MODIFIED UBD LESSON PLAN



COURSE: MIDDLE SCHOOL

UNIT: STRUCTURES EXERCISE: Top This TIME FRAME: 1-2 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.

From the kit you will need these items:

Materials:

- Approximately 30-40 3 x 5-inch notecards per team
- Multiple items of the same heavy weight (bricks, canned goods, wood boards, etc.)

Tools:

None



SAFETY: Summary of safety strategies in the lesson.

No specific safety strategies needed. Ensure each team has a tabletop or floor space to work, including enough open space so towers and items do not fall onto one another.

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DESIRED RESULTS: ESTABLISHED GOALS:

Problem Solving Techniques an

Problem Solving Techniques and Applications Standards:

TRANSFER:

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

• Choose an effective and appropriate structure shape for a given building situation.

MEANING:

UNDERSTANDINGS

Students will understand that...

 Squares, rectangles, triangles, and circles are each used as structural shapes in different situations.

ESSENTIAL QUESTIONS

Students will keep considering...

 Different shapes may be more effective or less effective in different structural situations.

ACQUISITION OF KNOWLEDGE AND SKILL:

Students will know...

 Square, rectangle, triangle, and circle structural shapes each have unique features, benefits, and limitations. Students will be skilled at...

 Building Models to represent sound structures featuring different shape structures.

S2 EVIDENCE:

EVALUATIVE CRITERIA:

Top This Design Brief Rubric

ASSESSMENT EVIDENCE:

Performance Task(s):

- Completion of Top This Activity Tower Builds
- Design Brief completion including sketches and reflection question responses

Other Evidence:

Structures Activity 1 Quiz



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LEARNING PLAN: Summary of Key Learning Events and Instruction

1. Introduce Activity

- **a.** Present the PROBLEM: Use the Design Process to explore and test different shapes as building structures. Apply what you discover to build a tower that will support the most weight possible, using only index cards.
- Read through the Constraints and Criteria as listed in the Top This Design Brief.

2. Brainstorm

- **a.** Students will complete Round 1 of the challenge as indicated in the Design Brief, gathering observations and ideas about tower structure options.
- b. Students will then complete Round 2, sketching and testing each structure shape design idea with one item of weight, then recording their results as research.

3. Construct

a. Using what was discovered in Rounds 1 and 2 above students will design and build a final competition tower including any combination of shapes they believe will withstand the most weight possible.

4. Test

a. Students will present their tower design strategy to classmates before testing and recording the total maximum weight their tower can nold.

5. Communicate Results

- a. Lead a class discussion based on the results of the final tower competition, highlighting what worked well, what didn't work as well as expected, and any creative or innovative risks or designs that were tested.
- b. Students will record their individual results in the chart and answer the reflections guestions in the Design Brief.

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

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

architecture - the science & art of designing structures and buildings

circumference – distance around the edge of a circle

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

