage & Related Google Apps
- MS Office Software as Needed

- SmartBoard Presentations and Peripheral Technology
- Smartphones
- Power Tools as Needed

- TECH.8.1.12.A.CS2 Select and use applications effectively and productively.
- TECH.8.1.12.B Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
- TECH.8.1.12.C.CS2 Communicate information and ideas to multiple audiences using a variety of media and formats.
- TECH.8.1.12.E.CS4 Process data and report results.
- TECH.8.1.12.F.CS1 Identify and define authentic problems and significant questions for investigation.
- TECH.8.1.12.A.CS1 Understand and use technology systems.
- TECH.8.1.12.B.CS1 Apply existing knowledge to generate new ideas, products, or processes.
- TECH.8.1.12.F.CS2 Plan and manage activities to develop a solution or complete a project.