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Quest for Success Virtual Guidance and Unit 3 Alternate Activity

September 28, 2020

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Objectives

- Introductions
- Hybrid/Virtual Guidance
- Original Activities
- Alternative Activity
- Closing

Hybrid/Virtual Guidance

- The only activities that are modified are those that may be challenging to complete in a virtual environment.
- The resources are created for Louisiana's unique *Quest for Success* course.
- The resources for Unit 3 and additional units under development will be located on the LDOE Quest for Success website.

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Original Activities

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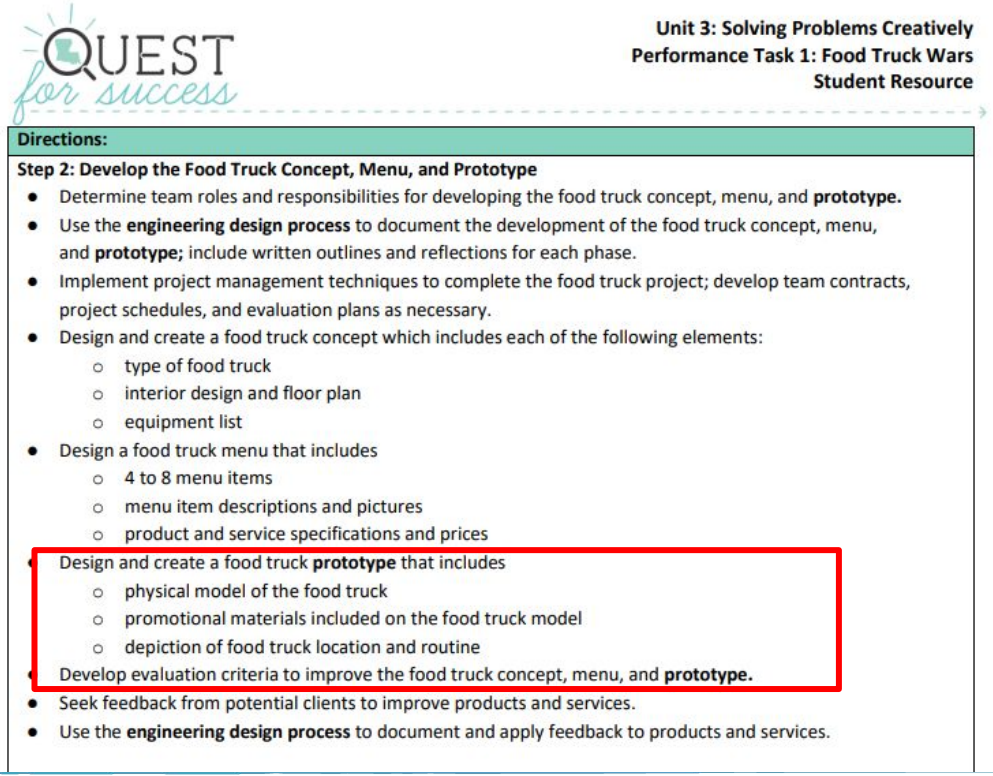
Quest for Success: Food Truck Activity

- Alternative activities are an option for hybrid and virtual instruction.

-The original activity is always an option if it can be performed safely.

-Students work together in small groups to build a physical prototype.



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Unit 3: Solving Problems Creatively
Performance Task 1: Food Truck Wars
Student Resource

Directions:

Step 2: Develop the Food Truck Concept, Menu, and Prototype

- Determine team roles and responsibilities for developing the food truck concept, menu, and **prototype.**
- Use the **engineering design process** to document the development of the food truck concept, menu, and **prototype;** include written outlines and reflections for each phase.
- Implement project management techniques to complete the food truck project; develop team contracts, project schedules, and evaluation plans as necessary.
- Design and create a food truck concept which includes each of the following elements:
  - type of food truck
  - interior design and floor plan
  - equipment list
- Design a food truck menu that includes
  - 4 to 8 menu items
  - menu item descriptions and pictures
  - product and service specifications and prices
- Design and create a food truck **prototype** that includes
  - physical model of the food truck
  - promotional materials included on the food truck model
  - depiction of food truck location and routine
- Develop evaluation criteria to improve the food truck concept, menu, and **prototype.**
- Seek feedback from potential clients to improve products and services.
- Use the **engineering design process** to document and apply feedback to products and services.

Quest for Success: Tower Activity

-This activity should be familiar to Quest for Success Teachers.

-During training, you were put into teams and asked to build a tower using, cups, balloons, and popsicle sticks.

-This was to help students understand the Engineering Design Process as well as continue learning how to create effective teams.

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Unit 3: Solving Problems Creatively
Suggested Timeline: 21 Days

Lesson One Learning Plan: Innovation and Entrepreneurship: What does it mean, and how is it done?	
innovation.	• How can processes such as the **engineering design process** help to develop **innovative** solutions to real-world problems?
Assessed Career and Life Readiness Competencies:	
*Thinking **creatively** is demonstrated through the design process for creating the tallest tower.* *Solving problems is demonstrated as students identify constraints and solutions to building the tallest tower.* *Reasoning is demonstrated as students reflect on how they could improve their towers.* *Adapting and showing flexibility is demonstrated as students work together in groups and share engineering ideas.*	
Suggested Texts and Resources:	
Resources • Engineering Is Elementary • A STEM Project Just in Time for Earth Day • Engineering Design Process Worksheet • Design Journals • Keep a Great Science or Engineering Project Laboratory Notebook • Engineering on a Dime: 3 STEM Challenges You Can Do Today	New Vocabulary for the Learning Plan • **creativity** • **entrepreneur** • **innovation** • **patent**
Learning Events and Formative Checkpoints:	
Day 1	Students will know and be able to understand and apply **creativity** and habits of effective **innovators** and **entrepreneurs**. Students will know the engineering and design process.
	Formative Assessment • teacher observation of class discussion • teacher review of engineering design journal • exit ticket on the engineering design process
	Materials/Resources: • **engineering design process** link • graphic depictions of the **engineering design process** • graphic depictions of an engineering journal
Day 2	Students will know and be able to use the engineering design process.
	Formative Assessment • teacher observation of class discussion • teacher review of engineering design journal
	Materials/Resources: • **engineering design process** • graphic depictions of the **engineering design process**

Quest for Success: Catapult Activity

- Similar to other activities in this unit, this activity focuses on solving problems creatively using the Engineering Design Process.

- Students work together in teams to build a working catapult.

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Unit 3: Solving Problems Creatively
Suggested Timeline: 21 Days

Career and Life Readiness Competencies	
Thinking critically is demonstrated as students work to create a successful catapult. *Solving problems is demonstrated as students brainstorm ways to create, evaluate, and improve their catapult design.*	
Suggested Texts and Resources:	
Resources • Engineering on a Dime: 3 STEM Challenges You Can Do Today Materials • pompom ball • paper towel rolls • rubber bands • spoons, tape • cardboard • (Materials can be adapted using common classroom resources as the teacher sees fit—craft sticks and tape, binder clips, etc.)	**Links to Resources:**
Learning Events and Formative Checkpoints:	
Day 1	Students will know and be able to: • discuss ways in which **innovators** have developed inventions and innovation. • work in teams of four to develop examples of possible innovations. • understand how **creative** qualities can be applied to achieve their personal and career goals.
	Formative Assessment • teacher observation of class discussion • teacher review of the engineering design journal
	Materials • engineering design journal • question guide from teacher guide
Day 2	Students will know and be able to • apply the **engineering design process** to develop an invention or innovation that solves a problem. • work in teams to apply creativity and peer iteration to their solution.
	Formative Assessment • teacher observation of class discussion • teacher review of the **engineering design process** during the catapult activity • teacher review of the engineering design journal
	Materials • pompom ball

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Quest Hybrid Resources PDF

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Quest Hybrid Resources PDF

LDOE released a crosswalk to share with instructors what alternate activities are being developed.

As resources are updated, they will be added to this document in the Online Activity Option column.

Quest for Success Activity Crosswalk

		Pacing	Face to Face Activity Option	Online Activity Option
Unit 1: How I Learn and Lead	Unit 1: Performance Task 1	10 Days	Performance Task 1 Personal Brand and Vision Board	
	Unit 1: Performance Task 2		Performance Task 2 Student Success Plan	
Unit 2: Effective Teams: The Sum is Greater Than the Parts	Unit 2: Performance Task 1	14 Days	Performance Task 1 Team Contract	
	Unit 2: Lesson 1		Activity: Obstacle Course	Alternative Activity: Building a Winning Team Bracket Modified Teaching Guide Modified Student Resource
	Unit 2: Performance Task 1 A		Performance Task 1 A Team Contract	
	Unit 2: Performance Task 1 B		Performance Task 1B Web Redesign and Social Media Campaign	
Unit 3: Thinking out of the Box	Unit 3: Performance Task 1	22 Days	Performance Task 1: Food Truck Prototype	Alternative activity
	Unit 3: Unit Plan		Activity: Build a Tower	Alternative activity
	Unit 3: Lesson 3		Activity: Catapult Activity	Alternative activity
Unit 4: Being a Cyber Citizen	Unit 4: Performance Task 1	28 Days	Performance Task 1 Navigating the Net	
	Unit 4: Performance Task 2		Performance Task 2 My Digital Identity	
	Unit 4: Performance Task 3		Performance Task 3 The Price of Cyberbullying	
	Unit 4: Performance Task 4		Performance Task 4 Your Data Your Privacy	
Unit 5: Superheroes in My Community	Unit 5: Performance Task 1	28 Days	Performance Task 1 Servant Leadership	Alternate activity
	Unit 5: Performance Task 2		Performance Task 2 Community Service Project	
	Unit 5: Performance Task 3		Performance Task 3 Helping Professions Awareness Campaign	
	Unit 5: Performance Task 4		Performance Task 4 Public Health and Healthcare Careers	
Unit 6: Managing Money to Meet My Goals	Unit 6: Performance Task 1	9 Days	Performance Task 1 What Would You Do	
	Unit 6: Performance Task 2		Performance Task 2 Understanding Car Loans	
	Unit 6: Performance Task 3		Performance Task 3 Budgets 101	
Unit 7: Navigating My Career Path	Unit 7: Performance Task 1	15 Days	Performance Task 1 Is this Career Is for You?	
	Unit 7: Performance Task 2		Performance Task 2 Individual Graduation Plan	
Unit 8: Looking Forward	Unit 8: Performance Task 1	18 Days	Performance Task 1 Bulletin Board of Poster Presentation	
	Unit 8: Performance Task 2		Performance Task 2 Parent and Community Night	Alternate activity

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Alternate Virtual Activity

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Unit 3: Modified Teacher Resource Guide

The Modified Teacher Resource Guide is a complement to the original guide and has a modification explaining the new modified activity.

Modifications:

The following lesson(s) have been modified to make learning opportunities more accessible to students in a remote setting. The use of an LMS with the capability of posting discussions, assignments, and video/content links for students is recommended.

- In a modification to Lesson One: Innovation and Entrepreneurship (Paper Tower Challenge Activity), students are asked to brainstorm tower building methods using an online virtual tower builder simulator and will record their journey through the engineering design process using a digital journal. Students will use up to 20 sheets of paper to build the tallest, most creative, or most interestingly engineered paper tower. All parts of the engineering design process will be recorded in the student's digital engineering design journal.
- In a modification to Lesson Three: Solving Problems through Creativity (Design a Catapult Activity), students are asked to brainstorm a conceptual catapult to solve an everyday problem using an online virtual catapult simulator. Students will test changing launch angle and mass virtually to make a design plan for their catapult design. Students will test the launch angle and mass of their design and record their design process in their digital engineering journal. Note: Students will research the best catapult type for their conceptual design but will not physically construct a catapult.
- In a modification to Lesson Four: Innovation and Entrepreneurship at Work (Unit 3 Performance Task), students are asked to develop a business plan for a food truck company. Students will work individually to develop the food truck menu, floor plan, 3-D model, business plan, and final presentation. All parts of the engineering design process will be recorded in the student's digital engineering design journal. Students will submit digital exit tickets/reflections and will receive virtual feedback from peers at various stages throughout the project development. Note: Since students will complete this project independently, students will not use the team contract, project roles and responsibilities and will not be assessed on team work. Students will complete a decision matrix independently and will receive peer evaluation using the matrix.

Unit 3: Modified Teacher Resource Guide Activities (Paper Tower Challenge)

Each activity will contain:
-Time Frame
-Materials
-Remote Learning Tips
    -Synchronous instruction
    -Asynchronous instruction

Activity: Paper Tower Challenge

Time Frame: 55 minutes

Class Configuration: Synchronous option: Individual with assigned partner feedback; Asynchronous option: Individual with teacher feedback

Materials:

- Virtual Tower Builder: https://www.scienceathome.org/games/tower-builder/play-tower-builder-v2/
- Digital copy of engineering design process graphic organizer (provided with PT 3.1 Student Resources)
- Copy of the digital engineering design journal (provided in Modified Student Resources)
- Remote students will provide the paper for the Tower Build. (Notify synchronous students in advance that 20 sheets of paper and scissors are needed for this activity.)

Description: Students individually with an assigned feedback partner (Synchronously) or individually with teacher feedback (Asynchronously) will see who can build the tallest paper tower using the engineering design process.

Remote Learning Tip: To make the "Paper Tower Challenge" activity as accessible to remote learning students as possible, links to external content, graphic organizers, and formative assessment checkpoints have been designed to easily integrate into a school or district's Learning Management System (LMS). It is suggested that links found within the lesson be shared with students directly through the LMS and tested prior to releasing them to students to ensure that links are still active and mapped correctly.

- ***Synchronous instruction:*** *For live synchronous instruction such as web conferencing, teachers can facilitate this activity by allowing students time to brainstorm solutions to the paper tower challenge using the virtual tower*

Unit 3: Modified Teacher Resource Guide Activities (Catapult)

Instructors should think about what comparable resources are available in their school system and what modifications may have to be made to complete hybrid or virtual projects.

***Consult with your school IT department to ensure any needed web addresses are accessible.**

Activity: Design a Catapult

Time Frame: 55 minutes

Class Size: Synchronous option: Individual with assigned partner feedback; Asynchronous option: Individual with teacher feedback

Materials:

- Virtual Catapult: https://phet.colorado.edu/en/simulation/projectile-motion
- Digital copy of engineering design process graphic organizer (provided with PT 3.1 Student Resources)
- Copy of the digital engineering design journal (provided in Modified Student Resources)
- Remote students will use household items to design a solution to an everyday problem using projectile motion.

Description: Students will work independently to design a conceptual catapult to solve an everyday problem using the steps of the engineering design process.

Remote Learning Tip: To make the "Design a Catapult" activity as accessible to remote learning students as possible, links to external content, graphic organizers, and formative assessment checkpoints have been designed to easily integrate into a school or district's Learning Management System (LMS). It is suggested that links found within the lesson be shared with students directly through the LMS and tested prior to releasing them to students to ensure that links are still active and mapped correctly.

- ***Synchronous instruction:*** *For live synchronous instruction such as web conferencing, teachers can facilitate this activity by allowing students time to brainstorm solutions to the catapult challenge using the virtual catapult (10 minutes) and creating the catapult (20 minutes). If assigning to students individually, teachers might consider modeling the virtual catapult and digital engineering design journal before assigning to the students.*
- ***Asynchronous instruction:*** *The "Design a Catapult" activity can be posted for students to complete independently or at their own pace (self-paced) as long as additional structures are in place. Providing a learning agenda or checklist for students detailing the various steps of the activity would give students more agency and provide support for students in need of accommodations such as this. Teachers may also consider providing an example of a digital engineering design journal to ensure that students have enough direction to meet the desired learning outcomes.*

Unit 3: Modified Teacher Resource Guide Activities (Food Truck Prototype)

Only one modeling tool is shared in this presentation. However there are many tools available. PowerPoint could even be used.

***Instructors should be familiar with any resource that the students are using.**

Activity: Food Truck Prototype

Time Frame: *45 minutes*
Class Size: *Independent*
Materials: *Creative and Unique Food Trucks PPT, The Great Food Truck Race, Household Items for 3-D models, Digital tools for 3-D model*
Description: Students will view and discuss Creative and Unique Food Trucks. Students will then use technology tools or ordinary household items to build a 3-D prototype of their food truck.

1. Share with students the Creative and Unique Food Trucks PPT. If conducting the lessons synchronously, ask students to vote for their favorite food truck, and explain why their selection is their favorite.

2. Students will begin to think about the design of their own food truck. Students may choose to re-watch "The Great Food Truck Race" video clip or research food truck concepts and models to think about the design of their prototype.

3. Have students **brainstorm** on how they would design their own food truck. Students will design a 3-D model of their food truck. Remind students to be creative!

4. Assist students as needed. Check to ensure student ideas and reflections are captured in the digital engineering design journal.

7. Students will create a 3-D model (either physical or computer-aided) of the inside of their food truck using available materials or digital tools.

Remote Learning Tip: Students can use tools such as SketchUp for Schools to digitally design their food truck. If students choose to build a physical model of their food truck, household materials can be used. The model can be photographed and uploaded into the digital journal and final presentation.

SketchUp for Schools Tutorial: https://www.youtube.com/watch?v=NRdd7VT-Qi8

Unit 3:Alternate Virtual Activity Links

Unit 3: Solving Problems Creatively Modified Teaching Guide

Unit 3: Solving Problems Creatively Modified Student Resource

Unit 3: Solving Problems Creatively Student Digital Journal

Closing

QFS Documents Location

QFS Website

Slack Channel

http://bit.ly/QFSSLACK

Questions?

Email Ted Holmes at LDOE: tedrick.holmes@la.gov