

Unit 8: Basic Residential Electrical and Plumbing

Content Area: **Industrial Technology**
Course(s): **Construction Technology I**
Time Period: **4th Marking Period**
Length: **Weeks**
Status: **Published**

Unit Overview

Students will be able to install a basic electrical circuit in the framed wall they have already constructed and identify how electric is distributed through a house and components. Student will be able to identify how plumbing is distributed through a house and components.

Transfer

Students will be able to independently use their learning to...

-Repair Electrical and Plumbing Components in their house or further their education to become a licensed Electrician or Plumber.

For more information, read the following article by Grant Wiggins.

http://www.authenticeducation.org/ae_bigideas/article.lasso?artid=60

Meaning

Student will be able to safely repair small electrical or plumbing projects in their home or they may want to pursue a career in the Electrical or Plumbing Field.

Understandings

Students will understand that...

-They can save money or earn money by repairing small electrical or plumbing themselves.

That the Electrical and Plumbing trades are in need of qualified technicians and they can earn money if they select this field as a Career.

Essential Questions

Students will keep considering...

-What are the dangers and safety hazards when working with Electricity or Water?

Is the Electrical or Plumbing Field a career I would like to pursue in the future.

Application of Knowledge and Skill

SWBAT drill holes and run wires through their framed wall to complete a basic electrical circuit.

SWBAT identify how electricity flows through a house.

SWBAT identify how water flows through a house and is removed.

Students will know...

Students will know...

What facts and basic concepts should students know and be able to recall?

How electricity flows through a house.

How water flows through a house and is removed

How to install electrical components. ie: Receptacle, Switch, Light.

How to install plumbing fixtures. ie: Sink with Faucet, Tub with Faucets, Toilet valves.

Tools that are specific to the Plumbing and Electrical Trades.

Safety when working with Electricity or Water.

Students will be skilled at...

Students will be skilled at...

Installation of Electrical and Plumbing Components.

Safe operation of Electric and Plumbing Tools along with various types of Electrical Testers.

Running Electrical Wires and Plumbing Pipes in a house.

Academic Vocabulary

Voltage, Amperage, Resistance, Wire Gauge, Electrical Load, Professional Unions.

Learning Goal 1

Transfer of Electricity from a Electrical Power Station to a home and Alternative Electrical Power.

9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.2	Use architecture and construction skills to create and manage a project.
9.3.12.AC.3	Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
9.3.12.AC.4	Evaluate the nature and scope of the Architecture & Construction Career Cluster and the role of architecture and construction in society and the economy.
9.3.12.AC.5	Describe the roles, responsibilities, and relationships found in the architecture and construction trades and professions, including labor/management relationships.
9.3.12.AC.7	Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career Pathways.
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.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.
9.3.12.AC-DES.4	Apply building codes, laws and rules in the project design.
9.3.12.AC-MO.2	Use troubleshooting procedures when solving a maintenance problem in buildings.

Target 1

SWBAT identify the methods electrical power is produced and how it travels to a residence.

Target 2

SWBAT identify the different types of Alternative Electrical Power and how it is created and delivered to a residence.

Learning Goal 2

Electric Circuitry and Electric Testing.

9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.2	Use architecture and construction skills to create and manage a project.
9.3.12.AC.3	Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
9.3.12.AC.4	Evaluate the nature and scope of the Architecture & Construction Career Cluster and the role of architecture and construction in society and the economy.
9.3.12.AC.5	Describe the roles, responsibilities, and relationships found in the architecture and construction trades and professions, including labor/management relationships.
9.3.12.AC.6	Read, interpret and use technical drawings, documents and specifications to plan a project.
9.3.12.AC.7	Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career Pathways.
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.5	Apply practices and procedures required to maintain jobsite safety.
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.
9.3.12.AC-DES.2	Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues.
9.3.12.AC-DES.4	Apply building codes, laws and rules in the project design.
9.3.12.AC-DES.8	Apply standards, applications and restrictions pertaining to the selection and use of construction materials, components and assemblies in the project design.
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.

Target 1

SWBAT to identify how electricity flows through a circuit in series and parallel and how to operate various electrical testers to test for and double shoot a electrical problem.

Learning Goal 3

Residential Plumbing System and Components.

9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.2	Use architecture and construction skills to create and manage a project.
9.3.12.AC.3	Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
9.3.12.AC.4	Evaluate the nature and scope of the Architecture & Construction Career Cluster and the role of architecture and construction in society and the economy.
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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.

9.3.12.AC-MO.2

Use troubleshooting procedures when solving a maintenance problem in buildings.

Target 1

SWBAT identify plumbing components and how water is delivered to a residential home.

Target 2

SWBAT identify plumbing components and how waste water is removed from a residential home.

Target 3

SWBAT solder or glue plumbing pipes together to make repairs.

Summative Assessment

Students will take on line tests through Google Classroom on Electrical Systems and Components.

Students will take on line tests through Google Classroom on Plumbing Systems and Components.

21st Century Life and Careers

Select all applicable standards from the applicable standards

CAEP.9.2.12.C.1	Review career goals and determine steps necessary for attainment.
CAEP.9.2.12.C.2	Modify Personalized Student Learning Plans to support declared career goals.
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.6	Investigate entrepreneurship opportunities as options for career planning and identify the knowledge, skills, abilities, and resources required for owning and managing a business.
CAEP.9.2.12.C.7	Examine the professional, legal, and ethical responsibilities for both employers and employees in the global workplace.
CAEP.9.2.12.C.8	Assess the impact of litigation and court decisions on employment laws and practices.

Formative Assessment and Performance Opportunities

Student will be graded by observation of performance and functionality of small group projects on Electrical Circuit.

Student will be graded by observation of performance and functionality of small group projects on Plumbing repair of Pipe.

Accommodations/Modifications

Students with Accommodations/Modifications can be assisted by students that have already completed the task.

Students with Accommodations/Modifications can retake the topic tests or take the test with a Special Needs Teacher.

Unit Resources

You tube videos on Topics.

Interdisciplinary Connections
