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| **Course:** Foudnations of Technology | | | | | | |
| **Unit:** Basic Electricity | | | | **exercise:** Parallel Circuits | | **Time Frame:** 1 - 2 Hours |
|  | Preparation: *Summary of “to do’s” that the teacher should understand and prepare before bringing this lesson to the classroom.* | | | | | |
| **Information:**  Before starting this exercise, students should have an understanding of material covered in:   * Presentation: Ohm’s Law * Video: Electricity – Series – Parallel Circuits * Video: Simple Circuits * Presentation: Series Circuits   Teachers will need to ensure that the proper supplies are available for students to build their solutions.  **Materials:**   * NASCO electrical supply kit * Batteries   **Tools:**   * Internet | | | | | | |
|  | Safety: *Summary of safety strategies in the lesson.* | | | | | |
| Shock: Students will be working with electricity. Extra care should be observed when working with electricity. | | | | | | |
|  | Desired Results: | | | | | |
| Established Goals: | |  | Transfer: | | | |
| *Problem Solving Techniques and Applications Standards:*  Teachers should use the STEM Academy Standards Correlation System available in the STEM Connections area of a unit to extract specific standards and insert these standards here. | | *Students will be able to independently use their learning to…*   * Identify the basic characteristics of parallel and compound circuits; * Verify the characteristics of several circuits. | | | |
| Meaning: | | | |
| Understandings  *Students will understand that...*   * With parallel circuits, the electricity has multiple paths to take; * Current is held constant in a parallel circuit. | | Essential Questions  *Students will keep considering...*   * Other circuit types; * Characteristics of circuits that combine the different types of circuits. | |
| Acquisition OF KNOWLEDGE AND SKILL: | | | |
| *Students will know...*   * The steps necessary in order to handle electricity safely; * The various characteristics of parallel circuits. | | *Students will be skilled at...*   * Constructing parallel circuits to specific specifications; * Handling electricity in circuits safely. | |
|  | Evidence: | | | | | |
| Evaluative Criteria: | |  | Assessment Evidence: | | | |
| * Outcome of assignment * Correct answers * Outcome of assignment * Correct answers | | | *Performance Task(s):*  Parallel Circuits Assignment:  In this assignment, students will be tasked with constructing and answering questions pertaining to parallel circuits.  Comparative Circuits Assignment:  In this assignment, students will be tasked with constructing and answering questions pertaining to various types of circuits. | | | |
| * Correct answers | | | *Other Evidence:*   * Online quiz | | | |
|  | Learning Plan: *Summary of Key Learning Events and Instruction* | | | | | |
| **Outline:**   1. Set Introduction   Ask your students about some of the advantages and disadvantages of series circuits. Use this to discuss how parallel circuits meet some of these challenges.   1. Introduction   Use the discussion section as a brief introduction to the procedure.   1. Pass Out Materials   Have your students read the entire procedure section before starting the activity. Pass out the needed materials for this activity while they are reading.   1. Student Time   Once all the materials are passed out and each student completes their reading allow them to start the activity.. Students will be assembling a simple circuit using the materials provided.  Using the provided adjustable wire strippers. Be sure to remove enough wire in order to "clip" the wire into the connection.   1. Student Questions   Make yourself available to any students that may get stuck or have questions.   1. Quiz   At the end of the activity each student should complete the corresponding online questions.  **Progress Monitoring:**   * The instructor will need to monitor the classroom, checking student’s work and ensuring students are on task and following directions. * Ensure students store their projects at the end of class and leave all materials in the room. * At the end of the activity, post student projects in the room and provide appropriate feedback | | | | | | |
|  | Differentiation: *Summary of Key Differentiation Techniques* | | | | | |
| Please use this space to insert your differentiation techniques. Depending on the needs of students, various techniques might be needed in a classroom, therefore use the information below and experts in the area needed to design your plan for differentiation.  The ASCD Study Guide for Integrating Differentiated Instruction and Understating by Design: Connecting Content and Kids.  by Carol Ann Tomlinson, Jay McTighe  Integrating Differentiated Instruction and Understating by Design: Connecting Content and Kids.  by Carol Ann Tomlinson, Jay McTighe  ISBN-13: 978-1416602842  ISBN-10: 1416602844  Differentiating Reading Instruction  *by Laura Robb.*  ISBN13: 9780545022989  A Teacher's Guide to Differentiating Instruction  The Center for Comprehensive School Reform and Improvement | | | | | | |

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|  | career Connections: *Summary of Career Opportunities Associated with this Lesson* |
| Electrical Engineer  Electrical engineers design and develop electrical systems.  Utilities Worker  Utilities workers handle electricity and other utilities in a safe manner.  Electrician  Electricians wire buildings and implement electrical systems.    Good sources for career connections:  Occupational Outlook Handbook  <http://www.bls.gov/ooh>  The National Career Clusters® Framework  <http://www.careertech.org/career-clusters> | |
|  | Keywords: *Please Insert Keywords from this Lesson with their Definitions* |
| PARALLEL CIRCUIT—a closed circuit in which the current flows in multiple paths.  ELECTRICITY—a form of energy resulting from the existence of charged particles.  CIRCUIT—a complete and closed path around which a circulating electric current can flow.  Use resources like [dictionary.com](http://dictionary.reference.com/) to find definitions to your keywords | |