

COURSE: MIDDLE SCHOOL

UNIT: ELECTRICITY

EXERCISE: ELECTRICAL CIRCUITS

TIME FRAME: 2-4 Hours



PREPARATION: *Summary of “to do’s” that the teacher should understand and prepare before bringing this lesson to the classroom.*

Teachers will need to ensure that the proper supplies are available for students to build their solutions.

You will need these items:

Materials:

- Electrical Circuits kit from Stem 101 website- <https://stem101.org/>



SAFETY: *Summary of safety strategies in the lesson.*

S1

DESIRED RESULTS:

ESTABLISHED GOALS:

Problem Solving Techniques and Applications Standards:

TRANSFER:

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

- Better understand electricity and circuits

MEANING:

UNDERSTANDINGS

Students will understand that...

- A circuit needs to be closed for current to flow and a LED to light up
- How electricity flows

ESSENTIAL QUESTIONS

Students will keep considering...

- How electricity is used and functions in everyday settings

ACQUISITION OF KNOWLEDGE AND SKILL:

Students will know...

- The difference between series and parallel circuits
- What is an open circuit and closed circuit
- How current flows
- What a LED is and how it works

Students will be skilled at...

- Designing a circuit
- Creating a circuit
- Testing a circuit
- Troubleshooting a circuit

S2

EVIDENCE:

EVALUATIVE CRITERIA:

ASSESSMENT EVIDENCE:

Performance Task(s):

Task Placeholder

The circuits the student designs will be assessed based on the set up and proper function.

Other Evidence:

- End of unit quiz

S3

LEARNING PLAN: *Summary of Key Learning Events and Instruction*

1. Introduce Activity

- Create different circuits to understand series and parallel circuits

2. Brainstorm

- Students will use the step-by-step circuit to help design their own series and parallel circuit

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3. Construct

- a. Using the workbook, students will build 7 different circuits

4. Test

- a. Test the circuits for proper operation.

5. Communicate Results

- a. Share the workbook with instructor

Progress Monitoring:

Teacher should observe students and provide on-going feedback during the activity. While introducing the unit, the teacher will pause and ask for questions to make sure everyone understands.

Students will complete self-assessment and brainstorm how they could improve their skills in the future. At the end of the unit, there will be a quiz to measure their overall understanding.



DIFFERENTIATION: *Summary of Key Differentiation Techniques*

The ASCD Study Guide for Integrating Differentiated Instruction and Understanding by Design: Connecting Content and Kids.
by Carol Ann Tomlinson, Jay McTighe

Integrating Differentiated Instruction and Understanding 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



CAREER CONNECTIONS: *Summary of Career Opportunities Associated with this Lesson*

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*

Use resources like dictionary.com to find definitions to your keywords