

Chocolate Company: Unit Scope and Sequence

SSFUSD - 5th Grade: 2018-19 Pilot

UNIT CONCEPT

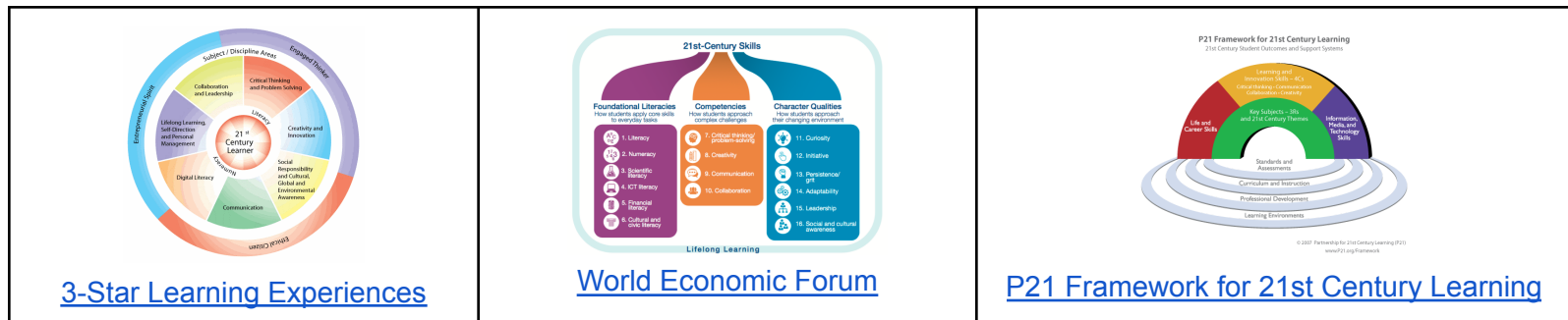
Students will work in teams to do a real-world entrepreneurship project focused on chocolate, which integrates the core aspects of a business: Research and Development, Manufacturing, Advertising, and Cost-Benefit-Analysis. The basic elements of the unit are:

- **Problem:** Student Teams are each running their own Chocolate Company, which is facing an increase in competition. Therefore, students will be expanding their current product line to include a specialized bar that has additional ingredients.
- **Learning Segments (LS):** Students will learn about the science and engineering of chocolate making, including the impact of the chocolate industry on people and the planet and the costs associated with making a chocolate bar. Students will also learn about the art of persuading others to purchase a product, and the costs associated with this advertising.
- **Design Challenges (DC):** Students will apply all of their learning to designing a customized milk chocolate bar that include additional ingredients. In order to design this bar, students will make decisions about sourcing, manufacturing, advertising, and sales prices. Each team will complete a corresponding cost-benefit analysis for the new bar, and will create a number of prototypes for their new bar including advertisements and factory machine prototypes.
- **Business Pitch:** Once students have completed their design challenges they will package everything together to pitch their custom bar to “investors” in a Shark Tank like scenario. The investors will choose teams to fund based on which group most successfully meets the design challenge criteria.



UNIT TYPE & PHILOSOPHY

This unit is designed to be problem-based, integrated content, and solutionary. The educational philosophies behind this unit include concepts from [*The World Becomes What We Teach*](#); and 21st Century skills based philosophies below.



Units of this nature include essential questions (EQ) and enduring understandings (EU). See examples below:

A) Primary Emphasis

- EQ: What does it mean to be a conscious consumer and producer?
- EU: Conscious consumption and production requires attention to triple bottom line business practices, which means products and services that take into account people, profit, and planet.

B) Topical Focus

- EQ: What is the story of chocolate?
- EU: The pieces of the chocolate story involve science, the environment, people, and economics.

C) Career Skills Pathways

- EQ: What are some of the career pathways involved in the chocolate industry?
- EU: There are many different career pathways for chocolate include science and engineering, manufacturing, advertising and marketing, business accounting, investing, and more!

RECOMMENDATIONS FOR TIMELINE AND FLOW

In order to complete this unit in four weeks, instructors will need to commit a half day for each day of the program. This would be on average 1.5-2.5 hours each day (90 - 150 minutes) each day. The unit is an integrated unit, and includes science, history-social studies, health, literacy (reading, writing, listening & speaking), mathematical reasoning, and computer science. Additionally, the unit includes an emphasis on environmental literacy and career technical education.

Phase 1 <i>LS 1-4 & DC 1</i>	Unit and Project Introduction: This introduction builds foundational knowledge of the project and chocolate, and includes team formation activities that support student success throughout the unit.
Phase 2 <i>LS 5-8 & DC 2-4</i>	Research and Development (R&D): Students will investigate factors relevant to chocolate sourcing, and make important decisions about their chocolate bar based on market research.
Phase 3 <i>LS 9-10 & DC 5-6</i>	Manufacturing: Students learn about factory operations including inputs and outputs, and machine upgrades, and make decisions about packaging.
Phase 4 <i>LS 11 & DC 7-9</i>	Sales: Students learn about advertising and create two advertising prototypes (label and commercial).
Phase 5 <i>DC 10-11 & Pitch</i>	Investor Pitch: Students will pitch their new chocolate bar concept to a panel of investors (shark tank style changes). The pitch will include information from all phases of the unit: R&D, Manufacturing, Sales, etc.

Curriculum Scope and Sequence

	Title and Plan	Overview	Time	Student Outcomes and Product	Standards and/or Skills
LS 1	Project Overview and Group Formation	Learning Segment One serves as an introduction to the Chocolate Company unit, and an introduction to the teams that students will be working on for the duration of the unit. Activities include: • Video: Kids and Business • Group Formation: Team Bonding • Group Formation: Public and Operations Agreements • Project Overview & Outcomes	90 min	Students will create public and operations agreements with their team members and establish a team name.	CCSS: ELA Literacy-SL.5.1.A-D
DC 1	Prototyping Your Dream	Design Challenge One (DC1) is a prototype activity for students to start the process of designing their own			3-5 ETS 1 -1

	Chocolate Bar	chocolate bar. Students will come back to this prototype over the course of the design challenges and make changes and additions.			
LS 2	Plants in Focus: The Cocoa Tree	Learning Segment Two builds a foundational understanding of the basic needs of all plants and the plant life cycle from beans to plants to beans. Activities include: • Plant Model: Bean observation and dissection • Plant Model: Structures and functions	100 min	Students will diagram the bean to plant to bean cycle.	- NGSS: 5-LS1-1 - NGSS: 5-ESS2-1
LS 3	From Cocoa Tree to Chocolate Bar	Learning Segment Three provides the big picture overview to the chocolate making process, starting with the cocoa tree and ending with the chocolate bar. Activities include: • Chocolate Tasting & K-W-L Chart • Chocolate Process Model: Card Sort • Chocolate Process Model: Video	60 min	Students will diagram the chocolate process from cocoa tree to chocolate bar in their notebook, and will refer back to this throughout the unit.	NGSS Crosscutting Concept: Systems and System Models. HSS
LS 4	Chocolate Making - Matter and Energy	Learning Segment Four helps students better understand how the individual ingredients come together to become a delicious chocolate treat. Through this segment students will develop an understanding of the foundational chemical principle that mass exists in different forms and can be changed around, but the amount doesn't change. Activities include: • Observation: Chocolate Tasting • Investigation: Taking measurements and observations before and after changing a substance • Investigation: Making fudge	300 min	Students will be able to differentiate physical changes from chemical changes, and understand that mass is conserved either way. Students will use evidence to determine if making fudge is a physical change or a chemical change.	- NGSS: 5-PS1-2 - NGSS: 5-PS1-3 - NGSS: 5-PS1-4
DC 1.5	Prototyping Your Dream Chocolate Bar	Design Challenge One (DC1) was a prototype activity for students to start the process of designing their own chocolate bar. Students will come back to the prototype	30 min	Students will prototype their team's chocolate bar	

		over the course of the design challenges and make changes and additions.			
LS 5	Chocolate and Agriculture	Learning Segment Five focuses on global arable land and available freshwater, biodiversity loss due to deforestation, and using art to mitigate the emotional effects of climate change. Activities include: • Modeling Limited Resources: Arable Land and Water • Analyzing Deforestation: Causes and Impacts • Social and Emotional Learning: Exploring emotions about environmental degradation through the arts • Coding Simulation: Deforestation • Analyzing Organic Certification	270 min	Students will model the earth's features, understand the effects of deforestation and create a deforestation simulation.	- NGSS: 5-ESS3-1 - CS: 3-5.AP.11 - VAPA
LS 6	Fair Trade Farming	Learning Segment Six is focused on the impact of chocolate production on people. In particular, the segment focuses on the growing and harvesting of chocolate and how this process impacts labor. Activities include: • Simulation: Defining Fair Trade • Simulation: What's Fair for Farmers • Discussion & Advocacy: Child Labor • Identification: Fair Trade Labels	150 min	Students will reflect on sustainable business practices that are ethical to people, and connect that to the values of the parent chocolate company.	- HSS: 5.6-7
DC 2	Sourcing Base Milk Chocolate Bar Ingredients	Students will apply what they learned in Learning Segments 5-6 to complete cost calculations and justify their sourcing decisions for the base milk chocolate in their bar.	30 min	Students will decide how they will source their chocolate and explain their decision using evidence based reasoning.	What is the essential outcome of this unit?
LS 7	Nutrition and Ingredients Labels	Learning Segment Seven builds a foundational understanding of the purpose and structure of the nutrition and ingredients label, and how they can help us make	120 min	Students apply their learning to an analysis of their "Dream Bar" and discussing the nutritional problems and benefits of	- Health: 5.1.2.N - Health: 5.2.3.N - Health: 5.3.2.N

		informed decisions about the foods we eat. Activities include: • Observation and Investigation: nutritional labels • Compare and Contrast: Whole vs. Artificial Ingredients • Design Challenge Analysis: Additional Ingredient		the original additional ingredients they chose.	
LS 8	Market Research	Students will learn about Market Research, and conduct basic market research (i.e. competitive landscape and/or surveys) to determine which additional ingredients they should use in their bar.	60 min	Students will conduct market research for their additional ingredients.	
DC 3	Additional Ingredients	Students will apply what they learned in Learning Segments 7-8 to make a final decision about what additional ingredients they will use in their bar, and to calculate the costs of these additional ingredients. They will justify their additional ingredients based on nutrition, market research, and costs.	30 min	Students will decide on their additional ingredients and explain their decision using evidence based reasoning.	Cost benefit analysis standard
DC 4	Chocolate Bar Prototyping	Students apply their learning and decision making to create a drawn (top-down and cross-sectional) and actual prototype of their chocolate bar.	45 min	Design Activity: Students will create their chocolate bar prototype.	
LS 9	Packaging	Learning Segment Eleven helps students understand the purpose of packaging for the preservation of a product and the implications that different packaging choices have on the environment and the cost of a product. Activities include: • Defining the criteria for a good packaging material • Exploring the properties of different packaging materials • Selecting the best packaging material for their chocolate	120 min	Design Activity: Students will apply what they learned in the packaging lesson to <u>make a decision about the type of packaging materials</u> they will use in their bar.	- NGSS: 5-PS1-3 Make observations and measurements to identify materials based on their properties.

LS 10	Conservation of Matter LIZ	- How can your factory be eco friendly? - Zero Waste <u>Energy Sources: Renewable and Non-Renewable</u> - Water			
DC 5	Manufacturing Costs	Students will apply what they learned in Learning Segments 9-10 to make a final decision about the costs associated with manufacturing their chocolate bars.	30 min	Students will make manufacturing decisions and explain their decision using evidence based reasoning.	Need Essential Standard
DC 6	Factory Machines	- Students will design and prototype their new machine for the additional ingredients. - They need the schematic - Need to be explained that they give the kids the hummingbird materials and play	Time	Design Activities: 2) Model one moving component within the new factory design.	Need coding standard
LS 11	Introduction to Advertising	Learning Segment Fourteen provides an introduction to the basics of advertising and builds a foundational understanding of the functions and hurdles of developing effective advertisements. Activities include: - Investigation: Different types of advertisements - Analysis: Functions and Hurdles of Advertising	60 min	Students will analyze advertisements through the lens of advertising functions and hurdles.	- CCSS: ELA-Literacy.RI.5.8 - CCSS: ELA-Literacy.RI.5.5 - CCSS: ELA-Literacy.W.5.1 - NGSS SEP: EAE - NGSS SEP: OECI
DC 7	Making a Chocolate Bar Label	Students will apply what they learned about advertising and the decisions they have made (i.e. sourcing, ingredients, manufacturing, etc.) to create the <u>front label</u> for their chocolate bar.	45 min	Students will create the <u>front label</u> for their chocolate bar.	CCSS.ELA-LITERACY.W.5.1
DC 8	Chocolate Bar Commercial	Students will apply what they learned about advertising and the decisions they have made (i.e. sourcing, ingredients, manufacturing, etc.) to create a commercial for their	120 min	Students will code a <u>commercial</u> for their chocolate bar.	

		chocolate bar. Students will code the commercial.			
DC 9	Advertising Costs	Students will apply what they learned in Learning Segments 11 to make a final decision about the costs associated with advertising their chocolate bar.	30 min	Students will make advertising cost decisions and explain their decision using evidence based reasoning.	
DC 10	Cost Benefit Analysis	Students will take all the costs that they have calculated in their design challenges and make a final calculation of the total costs per bar. They will then determine how many bars they need to sell to make a specific amount of profit.	30 min	Students will decide on the sales prices for their chocolate bar and explain their decision using evidence based reasoning.	Math: 5.NBT.4 5.NBT.6 5.NBT.7
DC 11	Putting the Pitch Together	Students will combine elements from all of the design challenges together into a Shark Tank style “pitch,” which they will present as a team in front of a panel of judges. Students will utilize the Chocolate Company Final Pitch Rubric to guide the organization and requirements for their pitch.	Time will Vary	Develop and practice a shark tank style pitch that will convince the investors (judges) that their chocolate bar is the best.	
Pitch Day		Students will pitch their chocolate bar to a panel of Shark Tank style investors (judges). The investors will use criteria from the Chocolate Company Final Pitch Rubric .	10 min per team	Students present their Chocolate Bar pitch to a panel of Shark Tank Investors (judges).	NGSS SEP: Obtaining, evaluating and communicating information.