

College & Career Awareness

Program Area(s): Agriculture, Business and Marketing, Family and Consumer Sciences, Information Technology, and Technology and Engineering

Lesson Plan Title: Energy Bar Exploration

Students will use project-based learning to develop a recipe for an energy bar that is healthy, made from easy-to-find ingredients, and simple to prepare. They will then design the marketing and branding of this new energy bar. A box will be constructed to display the marketing and branding of the product. Finally, teams will present their finished product to a group.

Estimated Time: Six to ten 45-minute sessions

Primary CTE Pathway(s) Explored: Agriculture – Food Production & Processing Systems, Business and Marketing – Entrepreneurship & Management, Family and Consumer Sciences – Food Science, Dietetics & Nutrition, Information Technology – Digital Media, and Technology and Engineering – Pre-Engineering

Intended Learning Outcome(s):

- Discuss how education, career exploration, planning for college career readiness, and current occupational information will assist individuals in making long-range plans.
- Become acquainted with a wide range of occupations, CTE Pathways, career trends, and emerging careers.
- Differentiate between entry level and expert level career readiness expectations.
- Participate in experiential activities related to career expectations.
- Identify career and postsecondary education options through investigation of High School to College and Career Pathways.
- Explain how academic content knowledge and technical skills are used in various careers.

College and Career Awareness Standard, Objective(s):

Standard 3, Objective 1
Standard 3, Objective 2
Standard 3, Objective 3
Standard 5, Objective 1
Standard 5, Objective 2
Standard 5, Objective 3
Standard 7, Objective 1
Standard 7, Objective 2
Standard 7, Objective 3
Standard 8, Objective 1
Standard 8, Objective 2
Standard 8, Objective 3

Cross Curriculum Integration:

- **21st Century or Interpersonal Soft Skills:** Communication, critical thinking, collaboration, and creativity
- **Math:** Measuring and estimation
- **Finance in the Classroom:** Economic Passport

Career Opportunities in the CTE Pathway(s): Accountant, auditor, business manager, entrepreneur, sales person, customer service representative, office manager, secretary, receptionist, human resources manager, marketing manager, advertising sales person, advertising manager, graphic designer, typographer, color specialist, industrial designer, dietician, food scientist, baker, chef, computer programmer, network support, network manager, digital media specialist (web and social networking), marketing support technician, data interface programmer, etc.

Nontraditional Career Opportunities:

STEM Specific Career Opportunities: Computer programmer, network support, network manager, digital media specialist (web and social networking), marketing support technician, data interface programmer

Methods (Approach to Teaching and Learning):

- Direct Instruction and Demonstration
- Activity/Inquiry/Practice Centered Instruction
- Problem-Based or Project-Based Learning

Materials Needed:

- Computer/projector with Internet connection
- Honey, brown sugar, peanut butter, cereals, dried fruits, oats, nuts, etc.
- Bowls, spoons, pot, measuring cups, rags, towels, etc.
- Foam core board, X-ACTO knife, cutting surface, tape, glue, etc.
- Kitchen for the creation and testing of food products

Vocabulary:

- Agriculture: The science, art, or practice of cultivating the soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting products.

Prior Knowledge Required by Students:

- Basic computing/Web searching skills, measuring, and basic cooking/baking skills

Instructional Procedures:

A quality PBL experience requires eight essential elements. Learn more about PBL on the [College and Career Awareness Wiki](#).

1. Significant Content: This project adds meaning to possible careers.
2. A Need to Know: In this project students will develop a product to help build the Utah economy by becoming entrepreneurs and developing a Utah's Own food product.
3. A Driving Question: Formulate with students a question related to a problem the students can solve.
4. Student Voice and Choice: After the question or problem has been identified, students will engage with the project and be free to make some choices regarding their product design.
5. 21st Century Skills: Students should be provided with multiple opportunities to be actively engaged in creating, collaborating, critical thinking, and communicating throughout the project. This is a student-centered activity.
6. Inquiry and Innovation: As the project progresses, students should be encouraged/directed to make connections to the academic and technical skills they are using and documenting these skills in their journals.
7. Feedback and Revision: Each team should share their first prototype with another team for a product review using the "Solution/Product Rubric."
8. Publicly Presented Product: Use the attached or modify the rubric.

Procedures

Prior to Day 1: Set up a Pinterest Board or a Wiki site with recipe links using common household ingredients: honey, brown sugar, peanut butter, oats, cereals, raisins, nuts, etc. Assemble the ingredients, bowls, spoons, etc. necessary for preparing the bars. Fruit leathers may be considered as a substitute product idea.

Day 1

1. Begin by comparing the nutritional value of snacks that are considered “healthy” with snacks that are considered “unhealthy.” Discuss what makes a snack healthy.
2. Divide the class into teams of 4-6 students. Allow about 5 minutes for each team to come up with a recipe and name for the “World’s Unhealthiest Energy or Granola Bar.” Next, ask each group to give a quick presentation of their bar and why they believe it is the “World’s Unhealthiest.”
3. Lead a discussion of what guidelines should be followed to consider an energy bar “healthy.” Based on the guidelines, allow the teams time to search the Pinterest Board or Wiki site previously prepared for recipes of energy bars that the team would like to follow or slightly alter for their own energy bar business. Teams should consider recipes that use commonly found ingredients, fast to make, and does not require specific equipment or food preparation skills. Each team will also be responsible for the product’s name.

Day 2

1. Provide each team with a bowl, mixing spoon, and basic recipe. See attached recipe. While students are measuring and mixing dry ingredients, warm peanut butter, honey, and brown sugar “wet” mixture on stovetop. Once “wet” ingredients have become homogenous, scoop “wet” ingredients into “dry” bowls of each team. Stir until combined.
2. Pour mixture into disposable 9” x 9” foil container. Press down with wax or parchment paper. Press firmly. Label paper and place on top of foil container. Stack foil containers in freezer for at least 30 minutes or until next class period. Clean up.
3. While energy bars are setting in freezer, and after clean up, allow students time to modify the existing recipe and create their own original recipe based on research on first day and recipe that they just followed. Students should choose type of cereal(s), dried fruits, nuts, or any additional items. Note: Teachers should choose to limit choices to items in room or allow students to bring ingredients from home.

Day 3

1. Briefly review the nutrition label and how to read it.
 - [How to Understand and Use the Nutrition Facts Label](#)
 - [Nutrition Facts Label](#)
 - [Understanding Food Nutrition Labels](#)
2. Gather nutrition label information. Option 1: Students calculate calories, fat, sugar, etc. of their own recipe based on package of each ingredient, actual packages or photocopies. Option 2: Students use websites:
 - [MyFitnessPal Recipe Calculator](#)
 - [SparkRecipes Recipe Calculator](#)
 - [FitWatch Recipe Analyzer](#)or similar app to calculate the calories, fat, sugar, etc. of their own recipe.
3. Create nutrition label. Option 1: Using gathered information from previous step, fill in attached nutrition label worksheet. Option 2: Using gathered information from previous step, complete the attached “Nutrition Label Template” in Adobe Illustrator.

Day 4

1. Marketing and Branding: Students will design the front, back, sides, top, and bottom of their 6”w x 9”h x 2”d box. Each panel will be created on paper, cut to size, and attached to box.
2. Logo: Show students several common logos. Discuss the characteristics each logo has that make it a great logo. A great logo should be simple, distinctive, enduring, memorable, versatile, and relevant. Ask students to generate a variety of logos for their energy bar. This can be done on paper or on the computer with software such as Adobe Illustrator.
3. Color: Students will choose a color scheme for their box. If computers are available, a great resource is, [Adobe Color](#). The color scheme should complement the logo, branding of the product, and take in consideration the target audience.
4. Typography: Students will choose an appropriate font for their product. The font and font treatment should also complement the logo, branding of the product, and take in consideration the target audience. A great resource is, [DaFont.com](#).

5. Teams should use remaining time to plan presentation of product to the class.

Day 5-6

1. Provide each team with a half sheet of foam core board, a pen or pencil, a metal ruler, a T-Square, an X-ACTO knife, and a cutting surface. Students need to find the middle point of their board and draw an X and Y axis with 1 inch marks in both the positive and negative directions of each axis.
2. Following the directions on the attached "Box Construction Worksheet," students will mark and label all the points needed to cut out and construct the box. Once all points have been marked and labeled, each team will connect the dots in the direction labeled.
3. Students will then cut out the pattern around the outer edge of the shape.
4. Now that the box is cut out, students will now make the bend cuts. To make a bend cut, students must first measure the thickness of the board, (~.25", depending on type of foam board.) They will then draw a second line on the outside of the bend lines. Both of these lines must be scored once through the top layer of the foam core and then a second time through the foam, careful not to cut through the final layer of the foam core. After the lines have been scored, pull off the top layer of foam core and then remove the foam. When all the foam has been removed, bend the foam core into place.
5. Dry fit the box to ensure proper fit. Once the box is ready, use glue or tape to finish the box.
6. Attach marketing and branding panels from Day 4 to the appropriate sides of the box.

Presentation Possibilities (Choose One)

1. Students should prepare an animated (:30 seconds to 1:00) commercial. This could be created in Adobe Flash or other animation software, stop-motion animation, flipbook, etc.
2. PowerPoint presentation that covers the 4 P's.
3. Magazine ad using InDesign, Publisher, or other desktop publishing software.
4. An online ad seen on Facebook or other social networking website.
5. Run a classroom market.
6. Classroom "Shark Tank." Other teachers, parents, local business leaders, etc. are the "sharks." The teams present their product for consideration.
7. Each team creates a page for a classroom catalog, recipe book, or class website.
8. Sale energy bars as class fundraiser. Prizes given to most profitable teams.

Additional Resources:

Assessment(s):

- Explanation of concepts (written, oral, or through demonstration or performance of particular skills): This will be accomplished in the presentation of their project.
- Elaboration (understandings or connections beyond objectives—written, oral or through demonstration or performance): This will be accomplished in the presentation of their project.
- Critical thinking demonstration (written, oral, or through demonstration or performance): This will be accomplished in the presentation of their project.
- Construct a list of careers and the education (secondary and postsecondary) necessary, skills required, and wage expectations related to careers discussed in this lesson: This is part of their presentation.
- At home project or activity related to the ILO or lesson objectives conducted with parents and reported by the student: Teachers may choose to have students create the food products at home.
- Develop a portfolio of artifacts documenting concepts learned: Depending on how the students have documented their presentation, this assessment will have been met.