

WE ALL SCREAM FOR ICE CREAM!



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RISING 4TH-6TH GRADE
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Rationale

Why are the skills, content, and concepts presented in this unit important for students to learn?

I chose the topic of ice cream because I knew I wanted to plan my unit around something I really enjoyed. I originally began by thinking about the science of cooking and then chose one particular food, my favorite, to focus on. I knew the camp was in the summertime and I wanted to teach about something that made me really excited as well; that's where ice cream came about. When planning my unit I knew that by the end of camp I wanted all students to be able to create their own ice cream flavor and make their ice cream. This became my performance task. With the end goal in mind, I created three full days of learning experiences to provide the students with all tools and knowledge necessary to complete the performance task on the final day of camp.

With so many variations of ice cream, ice cream flavors, and products; the concept **creativity** seemed fitting. Throughout the unit the essential understanding that **creativity enhances invention** can be found.

On the first day, students learn that ice cream is a confection. Students will take the role of a confectioner and learn about job opportunities, specialty fields, job description and requirements. Students will make their own confectioners' sugar and create something with it. Students will also interview a confectioner as well. Students were able to plan interview questions for the owner of East Durham Bake Shop and then have all questions answered by him that same day. Throughout the entire lesson students are learning how confectioners use creativity.

On the second day of camp, students complete independent research on the history of ice cream, creativity of products made with ice cream, creativity of products used with ice cream, and answering any questions they have about ice cream.

On the third day of camp, students use creative problem solving to learn about different methods to make ice cream. Students experiment with different milks, candies, and cookies to create ice cream.

On the final day of camp, students use their research and experiences from the week to create their own recipe and instructions for making a unique ice cream flavor. Students will create their ice cream after writing the recipe.

By the end of the unit, the following skills will have been taught:

- Students will be able to create an edible invention.
- Students will be able to reflect on invention.
- Students will be able to express creativity through writing.
- Students will be able to identify and analyze the skills of a given profession.
- Students will be able to design.
- Students will be able to synthesize how creativity enhances inventions.
- Students will be able to synthesize a process for making a product.
- Students will be able to use research skills to learn new information.
- Students will be able to research.
- Students will be able to ask questions to gain more information when researching.
- Students will be able to compare and contrast.
- Students will be able to make connections with the information gathered.
- Students will be able to invent using creativity.
- Students will be able to draw conclusions of inventions.
- Students will be able to evaluate final products.
- Students will be able to plan, predict, and solve a given problem.
- Students will be able to support the essential understanding that creativity enhances invention.

These skills are important for students to learn because they teach creative problem solving skills in ways not found in the traditional classroom. These skills allow for student creativity and give students the opportunity to work with materials that would not be found in the traditional classroom. The skills learned in this unit can be applied to any problem given to a student, not just one about ice cream.

The content learned in this unit is connected to the Common Core Standards and the NC Essential Standards. Some of the content learned in this unit:

- Research Skills
 - [CCSS.ELA-LITERACY.W.3.7](#) Conduct short research projects that build knowledge about a topic.
- Informational Writing- creating posters and recipes
 - [CCSS.ELA-LITERACY.W.3.2](#) Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- Speaking and Listening Skills
 - [CCSS.ELA-LITERACY.SL.5.1](#)
Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly.
- Measurement
 - [CCSS.MATH.CONTENT.3.MD.A.2](#) Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).¹Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

- Science- Changes in States of Matter through ice cream
 - 3.P.2.3 Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.

This content is important for students to learn because they will continue to need research skills and need to know how to search for information independently. It is important that students are able to contribute to discussions and listen to peers, as well as build off of comments made by others. It is important that students are exposed to different types of writing and can follow recipes. Measuring and following recipes are real life skills that will be needed as children become older and more independent.

The two overall concepts that are found in this unit are **creativity** and **invention**. It sometimes feels that in the traditional classroom there is little room for both of these concepts to be found. Through this unit though, students are able to explore with creativity and invention with edible ingredients. Students may be successful with their explorations or they may be unsuccessful, this led to many discussions and reflections on creativity within ourselves. Students were able to apply the concepts to the real world as well. For example, looking at art work, packaging designs for other foods, and gingerbread house competitions. These concepts are important for students to learn and be exposed to because both creativity and invention are what makes our world so interesting.

Differentiation

What elements of this unit make it particularly beneficial or appropriate for gifted learners? (Be sure to discuss the dimensions of differentiation: Content, Process, Product, and Learning Environment AND the features of differentiation: Complexity, Challenge, Depth, Creativity, and Acceleration)

This unit was designed for rising 4th and 5th graders. The lessons in this unit were designed with differentiation for gifted students in mind. There are many components of this unit that make it beneficial and appropriate for gifted learners:

- Students will work independently on computers to complete research. They will share and collaborate with peers to combine their information after researching on their own first.
- Students will use their research to answer higher-order thinking questions.
- Students will work through the creative problem solving process with a team of students. They will have to identify a problem, create a plan, and solve the problem with peers.
- Students will have choice and flexibility in how they complete the performance task.

The four dimensions of differentiation can be found in this unit. The content in this unit is a novelty. It is not content that is typically taught in the classroom. While measuring, states of matter, and informational writing are taught in the traditional classroom; they are not usually taught with the topic of ice cream. The process in which students are taught in this unit has been differentiated for gifted learners. Students will complete independent stations, independent research, creative problem solving, and problem based learning. The unit was designed to guide students' learning with the teacher as a facilitator. The product dimension of differentiation can be found several places in the unit. Students will collaborate to create Now Hiring posters. Students are given requirements for the product but then they are free to create how they see fit. The performance task has also been differentiated for gifted learners. Students are given the task and then allowed to create with very few restrictions. Lastly, the learning environment is differentiated for gifted learners because throughout the unit students will work independently, with partners and in collaborative groups. Students will be given choices and have more flexibility in how they complete the given tasks.

The features of differentiation can also be found in this unit. Students are given higher-order thinking questions to answer during their research. This is an example of the complexity of the differentiation in this unit. The learning process can also be accelerated for students who are ready to move on before others (during the stations, research, and performance task). Creativity is found throughout the entire unit. Students are using creativity when creating posters, using VTS with a piece of art work, designing a new Oreo flavor, looking at gingerbread houses, and making their own ice cream flavor. The unit is designed to challenge students and have them think deeper about the concept of creativity. By the end of the unit, students should be able to explain how the concept of creativity and invention relate to ice cream

and also to the other parts of life.

Goals and Outcomes

Content Goal

Goal 1: To develop an understanding of the job of a confectioner and how they use different scientific processes to create confections. Specifically, the understanding of the changes within states of matter when using different methods to create ice cream. (3.P.2.3 Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.)

Outcomes

Students will be able to...

- A. Research the specialty fields and jobs of confectioners.
- B. Explain the skills and characteristics of a confectioner.
- B. Act as a confectioner and draw conclusions from this experience.
- C. Explain the multiple methods for making ice cream and make recommendations on when a certain method should be used.
- D. Experiment with the processes for making ice cream and report on the changes observed in the process.
- E. Make connections among confections (ice cream, gingerbread houses, Oreos, all confections) and how they relate.

Process Goal

Goal 2: To develop creative problem solving skills with application to science.

Process Outcomes

Students will be able to...

- A. Apply research to support solving a problem.
- B. Predict and later explain cause and effect within a problem.
- C. Draw conclusions from results of scientific experiments.
- D. Create a final product using a scientific process.
- E. Evaluate final products developed during the creative problem solving process.

Concept Goal

Goal 3: To understand the concept of creativity.

Concept Outcomes

Students will be able to...

- A. Experiment with creativity through invention.
- B. Defend and explain what makes something creative.
- C. Justify how creativity enhances products or ideas.
- D. Make connections to areas that creativity can be found.

Assessment Plan

What evidence will show that students understand? Describe formative assessments and summative assessment (performance task) that will be used to monitor student progress in meeting established goals throughout unit. Include student work samples (copies and/or photos) that demonstrate student content knowledge, skill development, and understanding of the unit's concept.

Assessment Plan

Lesson 1

Formative Assessments

- [Now Hiring Poster](#)- Students will be assessed on their understanding of a confectioner's job, various specialty fields, qualities and characteristics of a confectioner by creating a "Now Hiring" poster for a specialty confectioner job. The teacher will look for student contributions to the group.
- Exit Ticket/Post it Notes- Students will respond to the essential question on Post-it Notes and share their responses with the class. The teacher will use this to guide instruction for the following day.

Lesson 2

Formative Assessments

- Comments and Contributions during VTS- Students will be shown an image and make comments on what they see. The teacher will be looking for contributions on creativity found in the image.
- Research graphic organizer- The teacher will look over notes on the graphic organizer to check for understanding of the content (ice cream history, products made with ice cream, products used with ice cream).
- Ice Cream Cone project- The teacher will check for understanding of all research with the different components of this task.
 - Cone: Answer the essential question. How does creativity enhance invention?
 - Ice cream scoops: On each ice cream scoop, apply the information you learned about different cultures and ice cream. On the ice cream scoop include what country you are writing about, what confection is similar to ice cream and why it is important to their culture. One ice cream scoop should be the United States, then choose two other cultures to write about.
 - Sprinkles: What inventions have the most creativity that have been created from the idea of ice cream (one on each sprinkle)?
 - Cherry on Top: Hypothesize the next greatest ice cream flavor and why. How will creativity enhance the invention of this flavor?

Lesson 3

Formative Assessments

- [Oreo Flavor Project](#) - Students will create their own Oreo flavor and design the package for the flavor. The teacher is looking for how the student is able to show that creativity enhances invention in this task. Students will need to explain how their flavor shows creativity.
- Class Discussion- During Oreo Hook and CPS Lesson the teacher is looking for student understanding of the essential understanding that creativity enhances invention.
- CPS Process with Ice Cream- Teacher will be looking for students using the Creative Problem Solving process to make ice cream. Teacher will be listening for reflections and connections to the essential understanding.

Lesson 4

Summative Assessment

- [Performance Task](#)
- [Performance Task](#)
- [Performance Task Rubric](#) - Students will complete the performance task and will be evaluated by the attached rubric.

The rubric for the performance task is based on the following criteria:

- Evaluation of Process- Using a given method to make ice cream.
 - Students will be evaluated on their ability to successfully make ice cream using a given process. During the week, the students will have learned and worked with several ways to make ice cream (ice cream maker, coffee cans, and plastic bags). They will be evaluated on using the plastic bag method. This criteria is aligned with all three goals in the following ways. Students will show mastery of the Content Goal by successfully following the steps in the plastic bag method independently. Students should be able to explain why this method works and what the changes are within the process. Students will show mastery of the Process Goal by using creative problem solving skills to create their own ice cream recipe with a given method. Students will show mastery of this goal by using their knowledge of the process to make ice cream but using it to make their own unique flavor. Students will show mastery of the Concept Goal by creating a flavor that is unique and creative.
- Content
 - Students will be evaluated on their ability to use the content and experiences from the week to successfully make ice cream. Students will need to be able to use their research and learning from previous ice cream making experiences in the Performance Task. Students will show mastery of the Content Goal by using their notes on the ice cream method to create their own recipe. Students will show mastery of the Process Goal in this criteria by using all information to creatively produce a new flavor of ice cream. The Concept Goal is assessed by how students are able to explain how creativity relates the information they have learned throughout their research.
- Understanding of Creativity
 - Students will be evaluated on their understanding of the concept of creativity. It is

expected that by the time students complete the performance task they will have an understanding that creativity enhances invention. Students will be expected to use their content knowledge of how to make ice cream, their creative problem solving skills and their understanding of creativity to create a new and unique flavor of ice cream.

- Evaluation of Product

- Recipe- Students will be evaluated on their written recipe and the ability to follow the directions given. This shows mastery of the Content Goal and Process Goal if the student has clear steps and accurate measurements of ingredients. This shows mastery of the Concept Goal if the student has created a recipe that is unique and has explained clearly how creativity influenced invention when making their ice cream flavor.
- Appearance/Taste- Students will also be evaluated on the appearance and taste of their ice cream. Students are expected to use their content knowledge, creativity, and process skills to create an ice cream flavor that is appealing and appetizing in taste.

TEACHER NAME
Alex Hurdle

Alex Hurdle

GRADE LEVEL
Rising 3rd-4th

Rising 3rd-4th

NC CURRICULUM STANDARDS

Math:

CCSS.MATH.CONTENT.3.MD.A.2

Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).¹ Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.²

ELA:

CCSS.ELA-LITERACY.W.3.7

Conduct short research projects that build knowledge about a topic.

CCSS.ELA-LITERACY.W.3.4

With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1-3 above.)

CCSS.ELA-LITERACY.W.3.2

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA-LITERACY.RI.3.3

Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

CCSS.ELA-LITERACY.SL.3.4

Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

Science

3.P.2 Understand the structure and properties of matter before and after they undergo a change.

3.P.2.1 Recognize that air is a substance that surrounds us, takes up space and has mass. 3.P.2.2 Compare solids, liquids, and gases based on their basic properties. 3.P.2.3 Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.

Social Studies:

2.H.1 Understand how various sources provide information about the past.

2.E.1.1 Give examples of ways in which businesses in the community meet the needs and wants of consumers.

CONCEPT

Creativity

ESSENTIAL UNDERSTANDING

Creativity enhances invention.

ESSENTIAL QUESTION

How does creativity enhance inventions?

CRITICAL CONTENT - Students will know that...

- Students will know that confectioners are people who make and sell candies and other sweets.
- Students will know the educational skills needed to be a confectioner include a high school diploma, food safety certification, basic math and reading skills, and culinary arts degree.
- Students will know that confectioner sugar is a finely grounded sugar that is used to make icings and other desserts with sugar.
- Students will know that creativity enhances the inventions made with confectioners sugar.
- Students will know that there is a variety of job opportunities available to someone who is a confectioner; such as a someone who makes fudge, pastries, candies, chocolates, ice cream, and cakes.
- Students will know that creativity is important to be successful as a confectioner.

PROCESS SKILLS - Students will be able to...

- Students will be able to create an edible invention.
- Students will be able to reflect on invention.
- Students will be able to express creativity through writing.
- Students will be able to identify and analyze the skills of a given profession.
- Students will be able to design.
- Students will be able to synthesize how creativity enhances inventions.
- Students will be able to defend the statement "ice cream is a confectionery food."

MATERIALS

[DAY 1- What is a Confectioner? Worksheets](#)

[DAY 1- Powerpoint](#)

Computers

Library Books

Chart Paper

Markers and Colored Pencils

Post-it notes

Index cards

Measuring Spoons and Cups

Coffee grinder

Sugar

Vanilla flavoring

Mint

Almond

Chocolate syrup

Milk

Water

Food coloring

peanut butter (if no allergies)

nutella

honey

cream cheese

butter

marshmallow cream

GUIDING QUESTIONS

Pre-Lesson Questions	During Lesson Questions	Post Lesson Question
• What does it mean to be creative? • How do you define creativity? • How do you define invention? • What jobs require creativity? • What skills are needed to invent something? • Think about your daily routine. What is something that you use that makes your day easier. What invention is this? How does it help you? • If a confectioner is someone who creates edible inventions from sugar, what are some of the inventions that we enjoy today? • What other jobs do you think a confectioner is similar to?	• What skills are needed to be a successful confectioner? • Where might a confectioner work? • What are the job expectations of someone that works with confectionery foods? • What subjects in school are related to the job of a confectioner? • Why are there specialty fields in this profession? What makes them all still confectioner jobs? • How do confectioners express creativity? • How can confectionery treats be classified or sorted? • What qualities would qualified applicant possess for a confectioner job at the newest candy store in Durham? • What were you able to create with the confectioner's sugar? • How were you able to determine if your invention with confectioner's sugar was a success or fail? • Why is this job important? • Creativity is used in the inventions of edible sweets. What other inventions also require creativity?	• What did you learn about confectioners? • In what ways is creativity important to a confectioner? • How is creativity expressed in other professions? • If there are only two categories for confectionery treats, why is ice cream classified as a confectionery? • What conclusions can be made about creativity and confectioners? • What would this profession look like if creativity was not a factor? • Why is creativity necessary for inventions? • What would invention look like without creativity? • How does creativity enhance invention?

PLANNED LEARNING EXPERIENCES

Engage: Familiarity with the discipline

Students will begin with a get to know you activity. They will decorate and personalize their own apron and chef's hats for the week. They will learn that they are going to be "Apprentice Confectioners" and are going to learn about the job of a confectioner. Once students have their aprons ready, show the group an assortment of foods that are all considered to be confectionery treats. Possible options include: chocolate candy bars, lollipops, starburst, skittles, m&ms, fudge, cake, cookies, Popsicles, ice cream, etc. Ask if anyone knows what the job title is for someone who makes these foods? If no one has a guess, tell the class that they are called a confectioner. Then Show the video:

<https://www.youtube.com/watch?v=poC7qic1aUE>. Ask the class What is a confectioner? Record their responses on the board. Ask Pre-Lesson questions and record all responses on the board.

Explore: Practicing the discipline

The lesson will begin with all students doing the first activity together. A confectioner will come visit and answer all questions before students continue to learn more about confectioners.

Activity: Meet and interview a confectioner.

- - Students will be given several websites to visit and complete research on local confectionery shops. After learning about these places, they will then prepare 5 questions that they can ask a confectioner from a local store in Durham. After preparing questions, a local confectioner will answer their questions and share more about their job.
 - Guglhupf- <https://guglhupf.com/about/>
 - The Parlour- https://localwiki.org/durham/The_Parlour
 - Mad Hatter- <https://www.durham-nc.com/listings/Mad-Hatter-Bakeshop-and-Cafe/1395/>
 - Maple View Farms- <http://mapleviewfarm.com/>
 - Pine Cone- <https://www.pineconenc.com/>

Students will then be put into 3 groups. Students will rotate through 3 stations to learn about the education skills needed and the profession of confectionery, specialty fields and job opportunities, and then practice being a confectioner themselves. Students will spend about 20 minutes at each station.

Split students into 3 groups:

1.Job Opportunities and Specialty Fields

1.
 - Students will search through library books on various confectionery treats and record the different areas they could specialize in.
 - Students will watch a few videos on the different jobs that are available and then use given questions to guide their discussion.
 - Videos:
 - Fudge- <https://www.youtube.com/watch?v=70-kvdhySjc>
 - Donuts- <https://www.youtube.com/watch?v=CopA9k08WL8>
 - Bakery- <https://www.youtube.com/watch?v=qlzk6Y0qqBM>
 - Ice Cream cake- <https://www.youtube.com/watch?v=8cUjpFNt9tA>
 - Questions to discuss with group:

- Which specialty would you choose to practice and why?
- What are the similarities and differences among the specialty fields?
- Which jobs require more creativity? What makes you think that?

2. Job Description and Educational Skills

- Students will watch the video: https://study.com/articles/How_to_Become_a_Confectioner_Career_Roadmap.html
- After watching the video, students will map out the steps to become a confectioner in their journals.
- Students will read the article on what is a confectioner? (<https://www.inputyouth.co.uk/jobguides/job-confectioner.html>)
- Students will look at the article: <http://www.careercentre.dtw.d.wa.gov.au/Occupations/Pages/confectionery-maker.aspx>
- After looking at both articles, students will create a list of the top 5 most important skills to have to be a successful confectioner.

3. SUGAR- What does sugar have to do with it?

- Students will be given the opportunity to become confectioners.
- Students will use the coffee grinder to make their own confectioners (powdered sugar) sugar.
- After making their own sugar they will then get create their own edible invention with the other ingredients provided.
- Once they have made their edible invention students will write down their recipe, describe their invention, and then critique their creation.

After spending 15-20 minutes researching independently students will meet back with their groups for 5 minutes to share what they found before rotating to the next station.

Explain: Reflecting on the discipline

Groups work together to complete a graphic organizer on how creativity is found in each station they visited. Students will discuss in their groups why creativity is necessary for confectioners. After all groups have had time to make conclusions, begin the whole group discussion.

Ask students the post-lesson questions to guide the discussion. Write students' responses on chart paper to leave up in the room for the remainder of the week.

Elaborate: Continued practice and reflection

Students will work with a partner to create a Help Wanted/Now Hiring poster for a confectioner's position.

Students will need to include the following in their poster:

- Job Description with a Specialty Field- must describe the duties of the position
- Must Have Skills- what skills are required for this position
- Certification needed
- Qualities to look for

Students may do any additional research needed for their particular specialty field. When all groups are finished, groups that want to share their posters may present them to the class.

Evaluate: Continued practice and reflection

Students will be given a post it note to answer the essential question on. The question will be written on chart paper where they will add their note when they finish.

Exit ticket- How does creativity enhance invention?

After all students have included their Post-it note, share out some of the responses. Ask students to add comments or share their thoughts on what others have said.

ASSESSMENTS

Students will be assessed on their contributions to their group's "Now Hiring" posters. Students will be assessed on their responses to the exit ticket with the essential question.

DIFFERENTIATION

CONTENT

PROCESS

Students will be provided with hands on learning opportunities. Students will be asked critical thinking questions at the different stations.

PRODUCT

Students will have to synthesize the new information gathered to design and create a "Now Hiring" poster for a confectioner position.

LEARNING ENVIRONMENT

TEACHER NAME

Alex Hurdle

GRADE LEVEL

Rising 3rd and 4th Grade

NC CURRICULUM STANDARDS

ELA:

[CCSS.ELA-LITERACY.W.3.7](#)

Conduct short research projects that build knowledge about a topic.

[CCSS.ELA-LITERACY.RI.3.3](#)

Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

Social Studies:

2.H.1 Understand how various sources provide information about the past.

CONCEPT

Creativity

ESSENTIAL UNDERSTANDING

Creativity enhances invention

ESSENTIAL QUESTION

How does creativity enhance invention?

CRITICAL CONTENT - Students will know that...

- Students will know that ice cream originated in the US in the late 1700s.
- Students will know what countries have foods that are similar to ice creams and what makes them similar such as Italy has gelato and Asian cultures have sorbet.
- Students will know that ice cream is made by a confectioner.
- Students will know that invention was informed by unique ideas about how to eat ice cream.
- Students will know that there are many creations and variations of ice cream such as ice cream sandwiches, ice cream cake, Popsicles, ice cream cones, ice cream scoop, ice cream syrups and shell toppings.
- Students will know that confectioners made unique choices of ingredients to create various flavors of ice cream.
- Students will know why ice cream is important to American culture.
- Students will know that creativity is the ability to create.
- Students will know that invention is the act of inventing something, invention is a process.

PROCESS SKILLS - Students will be able to...

- Students will be able to synthesize a process for making a product.
- Students will be able to use research skills to learn new information.
- Students will be able to research.
- Students will be able to ask questions to gain more information when researching.
- Students will be able to compare and contrast.
- Students will be able to make connections with the information gathered.
- Students will be able to hypothesize.

MATERIALS

VTS Image- [Ice Cream](#)

[Research Handout](#)

[PowerPoint](#)

computers or chrome books

books on ice cream

construction paper, colored pencils, markers, scissors, glue, pencils

clipboards

GUIDING QUESTIONS

Pre-Lesson Questions	During Lesson Questions	Post Lesson Question
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1. What do you see? (VTS)
2. What makes you say that? (VTS)
3. What else can you find? (VTS)
4. What connections can you make?
5. What is creativity?
6. Where is creativity expressed in this piece of art?
7. What is invention?
8. How did invention inform this artwork?
9. How does creativity enhance invention?
10. Why do you think I chose this piece of art to begin our day with?
11. What country do you think these children are in? What makes you say that?
12. How would this painting look different if it were from a different country?
13. How does this relate to what we learned about yesterday?

1. When doing research, how do we determine that a website is reliable?
2. In your opinion, what is the most effective way to learn new information? (tell students they can listen to videos, read text on the computer, search through books as well).
3. Where did ice cream originate?
4. What is the person called who makes ice cream? What category of foods does ice cream fit into?
5. What cultures have a confection that is similar to ice cream?
6. In what ways is ice cream apart of the American culture?
7. How has creativity enhanced invention surrounding ice cream over the years?
8. How has invention impacted the development of a variety of products made with ice cream?
9. How has invention impacted the development of a variety of products used with ice cream?
10. How is ice cream made? If there is more than one way to make it, what are the other ways it is made as well?
11. Where is creativity found in the process of making ice cream?
12. What makes an ice cream flavor popular? What are the most popular ice cream

1. Based on what you know now, how would you explain the importance of ice cream in our country?
2. In your opinion, what were the most successful inventions made from ice cream? What made them successful?
3. What is the connection between creativity and invention?
4. How can you justify that ice cream is a confection food?
5. What is the best process for making ice cream?
6. What is the relationship between ice cream and creativity?
7. How does creativity enhance invention?

flavors?

13. How has creativity enhanced invention in relation to ice cream flavors?
14. What questions can you ask about this topic?

PLANNED LEARNING EXPERIENCES

Engage- Visual Thinking Strategies

Begin today's lesson by presenting this piece of art work to the class. Give students a few minutes to silently make observations of what they see.

After a few minutes ask students to begin sharing what they see. Ask: "What do you see in this piece of art?"

Follow by asking, "What makes you say that?"

Then ask, "What else do you see?" or "What else can you find?" Continue to ask these questions to deepen student thinking. The teacher will continue to para-phrase or restate the students' thoughts in a non-judgmental way.

After all students have had a chance to share their thoughts ask the other pre-lesson questions. Ask students to define creativity. Ask students where they see examples of creativity in the piece of art. Give students the Webster's dictionary definition of creativity: the ability to create. Have them describe what they see and how it expresses creativity. Ask students to define invention. What is invention? What invention is in the piece of art work? How did invention inform this artwork? Give students the Webster's dictionary definition of invention: something invented such as a product of the imagination, a process. Ask students the essential question

"How does creativity enhance invention?"

Ask students to think about what we learned about confectioners yesterday. Ask students what are the products that represent invention by a confectioner? Make a list of the products that creativity enhances for a confectioner. Circle ice cream once the students have shared out multiple ideas. Today we are going to focus on one invention that creativity enhances; ice cream.

Explore- Research with Questioning

Before students begin their research, pass out their "Research Guides." In their guide books are the "during lesson questions." These are the questions that will be used to guide their research. Give students time to read over the questions. Then give them a few minutes to come up with 3 additional questions that they have on this topic. Students will record their questions in their Research Guides.

Explain to students that to complete their research they may listen to videos, use the websites I have provided or use their own search engines. In addition to the computers, they may also use the books on ice cream to find more information. While students are completing their research, they should be taking notes under each question in their Research Guides.

As students are doing their research, the teacher walks around to monitor and answer any questions the students may have.

Explain- Post-Lesson Questions Discussion

Students will now use their research to have a class discussion with the "Post-Lesson" Questions. The teacher will ask the post-lesson questions. Students should refer back to their research to answer the questions in their discussion.

Elaborate- Ice Cream Cone Project

To assess student understanding, each student will create an ice cream cone with the following components:

- Cone: Answer the essential question. How does creativity enhance invention?
- Ice cream scoops: On each ice cream scoop, apply the information you learned about different cultures and ice cream. On the ice cream scoop include what country you are writing about, what confection is similar to ice cream and why it is important to their culture. One ice cream scoop should be the United States, then choose two other cultures to write about.
- Sprinkles: What inventions have the most creativity that have been created from the idea of ice cream (one on each sprinkle)?
- Cherry on Top: Hypothesize the next greatest ice cream flavor and why. How will creativity enhance the invention of this flavor?

Students will get construction paper pieces that have already been cut out to create their ice cream cones. They will write their responses on the pieces of the ice cream cone before gluing it all together.

Evaluate- students share fun facts or most interesting information about ice cream, teacher will assess their research guides.

To conclude the lesson, allow students to share their ice cream cones. Students will share their responses to the essential question. Students can share what popular flavors, other inventions, and other products similar to ice cream.

Ask the following questions:

- What is one thing you learned that surprised you? Why was this surprising?
- What is the most important thing you learned today?
- How does creativity enhance invention?

Students will also be assessed on their Research Guides and Ice Cream Cones.

ASSESSMENTS

Students will be assessed on their contributions to the discussion, their research guides and their "ice cream cone" projects where they are applying their research.

DIFFERENTIATION

CONTENT
The curriculum is a topic of interest for students. The topic of ice cream is a novelty and is not found in their everyday curriculum.
PROCESS
Students will complete independent research, facilitated by the teacher. Students will be asked questions that require them to analyze, synthesize and evaluate their research.
PRODUCT
LEARNING ENVIRONMENT

TEACHER NAME

Alex Hurdle

GRADE LEVEL

Rising 3rd and 4th grade

NC CURRICULUM STANDARDS

Math

CCSS.MATH.CONTENT.3.MD.A.2

Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).¹Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

ELA

CCSS.ELA-LITERACY.SL.4.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.

Science

3.P.2.3 Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.

CONCEPT

Creativity

ESSENTIAL UNDERSTANDING

Creativity enhances invention

ESSENTIAL QUESTION

How does creativity enhance invention?

CRITICAL CONTENT - Students will know that...

- Students will know that creativity enhances the various methods of making ice cream; such as with an ice cream maker, plastic bags, or coffee cans.
- Students will know that invention can be found in the way ice cream is made; such as the materials used to make the ice cream.
- Students will know that salt is needed in order to lower the freezing temperature and create a base for the ice cream to freeze in.
- Students will know that different ingredients can effect the texture, flavor, and appearance of inventions with ice cream.
- Students will know that creativity enhances inventions of ice cream flavors.

PROCESS SKILLS - Students will be able to...

- Students will be able to invent using creativity.
- Students will be able to draw conclusions of inventions.
- Students will be able to evaluate final products.
- Students will be able to predict the effect of new ingredients with invention.
- Students will be able to plan, predict, and solve a given problem.
- Students will be able to support the essential understanding that creativity enhances invention.

MATERIALS

[CPS Handout](#)

[PowerPoint](#)

[Oreo package cards](#)

[Oreo design page](#)

Gallon size plastic bags

Quart size freezer bags

Ice

Rock salt

Vanilla

Sugar

Half/Half

Ice cream maker

paint cans (2)

candies

cookies

milk alternative (lactose free, soy milk, etc)

Oreo picture cards

GUIDING QUESTIONS

Pre-Lesson Questions	During Lesson Questions	Post Lesson Question
1. Who can name different flavors of oreos? 2. Where is creativity found in the flavor of oreos? 3. Where is invention found in the flavor or oreos? 4. Where does inspiration for these Oreo flavors come from? 5. Why do you think Oreo comes out with new flavors so frequently? 6. Why are they still able to come up with the new flavors each year? 7. How can the flavors of Oreo cookies be grouped or categorized? 8. How are each of these groups invention within the Oreo cookie? 9. How does creativity enhance invention of new Oreo flavors? 10. What do you predict to be the next released Oreo cookie flavor? 11. How can you defend that Oreo cookies are a confection that is enhanced through creativity?	1. What are the processes that can be used to make ice cream? 2. Where is creativity found in each of the processes used to make ice cream? 3. How does creativity enhance invention of ice cream methods? 4. What is the sequence for each ice cream process? 5. How does creativity effect invention within the production of ice cream? 6. What do you predict will happen when candies or other foods are included in the invention of ice cream flavors? 7. What do you predict will happen when alternatives for milk are used in the invention of new ice cream flavors? 8. What is the best process to create ice cream where the creativity of ingredients does not alter the appearance of the ice cream? 9. What chemical changes occur when creating ice cream? 10. How will you evaluate each possible solution? 11. How will creativity play a role in your solutions?	1. How can you improve the solution used to solve the problem? 2. How does this experience help you draw conclusions on the creativity of ingredients found in ice cream flavors? 3. How was this experience similar to those of a confectioner? 4. Why is it important to know the effect of each ingredient in the invention process? 5. How does creativity enhance invention?

PLANNED LEARNING EXPERIENCES

Engage (30 minutes)

Hook- invention in flavor, invention of new cookie flavors

https://en.wikipedia.org/wiki/List_of_Oreo_varieties

Before students come in place the picture cards of the Oreo packages on the desks around the room for students to look at as they come in.

Ask students to answer these questions based on the flavors that were found on the picture cards.

- Who can name different flavors of Oreos?
- Where is creativity found in the flavor of Oreos?
- Where is invention found in the flavor or Oreos?
- How does creativity enhance invention of new Oreo flavors?
- Where does inspiration for these Oreo flavors come from?
- Why do you think Oreo comes out with new flavors so frequently?

Conclude with students predicting the next Oreo flavor and creating the package design for this flavor.

Explore

Mess Finding- Explore the different processes for making ice cream, which process is best for: adding ingredients, the fastest, the easiest, etc.

There are many different processes for making ice cream. Today we are going to explore how creativity enhances the process used to make ice cream and what happens when you get creative with the ingredients you use to make your ice cream. We will begin by determining what ingredients are needed to make ice cream and also the ingredients that would enhance ice cream flavors.

Record on the board the ingredients students think are needed for ice cream. Record the ingredients that will enhance ice cream flavors.

Now make predictions on the steps that would be taken to create ice cream. Students can work with a partner to determine a process for making ice cream and then share back with the group.

Make predictions on what will happen if certain ingredients are added to your ice cream and when they should be added. (such as m&ms, syrups, fruits, cookies, flavors, herbs, candies)

Fact Finding- Find the different processes and which materials would be needed for each process.

Students will use divergent thinking to brainstorm all known facts. They will use convergent thinking to narrow down the most important facts.

Now that students have made predictions on the processes that can be used to make ice cream, they will read about several different processes (ice cream maker, ice cream in a bag, coffee can method and ice cream factories) to learn what materials are needed and the steps taken to make ice cream. Students must determine how each process shows creativity. Students will be divided into 4 groups and will rotate through each process. Students will spend about 10 minutes at each one.

<https://www.youtube.com/watch?v=JdeSGGtAweM>

Explain

Problem Finding-Students now have an understanding of the various processes for making ice cream. It's now their turn to use one of these processes to solve the following problem:

How does creativity effect invention within the production of ice cream?

Students will be divided into 3 groups. Each group will work to solve their own problem and then share their results and solutions with the group. Students will plan, predict, create, and draw conclusions when solving the problem. Students will have access to the ice cream maker, the paint can method or the ice cream bag method to solve the problem. Students will have access to candies, cookies, and a few different milk options.

1. What happens when candies are added to inventions with ice cream?
 - Students will examine store bought ice cream with candy in it.
 - Students will create their own ice cream and add candies to determine what happens.
2. What happens when cookies or baked goods are added to inventions with ice cream?
 - Students will examine store bought ice cream with baked goods in it (such as cookies and cream) and determine draw conclusions on what happens to the cookies.
 - Students will create their own ice cream and add cookies to determine what happens.
3. What happens when the type of milk is altered in inventions with ice cream?
 - Students will examine ice creams made with milk alternatives.
 - Students will create ice cream using milk alternatives to determine the end result.

Idea Finding- Students will work with their group to solve their problem. Students will make predictions independently and then share with their group. Students will defer judgement and accept all predictions as possibilities while sharing. Students will then plan the process they will use to solve the problem. Students may complete additional research if needed. Students will use divergent thinking to share out all possible solutions. Students will then use convergent thinking to narrow in on a few possible solutions.

Elaborate

Solution Finding- Before selecting a final solution, students will use divergent thinking to create criteria to judge each possible solution with. Students will use the graphic organizer to create this criteria. Students will critique each possible solution and then use convergent thinking to choose the best solution based on their criteria.

Evaluate

Acceptance Finding- Students will use the solution chosen to solve the problem. They will create an action plan and solve the problem.

After each group has completed all of the steps the groups will share with everyone what problem they had, how they solved and what they learned from this. Teacher will ask Post-Lesson Questions. The lesson will conclude with the teacher asking students how the experience supported the essential understanding that creativity enhances invention. Students will respond on an index card and the teacher will review all responses.

ASSESSMENTS

Students will be assessed on their final solution chosen to solve the problem. Students will be assessed on their response to how this experience supports the essential understanding that creativity enhances invention.

DIFFERENTIATION

CONTENT

PROCESS

Students will work through the creative problem solving process which will require convergent and divergent thinking, teamwork, and creativity.

PRODUCT

LEARNING ENVIRONMENT

Students will work in collaborative groups.

TEACHER NAME

Alex Hurdle

GRADE LEVEL

Rising 3rd and 4th grade

NC CURRICULUM STANDARDS

Math

[CCSS.MATH.CONTENT.3.MD.A.2](#)

Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).¹Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

ELA

[CCSS.ELA-LITERACY.W.3.4](#)

With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1-3 above.)

[CCSS.ELA-LITERACY.W.3.2](#)

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Science

3.P.2.3 Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.

CONCEPT

Creativity

ESSENTIAL UNDERSTANDING

Creativity enhances invention

ESSENTIAL QUESTION

How does creativity enhance invention?

CRITICAL CONTENT - Students will know that...

- Students will know that a recipe is a set of instructions and ingredients needed for preparing a particular food dish.
- Students will know that ice cream goes through a chemical process when it changes states of matter.
- Students will know that a recipe uses standard units of measure.
- Students will know that different ingredients will change the texture and flavor of a product.
- Students will know that invention of popular flavors of ice cream are influence by the following ingredients such as mint, peanut butter, nuts, cookie dough, or fruits.
- Students will know that creativity enhances invention.

PROCESS SKILLS - Students will be able to...

- Students will be able to invent.
- Students will be able to follow the steps in a process.
- Students will be able to experiment with measurement.
- Students will be able to critique their work.
- Students will be able to describe a product.
- Students will be able to assemble an invention.
- Students will be able to reflect.
- Students will be able to justify the essential understanding that creativity enhances invention.
- Students will be able to measure and collect data.

MATERIALS

[PowerPoint](#)

[Planning Sheet](#)

[Recipe Card \(front\)](#)

[Recipe Card \(back\)](#)

[Gingerbread House cards](#)

Ingredients

- Whole Milk
- Cream
- pudding mixes
- Vanilla Flavor
- Mint Flavor
- Almond Flavor
- Cocoa powder
- Chocolate syrup
- Strawberry Syrup
- Peanut Butter
- Nuts
- Candies
- Herbs
- Flowers
- Salt

Computers

Measuring spoons and cups

Disposable spoons and bowls

Coffee or paint cans (18 of each or 18 Quart size, 9 gallon size)

Rock Salt

GUIDING QUESTIONS

Pre-Lesson Questions	During Lesson Questions	Post Lesson Question
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1. Where is creativity expressed in the gingerbread house you chose? 2. What makes the gingerbread house you selected the most creative? 3. What about the gingerbread house is innovative? 4. How did invention inform each gingerbread house? 5. What makes each creation a house? 6. How do you determine the difference between a house and a home? Why does this matter? 7. What connections can be made between confections and the gingerbread houses? 8. What connections can be made between the Oreo flavors and the gingerbread houses? 9. What makes the gingerbread houses a confection? 10. Where is creativity found in your favorite ice cream flavors? 11. How does creativity impact the invention process of your favorite ice cream flavors? 12. How did invention impact the ice cream made in this video? 13. How was invention used to collect ingredients? 14. Where is creativity found in the ingredients used for their ice cream?	1. What do you already know about making ice cream? 2. Where is creativity found in the paint can method of making ice cream? 3. Where is creativity found in your favorite ice cream flavors? 4. How does creativity impact the popularity of an ice cream flavor? 5. How will creativity enhance your invention? 6. Where will your inspiration come from during the invention process? 7. What ingredients will be needed in the invention process? Which ingredients represent creativity? How is creativity represented in these ingredients? 8. Where is creativity found in the method for making your ice cream flavor? 9. How will creativity help you determine how much of an ingredient will be needed? How will you determine the unit of measurement for your ingredients during the invention process? 10. When inventing your new ice cream flavor, how will you determine the order in which ingredients are added?	1. What went well in your invention of a new ice cream flavor? 2. What do you think could be changed in the invention process? 3. What surprised you about the ice cream flavor you invented? 4. In what ways did creativity enhance the choices you made in the invention process? 5. What connections can be made between the creativity found in the gingerbread house and the creativity found in your ice cream flavors? 6. How does creativity enhance invention? 7. In what other areas does creativity enhance invention?
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PLANNED LEARNING EXPERIENCES

Performance Task

Engage

Gingerbread House Introduction Activity

Pictures of gingerbread houses will be placed around the room. Explain to students that these are images of Gingerbread houses that were submitted into the Biltmore Estate Gingerbread House Contest. The Students will be given time to look at the different gingerbread houses. They will be asked to stand beside the photograph that expresses the most creativity. After students have chosen a gingerbread house, have them share responses to the following questions:

- Where is creativity expressed in the gingerbread house you chose?
- What makes the gingerbread house you selected the most creative?
- What about the gingerbread house is innovative?
- How did invention inform each gingerbread house?
- What makes each creation a house?
- How do you determine the difference between a house and a home? Why does this matter?

Explore

Problem Engagement (10 minutes)

Ask students about their favorite flavors of ice cream and what they like about them.

- Where is creativity found in your favorite ice cream flavors?
- How does creativity impact the invention process of your favorite ice cream flavors?

Play video of ice cream challenge: <https://www.youtube.com/watch?v=uqYMvFjNWbA-> Ice Cream Cook Off

- How did invention impact the ice cream made in this video?
- What made their ice cream flavors creative?
- Where is creativity found in the ingredients used for their ice cream?

Introduce the performance task.

"You have been selected to compete in a confectioner's contest for this summer's specialty ice cream flavor by the Durham Ice Cream Company. Only the top confectioners in Durham were selected to compete. They know with your expertise on this subject that the competition will be tough, but some of the best flavors will be created. The winning flavor will be sold in their store all summer long. You must create a new and unique flavor of ice cream, as well as include the recipe, description of this flavor and how creativity enhanced the invention process. A panel of ice cream experts from across North Carolina will select the winning flavor based on the recipe, flavor, and appearance of the ice cream."

Students will learn that they are going to use the "ice cream in a bag" method to make their ice cream flavors. Students will work independently to create a new ice cream flavor. Students will write a description, recipe, and explain to the judges how creativity enhanced the invention process.

Inquiry and Investigation (30 minutes)

Although each student is creating their own ice cream flavor, students may work with a partner to brainstorm and think through the following questions:

- What do you already know about making ice cream?
- Where is creativity found in your favorite ice cream flavors?
- How does creativity impact the popularity of an ice cream flavor?
- How will creativity enhance your invention?
- Where will your inspiration come from during the invention process?
- What ingredients will be needed in the invention process? Which ingredients represent creativity? How is creativity represented in these ingredients?
- Where is creativity found in the method for making your ice cream flavor?
- How will creativity help you determine how much of an ingredient will be needed? How will you determine the unit of measurement for your ingredients during the invention process?
- When inventing your new ice cream flavor, how will you determine the order in which ingredients are added?

Helpful Resources:

- <http://www.businessinsider.com/americas-favorite-ice-cream-flavor-isnt-chocolate-or-vanilla-2017-8>
- <https://www.activebeat.com/diet-nutrition/15-most-popular-ice-cream-flavors-the-winner-may-surprise-you/4/>
- <http://www.geniuskitchen.com/recipe/homemade-ice-cream-in-a-coffee-can-244054>

Problem Definition (20 minutes)

Debrief and identify the solution that will address the problem

- Students will write a description of their planned ice cream flavor. They will include the materials and ingredients needed for this task.
- Students will create their recipe for their ice cream. Students must include the planned steps and the order they will go in. Students must include measurements for each ingredient.

Explain

Problem Resolution (30 minutes)

Students will solve the problem.

- Students will create their ice cream flavors by following their recipe cards.
- Students will use the ice cream in a bag method to create their ice cream flavors.

Elaborate

Problem Debriefing (30 minutes)

Students will reflect and write final recipe and influence card.

- Students will reflect on the invention of their new ice cream flavors.
 - What went well in your invention of a new ice cream flavor?
 - What do you think could be changed in the invention process?

- What surprised you about the ice cream flavor you invented?
- In what ways did creativity enhance the choices you made in the invention process?
- Students will write a final revised recipe for their ice cream invention.
- Students will create a description for their ice cream invention.
- Students will write to the judges how creativity influenced their invention.

Evaluate

Ice cream will be judged.

- Ice cream will be judged/ “tasted” by visitors who come into the classroom. Students will eat their invented ice cream flavors and share their inventions with the class.

Closing Activity

Discuss other areas of interest where creativity enhances invention.

ASSESSMENTS

Students' understanding of the essential question will be assessed by their ice cream recipe, the description, and their write up of how creativity enhances their invention.

DIFFERENTIATION

CONTENT
PROCESS
Students will work at their own pace to plan, create and reflect on their own invention.
PRODUCT
Each student will create their own unique ice cream flavor.
LEARNING ENVIRONMENT
Students will work in a safe environment that allows for creativity to be expressed.

Unit Resources

Provide a listing of books, Web sites, videos, and/or other instructional materials that are intended to supplement the unit. Include resources intended for both teacher and student use. Be sure to use APA style for books/articles and provide a brief (1-2 sentence) annotation for Web sites and instructional materials.

Unit Resources

Day One

<https://www.youtube.com/watch?v=poC7qic1aUE->

This video will be used as an introduction to the process of making ice cream. It explains how the confectioner takes great care in the ingredients they choose to use. Students were able to make connections with this video and the information they were given from the confectioner who visited the class.

What is confectioner's sugar? **<https://www.thespruceeats.com/what-is-confectioners-sugar-995626>**

Students will watch this video to learn about confectioner's sugar and its many purposes.

Fudge-**<https://www.youtube.com/watch?v=70-kvdhySjc>**

Students will watch this video to learn about the specialty field of fudge making.

Donuts-**<https://www.youtube.com/watch?v=CopA9k08WL8>**

Students will watch this video to learn about the specialty field of donut making.

Bakery- **<https://www.youtube.com/watch?v=qlzk6Y0qqBM>**

Students will watch this video to learn about the many confections that can be made in the specialty field of baking.

Ice Cream cake- **<https://www.youtube.com/watch?v=8cUjpFnt9tA>** \

Students will watch this video to learn about a specialty field within the specialty of ice cream making.

East Durham Bake Shop- **<http://eastdurhambakeshop.com/about-us/>**

Students will use this website to learn about the bakery. They will use this information to create 5 questions to ask the confectioner that owns the shop.

How to become a confectioner-

https://study.com/articles/How_to_Become_a_Confectioner_Career_Roadmap.html

Students will use this video to learn the steps that need to be taken to become a confectioner.

Job Description- **<https://www.inputyouth.co.uk/jobguides/job-confectioner.html>**

Students will use this website to learn about the job description of a confectioner.

Job Description- <http://www.careercentre.dtwd.wa.gov.au/Occupations/Pages/confectionery-maker.aspx>

Students will use this website to learn additional information about a confectioner.

Day Two

History- <https://www.idfa.org/news-views/media-kits/ice-cream/the-history-of-ice-cream>

Students will use this website to learn about the history of ice cream.

History-<https://www.frostgelato.com/about/history-of-gelato-sorbet/>

Students will use this website to learn about this history of confections similar to ice cream.

What is ice cream?- <https://www.thespruceeats.com/what-is-ice-cream-1328784>

Students will use this website to learn more about ice cream and how it is a confection.

Types of ice cream- <https://www.dairygoodness.ca/ice-cream/types-of-ice-cream>

Students will use this website to learn about the variety of ice cream confections.

Tools- <http://greatideas.people.com/2014/08/07/best-ice-cream-tools/>

Students will use this resource to learn how creativity has enhanced products used with ice cream.

Inventions in other cultures: <https://www.realsimple.com/food-recipes/recipe-collections-favorites/desserts/ice-cream-gelato-sorbet>

Students will use this resource to learn about what other cultures have that is similar to ice cream.

Day Three

Oreo flavors- https://en.wikipedia.org/wiki/List_of_Oreo_varieties

Students will use this to learn about the creativity found in Oreo flavors.

How to make ice cream-

<http://www.kidzworld.com/article/26683-science-project-make-homemade-ice-cream>

<http://www.kidzworld.com/article/17739-i-scream-you-scream>

Students will be able to use these websites to learn about making ice cream with a plastic bag. Students will need to know this method because they will be using it independently.

Science of ice cream- <https://www.icecreamnation.org/science-of-ice-cream/>

Students will be able to use this website to learn about how ice cream is made and the importance of salt with in the process.

Making ice cream- <https://www.icecreamnation.org/base-recipes-start/>

This resource provides tips on how to create your ice cream and suggestions for your recipes.

Ice cream science-

<https://www.acs.org/content/acs/en/education/resources/highschool/chemmatters/past-issues/archive-2013-2014/ice-cream-chemistry.html>

This resources provides information on the science of how ice cream is created.

Ice Cream Maker-<https://www.thespruceeats.com/using-rival-electric-ice-cream-maker-1816232>

Students will use this resource to learn how to use an ice cream maker. This is important because students will use the ice cream maker as a class after learning about different processes for making ice cream.

Coffee can method-

<http://www.geniuskitchen.com/recipe/homemade-ice-cream-in-a-coffee-can-244054>

<https://susiej.com/ice-cream-in-a-can-teaching-science/>

Students will be able to use these resources to learn how to make ice cream with coffee cans (or paint cans). Some students will have the opportunity to use this method during the lesson.

Plastic bag method- <http://www.kidzworld.com/article/26683-science-project-make-homemade-ice-cream>

This is another resource that provides information on how to make ice cream in a bag.

Ice cream factories-<https://www.youtube.com/watch?v=JdeSGGtAweM>

This resource shows how ice cream is made in a factory. Students will use this to learn about a different process that is used for making ice cream.

Day Four

Introduction- <https://www.youtube.com/watch?v=uqYMvFjNWbA>

Students will watch this video as a whole group. This is a video of an “ice cream challenge” where they will see a few people create their own ice cream flavors.

Ice Cream Flavors-

<http://www.businessinsider.com/americas-favorite-ice-cream-flavor-isnt-chocolate-or-vanilla-2017-8>

<https://www.activebeat.com/diet-nutrition/15-most-popular-ice-cream-flavors-the-winner-may-surprise-you/4/>

DAY 1: WHAT IS A CONFECTIONER?

Mrs. Hurdle
SPARK Camp 2018

INTRODUCTION

What is a confectioner? Share your thoughts.

Watch <https://www.youtube.com/watch?v=poC7qic1aUE>

What else do you know about a confectioner now?

STATION: INTERVIEW A CONFECTIONER

Research the following restaurants and stores.

After taking notes, create 5 questions you would ask a confectioner in an interview.

- East Durham Bake Shop- <http://eastdurhambakeshop.com/about-us/>
- Guglhupf- <https://guglhupf.com/about/>
- The Parlour- [https://localwiki.org/durham/The Parlour](https://localwiki.org/durham/The_Parlour)
- Mad Hatter- <https://www.durham-nc.com/listings/Mad-Hatter-Bakeshop-and-Cafe/1395/>
- Maple View Farms- <http://mapleviewfarm.com/>
- Pine Cone- <https://www.pineconenc.com/>

STATION: JOB OPPORTUNITIES AND SPECIALTY FIELDS

Spend time learning the specialty fields within a confectioner's job. You will watch the following videos as well as search through the provided books. Take notes on the different specialty fields in your handbook. Use the questions in your handbook to guide your group discussion.

- What is confectioner's sugar?

<https://www.thespruceeats.com/what-is-confectioners-sugar-995626>

- Fudge- <https://www.youtube.com/watch?v=70-kvdhySjc>

- Donuts- <https://www.youtube.com/watch?v=CopA9k08WL8>

- Bakery- <https://www.youtube.com/watch?v=qlzk6Y0qqBM>

- Ice Cream cake- <https://www.youtube.com/watch?v=8cUjpFNt9tA>

STATION: JOB DESCRIPTION

Watch the video below. In your handbook, map out the steps needed to become a confectioner. Read the two articles below and take notes. After reading both articles, create a Top 5 Skills list of the most important skills needed to be a confectioner.

Watch- [https://study.com/articles/How to Become a Confectioner Career Roadmap.html](https://study.com/articles/How_to_Become_a_Confectioner_Career_Roadmap.html)

Read- <https://www.inputyouth.co.uk/jobguides/job-confectioner.html>

Read- <http://www.careercentre.dtw.d.wa.gov.au/Occupations/Pages/confectionery-maker.aspx>

Read-

STATION: SUGAR

1. Using the coffee grinder create your own confectioners sugar. You will pour granulated sugar into the grinder. Grind the sugar. You have made confectioners sugar.
2. Create your own invention with the sugar and the other ingredients on the table. (Make sure you write down how much of each ingredient you put in).
3. Create a recipe card for your invention. Give your invention a name!
4. Glue your recipe in your handbook and answer the questions about your invention.

REFLECTION

1. Spend time reflecting about all stations with your group.
Record your thoughts in your handbook.
2. Whole group reflection- share thoughts with the whole class.

NOW HIRING!

WORKING WITH A PARTNER CREATE A HELP WANTED/NOW HIRING POSTER FOR A CONFECTIONER'S POSITION INCLUDING THESE COMPONENTS:

- **Job Description with a Specialty Field-** what are the responsibilities and duties of this position?
- **Must Have Skills-** what skills are required for this position?
- **Certification needed-** what certification is needed for this position?
- **Qualities to look for in the applicant**

You will be given a chance to share your poster with the class when everyone is finished!

EXIT TICKET

On a sticky note answer the following question:

HOW DOES CREATIVITY ENHANCE INVENTION?

Bring your sticky note up to the chart paper when you are finished.

I SCREAM!

YOU SCREAM!

WE ALL SCREAM FOR ICE CREAM!

DAY ONE: WHAT IS A CONFECTIONER?

STATION: INTERVIEW A CONFECTIONER

Record any interesting information you find here!

After learning more about confectioner stores here in Durham, create 5 questions that you would ask a confectioner about their job.

1.

2.

3.

4.

5.

DAY ONE: WHAT IS A CONFECTIONER?

STATION: JOB OPPORTUNITIES AND SPECIALTY FIELDS

What job opportunities were available?

Specialty Field- _____
Description

Specialty Field- _____
Description

Specialty Field- _____
Description

Specialty Field- _____
Description

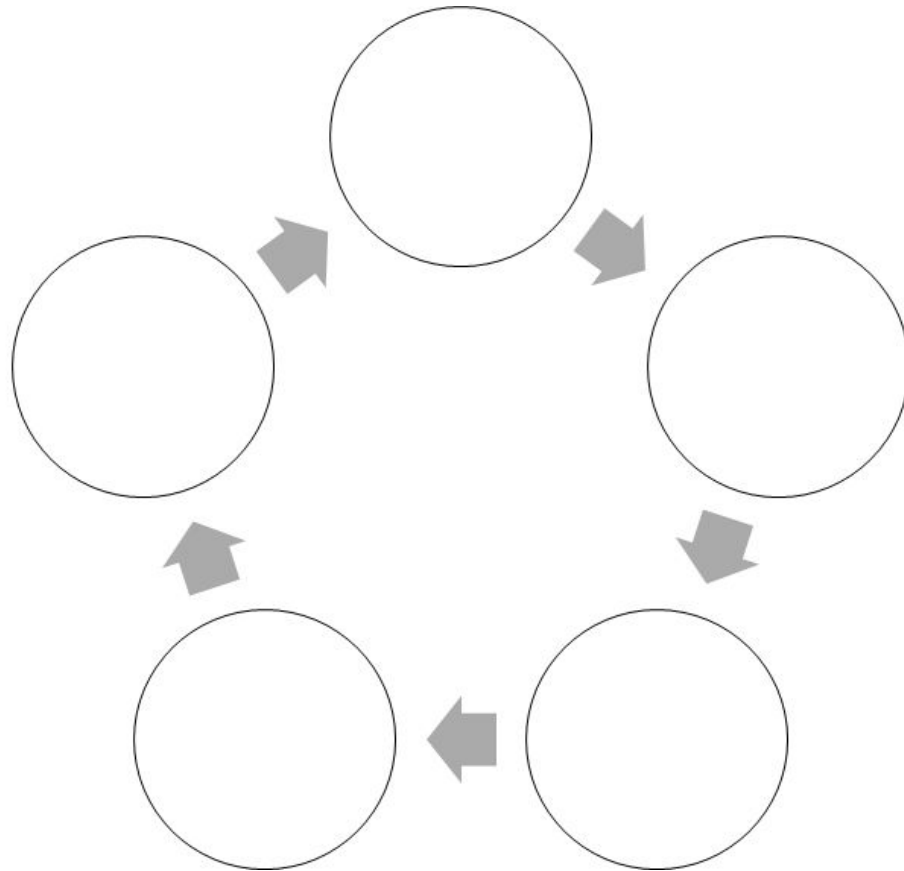
After researching the specialty fields and watching the video, discuss these questions with your group:

- Which jobs require more creativity? What makes you think that?
- What are the similarities and differences among the specialty fields?
- Which specialty would you choose to practice and why?

DAY ONE: WHAT IS A CONFECTIONER?

STATION: JOB DESCRIPTION

Map out the steps to become a confectioner.



Take notes on the skills needed to be a confectioner.

Create a list with the Top 5 Skills needed to be a confectioner on the following page..

DAY ONE: WHAT IS A CONFECTIONER?

Top 5 Confectioner Skills

1. _____

2. _____

3. _____

4. _____

5. _____

DAY ONE: WHAT IS A CONFECTIONER?

STATION: SUGAR

Record your recipe and the steps you used to make your invention.

(glue index card here)

Describe your sugar invention.

How was your invention creative?

What was successful about your invention? What would you change?

DAY ONE: WHAT IS A CONFECTIONER?

REFLECTION

Discuss with your group what components from each station were creative.

Station: Interview a Confectioner

Station: Job Opportunities and Specialty Fields

Station: Job Description

Station: Sugar

Why is creativity necessary for confectioners?

DAY ONE: WHAT IS A CONFECTIONER?

NOW HIRING: CONFECTIONER

TASK:

WORKING WITH A PARTNER CREATE A HELP WANTED/NOW HIRING POSTER FOR A CONFECTIONER'S POSITION INCLUDING THESE COMPONENTS:

- **Job Description with a Specialty Field-** what are the responsibilities and duties of this position?
- **Must Have Skills-** what skills are required for this position?
- **Certification needed-** what certification is needed for this position?
- **Qualities to look for in the applicant**

RUBRIC

CONTENT	3	2	1	POINTS
Job Description and Specialty Field	Specialty field is listed with a detailed description.	Specialty field is listed with no description.	No specialty field listed.	
Must Have Skills	Detailed list of skills.	Some skills listed.	No skills.	
Certification	Appropriate certification is posted.	Attempt to post the correct certification.	No certification is listed.	
Qualities	Detailed list of qualities.	Some qualities.	No qualities listed.	

DAY ONE: WHAT IS A CONFECTIONER?

Feedback:	
------------------	--

DAY 2: ALL ABOUT ICE CREAM

Mrs. Hurdle
SPARK Camp 2018

WHAT ARE WE DOING TODAY?

Using your Research Guide you will explore the following:

- The history of ice cream
- The impact of invention on the development of products made with ice cream
- The impact of invention on the development of products used with ice cream
- The importance of ice cream in our culture
- Any other questions you have related to ice cream!

HELPFUL RESOURCES

History-

<https://www.idfa.org/news-views/media-kits/ice-cream/the-history-of-ice-cream>

History-<https://www.frostgelato.com/about/history-of-gelato-sorbet/>

What is ice cream?-

<https://www.thespruceeats.com/what-is-ice-cream-1328784>

HELPFUL RESOURCES CONT.

Types of ice cream-

<https://www.dairygoodness.ca/ice-cream/types-of-ice-cream>

How to make ice cream-

<http://www.kidzworld.com/article/26683-science-project-make-homemade-ice-cream>

<http://www.kidzworld.com/article/17739-i-scream-you-scream>

Science of ice cream-

<https://www.icecreamnation.org/science-of-ice-cream/>

HELPFUL RESOURCES CONT.

Making ice cream-

<https://www.icecreamnation.org/base-recipes-start/>

Ice cream science-

<https://www.acs.org/content/acs/en/education/resources/highschool/chemmatters/past-issues/archive-2013-2014/ice-cream-chemistry.html>

Flavors of ice cream-

<http://www.businessinsider.com/americas-favorite-ice-cream-flavor-isnt-chocolate-or-vanilla-2017-8>

HELPFUL RESOURCES CONT.

Tools:

<http://greatideas.people.com/2014/08/07/best-ice-cream-tools/>

Inventions in other cultures:

<https://www.realsimple.com/food-recipes/recipe-collections-favorites/desserts/ice-cream-gelato-sorbet>

Appendix item: ice cream image- VTS.PNG

[Show location](#)



ice cream image- VTS.PNG

PNG (742 KB)

DAY 2: ICE CREAM RESEARCH

1. When and where did ice cream originate?

2. What is the person called who makes ice cream?

If you could rename the person who makes ice cream, what would you name that person? Why?

3. To which food group(s) does ice cream belong? How would you justify your choices?

4. How has creativity enhanced invention surrounding ice cream over the years?

5. How has invention impacted the development of a variety of products made with ice cream?

6. How has invention impacted the development of a variety of products used with ice cream?

Product	Purpose

7. What cultures have a confection that is similar to ice cream?

Invention Name	Description	Place of Origin

8. What does mean?

9. In what ways is ice cream an important part of the American culture?

10. What American traditions include ice cream?

11. What makes an ice cream flavor popular? What are the most popular ice cream flavors?

12. How has creativity enhanced invention in relation to ice cream flavors?

WHAT ELSE DO YOU WANT TO KNOW ABOUT ICE CREAM?

Create 3 questions that you still have about this topic and then complete research to find the answers!

1. _____

2. _____

3. _____

DAY 3: CREATIVE PROBLEM SOLVING

Mrs. Hurdle
SPARK Camp 2018

HOOK- OREOS

https://en.wikipedia.org/wiki/List_of_Oreo_varieties

- Who can name different flavors of Oreos?
- Where is creativity found in the flavor of Oreos?
- Where is invention found in the flavor or Oreos?
- How does creativity enhance invention of new Oreo flavors?
- Where does inspiration for these Oreo flavors come from?
- Why do you think Oreo comes out with new flavors so frequently?

MESS FINDING

What ingredients are needed for ice cream?

What ingredients enhance ice cream?

Predict the steps to make ice cream.

Predict what will happen if:

- M&M's or candies are added.
- Cookies or other baked goods are added.
- A milk substitute is used.

FACT FINDING

Use the resources below to learn more about different methods of making ice cream.

- Ice Cream Maker-
 - <https://www.thespruceeats.com/using-rival-electric-ice-cream-maker-1816232>
- Coffee can method-
 - <http://www.geniuskitchen.com/recipe/homemade-ice-cream-in-a-coffee-can-244054>
 - <https://susiej.com/ice-cream-in-a-can-teaching-science/>
- Plastic bag method-
 - <http://www.kidzworld.com/article/26683-science-project-make-homemade-ice-cream>
- Ice cream factories-
 - <https://www.youtube.com/watch?v=JdeSGGtAweM>

PROBLEM FINDING

Problem

How does creativity affect invention within the production of ice cream?

1. What happens when candies are added to inventions with ice cream?
2. What happens when cookies or baked goods are added to inventions with ice cream?
3. What happens when the type of milk is altered in inventions with ice cream?

IDEA FINDING

Using **divergent thinking** try and answer your problem in as many different ways as possible. Be sure to defer judgement on all of the ideas!

Use **convergent thinking** to review your ideas and choose 4 to 5 that have the greatest potential.

SOLUTION FINDING

You must now decide what criteria should be applied to weigh the worth of each of your selected ideas. These criteria will be used to determine the best solution to your problem. Use **divergent thinking** to create a list of factors or criteria that will be used to evaluate your ideas

Then use **convergent thinking** to review your criteria and circle four factors that you believe are the most important for evaluating each of your ideas.

ACCEPTANCE FINDING

Create an **action plan** of how the problem will be solved. Then use the plan to solve the problem.

SHARE YOUR PROBLEM AND SOLUTION

EXIT TICKET

On the index card write about how this experience supports the essential understanding that creativity enhances invention.

CREATIVE PROBLEM SOLVING HANDOUT

NAME _____

MESS FINDING:

Predict the steps that would be taken to make ice cream.

Predict the effect of adding candies or baked goods to ice cream.

FACT FINDING:

Use **divergent thinking** to brainstorm all known facts in the table below.

Then use **convergent thinking** to select the most important facts. Circle them.

Method	Process	Materials Needed	How does this method show creativity?
Ice Cream Maker			
Coffee Can Method			
Plastic Bag Method			
Ice Cream Factories			

PROBLEM FINDING:

How does creativity affect invention within the production of ice cream?

Circle the problem that you will be working to solve:

1. What happens when candies are added to inventions with ice cream?
2. What happens when cookies or baked goods are added to inventions with ice cream?
3. What happens when the type of milk is altered in inventions with ice cream?

IDEA FINDING:

Using **divergent thinking** try and answer your problem in as many different ways as possible. Be sure to defer judgement on all of the ideas! Record your ideas below and then share with your group.

Use **convergent thinking** to review your ideas and circle four to five ideas that have the greatest potential.

SOLUTION FINDING:

You must now decide what criteria should be applied to weigh the worth of each of your selected ideas. These criteria will be used to determine the best solution to your problem. Use **divergent thinking** to create a list of factors or criteria that will be used to evaluate your ideas. List them below.

Now use **convergent thinking** to review your criteria and circle four factors that you believe are the most important for evaluating each of your ideas. Fill in the table and then determine whether each idea meets this criteria by scoring it on a 1-3 scale. (3 is the highest.)

Criteria

Ideas						Totals

Rewrite the idea you are going to implement here:

ACCEPTANCE FINDING:

Create an **action plan** of how the problem will be solved. Then use the plan to solve the problem.

[illegible]







OREO

OREO

DAY 4: PROBLEM BASED LEARNING

Mrs. Hurdle
SPARK Camp 2018

GINGERBREAD HOUSE ACTIVITY

- Take a gallery walk and view the different gingerbread house pictures around the room.
- Choose the house that expresses the most creativity in your opinion and stand beside it.
- Be ready to share why you think it is the most creative.
 - Where is creativity expressed in the gingerbread house you chose?
 - What makes the gingerbread house you selected the most creative?
 - What about the gingerbread house is innovative?
 - How did invention inform each gingerbread house?
 - What makes each creation a house?
 - How do you determine the difference between a house and a home? Why does this matter?

ICE CREAM FLAVORS

- Where is creativity found in your favorite ice cream flavors?
- How does creativity impact the invention process of your favorite ice cream flavors?

PROBLEM ENGAGEMENT

Watch- <https://www.youtube.com/watch?v=uqYMvFjNWbA>

- How did invention impact the ice cream made in this video?
- What made their ice cream flavors creative?
- Where is creativity found in the ingredients used for their ice cream?

PERFORMANCE TASK

"You have been selected to compete in a confectioner's contest for this summer's specialty ice cream flavor by the Durham Ice Cream Company. Only the top confectioners in Durham were selected to compete. They know with your expertise on this subject that the competition will be tough, but some of the best flavors will be created. The winning flavor will be sold in their store all summer long. You must create a new and unique flavor of ice cream, as well as include the recipe, description of this flavor and how creativity enhanced the invention process. A panel of ice cream experts from across North Carolina will select the winning flavor based on the recipe, flavor, and appearance of the ice cream."

INQUIRY AND INVESTIGATION

- What do you already know about making ice cream?
- Where is creativity found in your favorite ice cream flavors?
- How does creativity impact the popularity of an ice cream flavor?
- How will creativity enhance your invention?
- Where will your inspiration come from during the invention process?

INQUIRY AND INVESTIGATION CONT.

- What ingredients will be needed in the invention process? Which ingredients represent creativity? How is creativity represented in these ingredients?
- Where is creativity found in the method for making your ice cream flavor?
- How will creativity help you determine how much of an ingredient will be needed? How will you determine the unit of measurement for your ingredients during the invention process?
- When inventing your new ice cream flavor, how will you determine the order in which ingredients are added?

HELPFUL RESOURCES

- <http://www.businessinsider.com/americas-favorite-ice-cream-flavor-isnt-chocolate-or-vanilla-2017-8>
- <https://www.activebeat.com/diet-nutrition/15-most-popular-ice-cream-flavors-the-winner-may-surprise-you/4/>
- <http://www.geniuskitchen.com/recipe/homemade-ice-cream-in-a-coffee-can-244054>

PROBLEM DEFINITION

Write description of your ice cream flavor.

Include materials and ingredients needed.

Create a rough draft of your recipe for the ice cream.

PROBLEM RESOLUTION

Follow your recipe and create your ice cream.

PROBLEM DEBRIEFING

Reflection:

- What went well in your invention of a new ice cream flavor?
- What do you think could be changed in the invention process?
- What surprised you about the ice cream flavor you invented?
- In what ways did creativity enhance the choices you made in the invention process?

Revise and rewrite your final recipe to be judged.

IN WHAT OTHER AREAS OF LIFE DOES CREATIVITY ENHANCE
INVENTION?



















_____’s Ice Cream Recipe

Ingredients

Directions:



_____’s Ice Cream Recipe

Description:

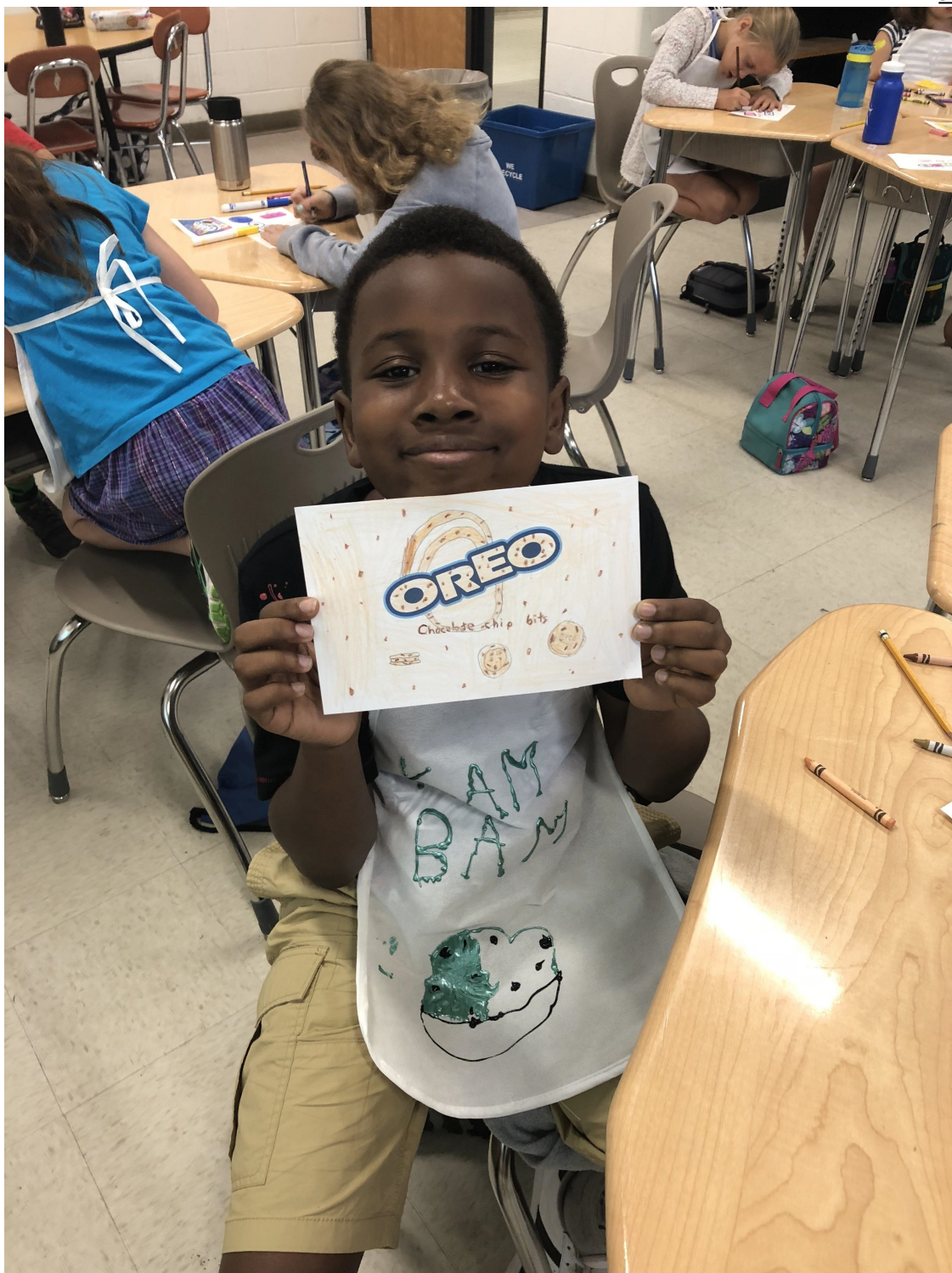
How did creativity influence the invention of your ice cream flavor?





IMG-0155.JPG

JPG (3299 KB)



IMG-1046.jpeg

jpeg (2135 KB)

PERFORMANCE TASK:

You have been selected to compete in a confectioner's contest for this summer's specialty ice cream flavor by the Durham Ice Cream Company. Only the top confectioners in Durham were selected to compete. They know with your expertise on this subject that the competition will be tough, but some of the best flavors will be created. The winning flavor will be sold in their store all summer long. You must create a new and unique flavor of ice cream, as well as include the recipe, description of this flavor and how creativity enhanced the invention process. A panel of ice cream experts from across North Carolina will select the winning flavor based on the recipe, flavor, and appearance of the ice cream.

QUESTIONS TO GUIDE YOUR THINKING:

Where will your inspiration come from during the invention process?

What ingredients will be needed in the invention process? Which ingredients represent creativity? How is creativity represented in these ingredients?

Where is creativity found in the method for making your ice cream flavor?

How will creativity help you determine how much of an ingredient will be needed? How will you determine the unit of measurement for your ingredients during the invention process?

PLANNING:

DESCRIPTION:

MATERIALS AND INGREDIENTS NEEDED:

You have been selected to compete in a contest for this summer's specialty ice cream flavor by the Durham Ice Cream Company. Only the top confectioners in Durham were selected to compete. They know with your expertise on this subject that the competition will be tough, but some of the best flavors will be created. The winning flavor will be sold in their store all summer long. You must create a new and unique flavor of ice cream, as well as include the recipe, description of this flavor and how your creativity influenced your ice cream invention. A panel of ice cream experts from across North Carolina will select the winning flavor based on the recipe, flavor, and appearance of the ice cream.

Performance Task Rubric

Criteria	Evaluation of Process (Using a given method to create their ice cream)	Content (Creation of a recipe using research and experiences from the week)	Understanding of Creativity (How does creativity influence invention within your ice cream flavor?)	Evaluation of Product (Recipe)	Evaluation of Product (Appearance & Taste of Ice Cream)
Weight	25%	25%	30 %	10%	10%
4	Student successfully completes the task of making ice cream independently.	Student effectively uses research and experiences to create a recipe for a creative ice cream flavor.	Student has a complete understanding of the concept of creativity.	Student has an exceptionally clear and easy to follow recipe.	Student has an exceptionally appealing and appetizing ice cream flavor.
3	Student successfully completes the task of making ice cream with minimal assistance from the teacher or peers.	Student uses some research and experiences to create a recipe for a creative ice cream flavor.	Student has a substantial understanding of the concept of creativity.	Student has a generally clear recipe that you are able to follow.	Student has a generally appealing and appetizing ice cream flavor.
2	Student successfully completes the task of making ice cream with moderate assistance from the teacher or peers.	Student uses research or experience to create a recipe for a creative ice cream flavor.	Student has partial understanding of the concept of creativity.	Student's recipe is difficult to follow and lacks clarity.	Student has a somewhat appealing and appetizing ice flavor.
1	Student successfully completes the task with one-on-one support from the teacher or does not successfully complete the task.	Student does not use research and experiences to create a recipe for a creative ice cream flavor.	Student has a misunderstanding of the concept of creativity.	Student's recipe is unclear and not able to be followed.	Student's ice cream is somewhat unappealing and appetizing.



