MODIFIED UBD LESSON PLAN



COURSE: Middle School

UNIT: Environmental and Agricultural Concepts

EXERCISE: Design and Monitor a

Building System

TIME FRAME: 3-4 Hours

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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 the following items:

Materials:

Hydroponics kit (purchased from Stem 101)



SAFETY: Summary of safety strategies in the lesson.

Please use this space to describe safety procedures or highlights for this lesson.

DESIRED RESULTS: ESTABLISHED GOALS:

Problem Solving Techniques and Applications Standards:

TRANSFER:

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

- Consider energy conservation in relation to heating and cooling of a home or building.
- Understand carbon footprint and ways to reduce their own

MEANING:

UNDERSTANDINGS

Students will understand that...

Different factors affect the ambient temperature of a building

ESSENTIAL QUESTIONS

Students will keep considering...

- Energy conservation
- Building layout
- Heat transfer

ACQUISITION OF KNOWLEDGE AND SKILL:

Students will know...

- How to calculate surface area of a room
- How to price out products for a home
- How to calculate the volume of a room
- How humidity can affect products

Students will be skilled at...

- Building a foam model
- Using a temperature sensor properly
- Data collection
- Various experimentations involving different factors within a building system



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BUILDING SYSTEM

S2 EVIDENCE:

EVALUATIVE CRITERIA:

ASSESSMENT EVIDENCE:

Performance Task(s):

Placeholder

Design and Monitor a Building System Building and testing of a foam model.

Other Evidence:

- Online test
- Results of experiments
- Spreadsheet showing data collection

LEARNING PLAN: Summary of Key Learning Events and Instruction

1. Introduce Activity

a. Begin by showing videos of smart buildings. Also, go through the kit components explaining what they will be doing. It is a good idea to have one already built so students can see what a finished product looks like

2. Construct

Students will build their model. The teacher can demo the steps to completion or refer to the videos for construction

4. Test

a. Once built, there are several experiments students will conduct. Be sure they extract their data for each experiment so they can create visualizations of their experiments. Feel free to add to the experiments that are included.

5. Communicate Results

a. Have students chart the results of their experiments and explain analyze their findings.

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.



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

Please use this space to insert careers that might be connected to this lesson. This section will need continuous updating as new careers and emerging technologies change the opportunities available in the workforce.

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

Please use this space to insert keywords and their definitions Use resources like dictionary.com to find definitions to your keywords

