



Lesson Plan 2 of 8

Research and Development

Created: 02/2020 by the National FFA Organization

Description: Valent USA is a leader in sustainable solutions for a changing world, and maintaining the ability to continue feeding the growing population requires sustainability. Through this lesson series, students will have the opportunity to learn about the importance of sustainability throughout the Agriculture, Food and Natural Resources Value Chain.

STUDENT LEARNING OBJECTIVES:

After completing these activities, students will ...

1. Describe the process of research and development.
2. Create a survey to determine the needs of the consumer when developing a product.
3. Recognize a biorational product and analyze the importance of biorational products in sustainable agriculture.

TIME REQUIRED: 95 minutes

RESOURCES:

1. Valent USA, <http://www.valentbiosciences.com/>
 - a. Article: "The Role of Biorationals," <https://www.valentbiosciences.com/research-development/the-role-of-biorationals/>
 - b. Article: "Biorationals and Sustainability," <https://www.valentbiosciences.com/sustainability/>
 - c. Article: "Biorationals and Crop Quality," <https://www.valentbiosciences.com/the-role-of-biorationals/crop-quality/>
2. AgExplorer "Cargill Virtual Field Trip," <https://agexplorer.ffa.org/virtual-field-trip/archive/2017-cargill>

EQUIPMENT AND SUPPLIES NEEDED:

1. "Surprise Bag" supplies:
 - a. Brown paper bags — 1 per group
 - b. Toothpicks — 25 per group
 - c. Mini marshmallows — 15 per group
 - d. Three different varieties of trail mix
2. Red, green and purple markers, pens, crayons or highlighters
3. A copy of the "The Role of Biorationals" article for each student, <https://www.valentbiosciences.com/research-development/the-role-of-biorationals/>
4. A copy of the "Biorationals and Sustainability" article for each student, <https://www.valentbiosciences.com/sustainability/>
5. A copy of the "Biorationals and Crop Quality" article for each student, <https://www.valentbiosciences.com/the-role-of-biorationals/crop-quality/>
6. A copy of the "Surprise Bag Challenge" worksheet for each student
7. A copy of the "What to Ask" worksheet for each student
8. A copy of the "Demand Influences Design — Cargill Virtual Field Trip" worksheet for each student
9. A copy of the "Trail Mix Challenge: Consumer Research" worksheet for each student
10. A copy of the "Biorational Products Jigsaw Activity" worksheet for each student
11. A copy of "Appendix 1: Valent Growers' Sustainability Attitudes Survey Example"

THIS QUICK LESSON PLAN WOULD WORK WELL AS:

1. An introduction to research and development.
2. A lesson in a food products and processing unit.

THESE ACTIVITIES ARE ALIGNED TO THE FOLLOWING STANDARDS:

AFNR Performance Element

- CS.06: Analyze the interaction among AFNR systems in the production, processing and management of food, fiber and fuel and the sustainable use of natural resources.

FFA Precept

- FFA.PL-A.Action: Assume responsibility and take the necessary steps to achieve the desired results, no matter what the goal or task at hand.
- FFA.PL-C.Vision: Visualize the future and how to get there.
- FFA.PL-E.Awareness: Understand personal vision, mission and goals.
- FFA.PG-I.Professional Growth: Assume responsibility for attaining and improving upon the skills needed for career success.
- FFA.PG-J.Mental Growth: Embrace cognitive and intellectual development relative to reasoning, thinking and coping.
- FFA.CS-M.Communication: Effectively interact with others in personal and professional settings.
- FFA.CS-N.Decision Making: Analyze a situation and execute an appropriate course of action.

Common Career Technical Core

- AG6: Analyze the interaction among AFNR systems in the production, processing, and management of food, fiber, and fuel and the sustainable use of natural resources.

NASDCTEC

- AGPA01.02: Conduct food product development and research activities that demonstrate application of food science principles to enhance products.

Common Core – Reading: Informational Text

- CCSS.ELA-Literacy.RI.9-10.2: Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.
- CCSS.ELA-Literacy.RI.9-10.3: Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.
- CCSS.ELA-Literacy.RI.9-10.4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
- CCSS.ELA-Literacy.RI.9-10.8: Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.

Common Core – Speaking and Listening

- CCSS.ELA-Literacy.SL.9-10.2: Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
- CCSS.ELA-Literacy.SL.9-10.4: Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

Common Core – Science & Technical Subjects

- CCSS.ELA-Literacy.RST.9.10.9: By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

Common Core – Literacy in Science & Technical Subjects: Writing

- CCSS.ELA-Literacy.WHST.9.10.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Green/Sustainability Knowledge and Skill Statements

- AFNR Career Cluster, Statement 7: Demonstrate an understanding of green and sustainability trends that are impacting processes and markets in AFNR.

AFNR Career Ready Practices

- CRP.02: Apply appropriate academic and technical skills. Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive.
- CRP.04: Communicate clearly, effectively, and with reason. Career-ready individuals communicate thoughts, ideas and action plans with clarity, whether using written, verbal and/or visual methods.
- CRP.05: Consider the environmental, social and economic impact of decisions. Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organizations and the environment.
- CRP.06: Demonstrate creativity and innovation. Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization.
- CRP.07: Employ valid and reliable research strategies. Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies.
- CRP.08: Utilize critical thinking to make sense of problems and persevere in solving them. Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem.

Partnership for 21st Century Skills

- Communication
- Critical Thinking and Problem Solving
- Flexibility and Adaptability
- Initiative and Self-Direction
- Leadership and Responsibility
- Think Creatively

LESSON PLAN:

1. **Bell Ringer:** (3–5 minutes) Using the words “research and development,” make as many smaller words as you can (Example: me, search, mop). Have students underline the small words they came up with that are related to research and development. Then explain that this lesson will focus on research and development of new products.
2. **Introduction:** (10 minutes) **Surprise Bag Challenge**
 - a. Students will participate in two rounds of mini challenges. Students should be split into groups of two or three students. Round 1: Provide each group with a “surprise bag,” and give students three minutes to build a tower. After the time has expired, lead a discussion with the students by asking these questions: What went well? What were the challenges?
 - b. Round 2 of the surprise bag challenge:
Ask students to record all the materials they have. Then allow the students five minutes to work in their teams and discuss how they will build their tower. After the five minutes expire, give the teams three minutes to build the tower they discussed. Lead a discussion with the whole group to identify the differences between Round 1 and Round 2. Students should discuss issues such as in Round 1 they didn’t have a plan or a common goal, but in Round 2 they worked to create a plan and knew the materials they had to work with. Lead students to understand that Round 1 could be considered research and round 2 is a development process. Ask students “Where is research and development used in agriculture?” Share with students that by developing their own products they will learn how companies like Valent develop new products to fulfill a need in the agriculture industry.
3. **Activity 1:** (20 minutes) **Biorational Products Jigsaw:** Valent has developed biorational agriculture products to meet the sustainability demands of agriculturists and consumers. Biorational products are designed to improve crop quality and productivity with minimal impact on the environment. Each student will need a copy of “The Role of Biorationals — Valent Biosciences” (<https://www.valentbiosciences.com/research-development/the-role-of-biorationals/>), “Biorationals and Sustainability — Valent Biosciences” (<https://www.valentbiosciences.com/sustainability/>) and “Biorationals and Crop Quality” (<https://www.valentbiosciences.com/the-role-of-biorationals/crop-quality/>). Students will be organized in small groups and a jigsaw reading strategy, paired with a close-reading strategy, will be used.
Jigsaw Strategy Instructions: Split students into “home” groups of three students each. Assign a different article to each person in the group. Students with the same article create “expert” groups. Students will move to their “expert” groups to read the article together and fill in their portion of the graphic organizer. Home groups come back together to teach each other the most important and central ideas from the text they read. After each student has shared their main points, they should work together to complete the “Biorational Products Jigsaw Activity” worksheet. After students finish their worksheets, discuss as a class how Valent applies “research and development” to its products.
4. **Activity 2:** (20 minutes) **Cargill Research and Development:** How does a large company analyze consumer needs and develop a product to meet those needs? Show the Chapter 3 “Food Scientist: The Science of Food” video from the AgExplorer Cargill Virtual Field Trip (VFT) (<https://agexplorer.ffa.org/virtual-field-trip/archive/2017-cargill>). Play the video and stop at the 3:25 mark. During this video, students will begin to understand the process of research and development to directly meet customer needs. Provide each student with the “Demand Influences Design — Cargill Virtual Field Trip” worksheet. After watching the video, ask students to recall from the VFT different ways that consumer needs and market researchers have influenced product development from Cargill. Students can use the information they completed in the worksheet to help guide their responses. Ask students to draw conclusions about how product designs are influenced by customer needs.
5. **Activity 3:** (40 minutes) **Trail Mix Challenge:** Have at least three different types of trail mix available to show the class. Trail mix options should include a trail mix with only nuts, a trail mix with dried fruit and nuts, and a trail mix with nuts and chocolate candy. Conduct a simple poll of the class and see which variety of trail mix the students prefer. Ask students about the problems with the trail mix. Sample answers: trail mix ingredients, nut allergies, not enough chocolate, too much chocolate, too many raisins, not enough raisins, etc. Challenge students by asking “How do you know that these are truly challenges?” Lead them to a response that centers around the need to create a customer survey. Ask students if they have ever received a survey at a restaurant, on their phone, at a store, etc.

(Note: If there are severe nut allergies, consider substituting other ingredients for students and develop a new snack mix.)

To best understand customers/consumers and their preferences, it is best to have them complete a survey. But how do we ask the right questions in the right way to gain the information we need? Using the resource "Survey Questions 101: Do You Make These 7 Mistakes?" (<https://www.qualtrics.com/blog/writing-survey-questions/>) have students read the article and identify the seven mistakes many often make when creating a basic survey using the "What to Ask" worksheet. Next, have students critique the example questions: (1) Draw a green circle around the questions written correctly, (2) draw a red circle around the questions written incorrectly and (3) in purple, correct the questions that you identified as poorly written. After students have finished critiquing the provided questions, have students think-pair-share and discuss their thoughts. Then hold a class discussion to ensure all students had the correct answers and understand survey question creation.

Students will work in pairs to develop a consumer survey to determine the needs for new product development of trail mix. Each student needs a copy of the "Trail Mix Challenge: Consumer Research" worksheet. It may be necessary to give students parameters as to the type and number of questions on the survey. This survey may be a paper/pencil survey or students may utilize a form of technology such as Google Forms or SurveyMonkey to complete their surveys. It is recommended that students are instructed to collect at least 15 responses from varying people. (Note: See [Appendix 1](#) for an example set of survey questions from Valent USA.)

6. *Follow-up:* Remind students that they have a limited amount of time to administer their survey. The next lesson will require students to have the results of their surveys to begin developing their products.
7. *Leveling Up:* Have students identify how another major corporation, such as Apple, utilizes research and development for product improvement and report back to the class.
8. *Exit Ticket:* Students' completed consumer research surveys will serve as their exit ticket for this lesson.

NAME: _____

Aligned to the following standards:
CS.06; FFA.PL-A; FFA.PL-C; FFA.PL-E; FFA.PG-I; FFA.PG-J; FFA.CS-M; FFA.CS-N; AG6;
AGPA01.02; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.RI.9-10.4;
CCSS.ELA.RI.9-10.8; CCSS.ELA.SL.9-10.2; CCSS.ELA.SL.9-10.4; CCSS.ELA.RST.9.10.9;
CCSS.ELA.WHST.9.10.4; AFNR Career Cluster, Statement 7; CRP.02; CRP.04; CRP.05;
CRP.06; CRP.07; CRP.08

Surprise Bag Challenge: Round 1

DIRECTIONS:

Get a surprise bag from your instructor. When the instructor says "GO," you will have three minutes to build a tower. After building the tower, answer the following questions.

Identify 3 things that worked well in building your tower.

- 1.
- 2.
- 3.

Draw a picture of the tower you built and explain your building process:

How would you improve your tower? (What did not go well?)

Surprise Bag Challenge: Round 2

DIRECTIONS:

For the second round of this challenge, you will create a list of all the materials you have to build your tower, work with your teammates to plan a design for your tower and then build your tower.

List the materials you have to build a tower.

Draw your plan for the tower, and identify which materials you will use.

Explain how this activity is similar to the research and design process of product development.



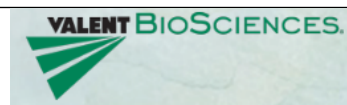
Aligned to the following standards:

CS.06; FFA.PL-A; FFA.PL-C; FFA.PL-E; FFA.PG-I; FFA.PG-J; FFA.CS-M; FFA.CS-N; AG6; AGPA01.02; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.RI.9-10.4; CCSS.ELA.RI.9-10.8; CCSS.ELA.SL.9-10.2; CCSS.ELA.SL.9-10.4; CCSS.ELA.RST.9.10.9; CCSS.ELA.WHST.9.10.4;; AFNR Career Cluster, Statement 7; CRP.02; CRP.04; CRP.05; CRP.06; CRP.07; CRP.08

Biorational Products Jigsaw Activity

My "Expert" Group	My "Home" Group
Central ideas I am an expert on:	Central ideas shared by members of my home group:
Two of the most important things I learned that I want to share. 1. 2.	Two things I learned in my home group: 1. 2.
Something new that I learned from my expert group: (Write a few sentences or draw a visual representation.)	How does each topic from my home group connect to my expert group topic? 1. 2
Two questions that I have after completing this activity: 1. 2.	

How does Valent apply the idea of "research and development" to its product line?



How will you ensure the products you use in your trail mix are sustainably produced?

Explain what would happen if research and development were not a part of the process when developing a new product.

Demand Influences Design – Cargill Virtual Field Trip

DIRECTIONS:

Watch the Chapter 3 “Food Scientist: The Science of Food” video on the AgExplorer Cargill Virtual Field Trip and answer the following questions.

Which of the following is needed to be a food scientist?

- a. Microbiology
- b. Chemistry
- c. An interest in looking at the innate characteristics of food
- d. All of the above



Why is it important for Cargill to pay attention to the needs of the industry and their consumers?

What are four responsibilities a food scientist at Cargill will be tasked with in a typical work day?

- 1.
- 2.
- 3.
- 4.

Trail mix is nearly a perfect snack. It is easy to pack for travelling and not perishable, and there are many different types of trail mix available. However, there is still some room for improvement. Just as Cargill works to keep up with consumer needs to improve their products, you will work with consumers to improve trail mix.

How will you apply the ideas shared by Cargill to determine consumer needs/problems as you work to develop a new trail mix?

What information do you need to gather from consumers to create a quality product that meets their needs?

What to Ask

Aligned to the following standards:
CS.06; FFA.PL-A; FFA.PL-C; FFA.PL-E; FFA.PG-I; FFA.PG-J; FFA.CS-M; FFA.CS-N; AG6; AGPA01.02; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.RI.9-10.4; CCSS.ELA.RI.9-10.8; CCSS.ELA.SL.9-10.2; CCSS.ELA.SL.9-10.4; CCSS.ELA.RST.9.10.9; CCSS.ELA.WHST.9.10.4; AFNR Career Cluster, Statement 7; CRP.02; CRP.04; CRP.05; CRP.06; CRP.07; CRP.08

DIRECTIONS:

To best understand your customers/consumers and their preferences, it is best to have them complete a survey. But how do we ask the right questions in the right way to gain the information we need? Using the resource "Survey Questions 101: Do You Make These 7 Mistakes?" (<https://www.qualtrics.com/blog/writing-survey-questions/>), complete the following activities to learn about surveys and their development.

Read the article "Survey Questions 101: Do You Make These 7 Mistakes?" and identify each of the mistakes.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Using what you read in the resource above, examine the questions below and complete the following tasks: (1) Draw a green circle around the questions written correctly, (2) draw a red circle around the questions written incorrectly and (3) in purple, correct the questions that you identified as poorly written.

1. How many years have you played basketball?

- ☐ 1-2 years
- ☐ 2-3 years
- ☐ 3-4 years
- ☐ 4-5 years
- ☐ 5-6 years

2. Which instrument is your favorite?

- ☐ Saxophone
- ☐ Violin
- ☐ Flute
- ☐ Cello
- ☐ Triangle

3. To what level do you like Ben and Jerry's Ice Cream?

- ☐ Like a lot
- ☐ Like
- ☐ Neutral
- ☐ Dislike
- ☐ Dislike a lot

4. What is your favorite food?

5. Which shoe is the most attractive and best for basketball?

- ☐ Air Jordan
- ☐ And1
- ☐ Nike
- ☐ Adidas
- ☐ Other

6. Which type of animal do you own?

- ☐ Cat
- ☐ Dog
- ☐ Rabbit
- ☐ Hamster
- ☐ Other

Why is it important to develop well-written questions for a survey?



Aligned to the following standards:

CS.06; FFA.PL-A; FFA.PL-C; FFA.PL-E; FFA.PG-I; FFA.PG-J; FFA.CS-M; FFA.CS-N; AG6; AGPA01.02; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.RI.9-10.4; CCSS.ELA.RI.9-10.8; CCSS.ELA.SL.9-10.2; CCSS.ELA.SL.9-10.4; CCSS.ELA.RST.9.10.9; CCSS.ELA.WHST.9.10.4; AFNR Career Cluster, Statement 7; CRP.02; CRP.04; CRP.05; CRP.06; CRP.07; CRP.08

Trail Mix Challenge: Consumer Research

DIRECTIONS:

After learning about how major companies determine consumer needs to develop new products, you will create a survey of at least 10 questions to guide your development of a new trail mix product. Your instructor will tell you if you are to create the survey using a web-based program such as Google Forms or SurveyMonkey or if you will handwrite your survey. (Note: To see an example of survey questions from Valent, check out [Appendix 1](#).)

Demographic Questions: Ask at least 2 questions to learn more about the person completing the survey.
(Example: What is your age?)

Current Product Preference Questions: Ask at least 3 questions about the consumer's current trail mix preference.
(Example: Select Yes or No — When you eat trail mix, do you prefer that it contains dried fruit?)

Product Challenges Question: Ask at least 4 questions about challenges the consumer faces with the product and improvements they would like to see.
(Example: What would make trail mix more enjoyable for you?)

Sustainability: Ask at least 1 question related to the importance of using sustainably produced/sourced ingredients.
(Example: On a scale of 1 to 10, how important is it that the ingredients in your trail mix are sustainably produced?)

Appendix 1: Valent Growers' Sustainability Attitudes Survey Example

1. How many acres do you farm?

- a. None
- b. 1-24
- c. 25-99
- d. 100-499
- e. 500-999
- f. 1,000-2,499
- g. 2,500 or more

2. What job title best describes you?

- a. Executive management (owner, president, etc.)
- b. General/location management (farm or packing house manager, etc.)
- c. Production management (field operations, crew chief, etc.)
- d. Sales or marketing management
- e. Other

3. What is the primary crop you grow?

- a. Corn and Soybean
- b. Fruit for Fresh Market
- c. Vegetables for Fresh Market
- d. Fruit/Veg for Processing

4. How relevant are each of the following in your own personal definition of "sustainability"?

- Soil Health and Nutrition Management
 - a. Corn and Soybean
 - b. Fruit for Fresh Market
 - c. Vegetables for Fresh Market
 - d. Fruit/Veg for Processing
- Use of GMOs
 - a. Corn and Soybean
 - b. Fruit for Fresh Market
 - c. Vegetables for Fresh Market
 - d. Fruit/Veg for Processing
- Employee Health and Safety
 - a. Corn and Soybean
 - b. Fruit for Fresh Market
 - c. Vegetables for Fresh Market
 - d. Fruit/Veg for Processing
- Use of Biologicals in Crop Protection/Production Systems
 - a. Corn and Soybean
 - b. Fruit for Fresh Market
 - c. Vegetables for Fresh Market
 - d. Fruit/Veg for Processing
- Farm Profitability and Sustainability/Longevity
 - a. Corn and Soybean
 - b. Fruit for Fresh Market
 - c. Vegetables for Fresh Market
 - d. Fruit/Veg for Processing
- Consumer Attitudes
 - a. Corn and Soybean
 - b. Fruit for Fresh Market
 - c. Vegetables for Fresh Market
 - d. Fruit/Veg for Processing
- Residues
 - a. Corn and Soybean
 - b. Fruit for Fresh Market
 - c. Vegetables for Fresh Market
 - d. Fruit/Veg for Processing
- Biodiversity
 - a. Corn and Soybean
 - b. Fruit for Fresh Market
 - c. Vegetables for Fresh Market
 - d. Fruit/Veg for Processing
- Water Management
 - a. Corn and Soybean
 - b. Fruit for Fresh Market
 - c. Vegetables for Fresh Market
 - d. Fruit/Veg for Processing



KEY: Demand Influences Design — Cargill Virtual Field Trip

DIRECTIONS:

Watch the Chapter 3 "Food Scientist: The Science of Food" video on the AgExplorer Cargill Virtual Field Trip and answer the following questions.

Which of the following is needed to be a food scientist?

- a. Microbiology
- b. Chemistry
- c. An interest in looking at the innate characteristics of food
- ☒ d. All of the above



Why is it important for Cargill to pay attention to the needs of the industry and their consumers? **Answers may vary. Example: Paying attention to consumer needs is very important to make sure that your products are being developed to meet the needs and trends of the industry.**

What are four responsibilities a food scientist at Cargill will be tasked with in a typical workday?

1. **Checking on samples**
2. **Developing new formulations for customers**
3. **Responding to customer feedback about existing products or product concerns**
4. **Layering insights from the marketplace and consumers as to the products that should be developed to meet new demands and a changing landscape**

Trail mix is nearly a perfect snack. It is easy to pack for travelling and not perishable, and there are many different types of trail mix available. However, there is still some room for improvement. Just as Cargill works to keep up with consumer needs to improve their products, you will work with consumers to improve trail mix.

You will be developing a new trail mix. How will you apply the ideas shared by Cargill to determine consumer needs/problems with the currently available trail mix?

Answers will vary.

What information do you need to gather from consumers to create a quality product that meets their needs?

Answers will vary, but should include something like this: Who is the target audience? What challenges do they have with the current product? What ideas do they have for improvement? etc.

KEY: What to Ask

DIRECTIONS:

To best understand your customers/consumers and their preferences, it is best to have them complete a survey. But how do we ask the right questions in the right way to gain the information we need? Using the resource "Survey Questions 101: Do You Make These 7 Mistakes?" (<https://www.qualtrics.com/blog/writing-survey-questions/>), complete the following activities to learn about surveys and their development.

Read the article "Survey Questions 101: Do You Make These 7 Mistakes?" and identify each of the mistakes.

- Avoid leading words and statements.
- Give mutually exclusive answers.
- Ask direct questions.
- Include the option to "not answer."
- Include all possible answer choices.
- Use a balanced scale for options.
- Ask one question at a time.

Using what you read in the resource above, examine the questions below and complete the following tasks: (1) Draw a green circle around the questions written correctly, (2) draw a red circle around the questions written incorrectly and (3) in purple, correct the questions that you identified as poorly written.

1. How many years have you played basketball?

- 1-2 years
- 2-3 years
- 3-4 years
- 4-5 years
- 5-6 years

2. Which instrument is your favorite?

- Saxophone
- Violin
- Flute
- Cello
- Triangle

There needs to be another category. What if someone does not like any of the options given?

3. To what level do you like Ben and Jerry's Ice Cream?

- Like a lot
- Like
- Neutral
- Dislike
- Dislike a lot

4. What is your favorite food?

This question is not narrow enough to get a specific answer. Example, what is your favorite Italian dish?

5. Which shoe is the most attractive and best for basketball?

- Air Jordan
- And1
- Nike
- Adidas
- Other

6. Which type of animal do you own?

- Cat
- Dog
- Rabbit
- Hamster
- Other

What if they do not own an animal? Correct: Add an answer for "do not own an animal."

1. A person with 3 years experience would have a hard time selecting an answer. Correct: 1-2, 3-4, 5-6

Why is it important to develop well-written questions for a survey?
 If we don't ask questions that are well-developed, we will not get the information we truly need to answer the questions we have. We will then have a very blurry concept of where our research and development and product creation should go.

