**Course 1: Food Production, Nutrition and Health**

**Project: Food for Thought**

**Essential Question:** How should we monitor our eating to maintain a healthy lifestyle?

**Engagement Scenario**:

Malnutrition occurs in people who are either undernourished or over-nourished. Approximately 30% of children in the United States are obese while 1% are undernourished. Many people have no idea what they actually eat in a given day and whether they are making good food decisions. Your CTSO (FFA, FCCLA, HOSA, etc.) has asked you – as a member of the organization’s healthy lifestyle committee – to write a food diary for high school students and develop the tools students would need to use the diary. They will use the food diary the class develops for a healthy lifestyle program they are conducting. The goal is to help students become more aware of the foods they consume and the impact those foods could have on overall health.

Your team will research healthy eating and determine guidelines for adolescents to follow. Based on the guidelines, your team will develop a food diary that allows you to track food and calorie consumption. You will use the food diary you develop and test it among your peers for usability. You will compare your eating habits and the habits of your peers to those suggested by your research using pie charts. You will calculate the necessary caloric intake for an individual based on Resting Metabolic Rate and activity levels and use this caloric intake recommendation in the guide for your food diary.

After reading informational texts on nutrition and participating in enabling learning activities intended to assist you in researching, conducting, and analyzing an approach to monitoring proper nutrition, write a report in which you analyze the effectiveness of your food diary, providing examples to illustrate and clarify your analysis.

You will present your food diary, eating data, and usability results to a nutrition expert and leaders in the student organization and apply their feedback and the usability feedback you receive from your peers to revise your food diary. As a class, you will choose a food diary to use for the remainder of the course.

**Project Overview**

|  |  |
| --- | --- |
| **Day** | **Concept/Description** |
| 1 | Students compare personal eating habits to standard American diets. Students explain the impact of historical events on personal eating habits. Students discuss the cultural significance of food. |
| 2 | Students describe the purpose of the project. Students list the tasks and products related to the project. Students describe the project in one sentence. |
| 34 | Students list the recommendations for healthy diets. Students compare recommendations from different sources. Students examine careers in the field of nutrition. Students determine if sources of information are reliable. |
| 5 | Students define fruits, grains, dairy, vegetables, and proteins. Students assign foods to the categories used in USDA MyPlate. |
| 6 | Students create pie or circle charts based on given data. Students compare personal eating habits to those suggested by the USDA. |
| 7 | Students measure servings of foods from each MyPlate category. Students compare serving sizes of foods commonly served. |
| 8 | Students calculate calorie requirements for a variety of people in order to maintain energy balance. Students describe how different factors impact energy balance. |
| 910 | Students compare systems for tracking eating. Students develop a system to track food consumption. |
| 11 | Students create a pie chart representing eating habits. Students compare pie charts of their eating to the MyPlate pie chart. |
| 12 | Students identify necessary information for someone to follow their guide. Students develop a one page explanation of the diary and how to classify foods. |
| 13 | Students explain the structure of a presentation. Students describe the kinds of evidence that sway audiences. |
| 14 | Students calculate mean. Students explain why one uses mean responses. **(Optional day depending on how students perform on pre-test)** |
| 1516 | Students analyze the results of their food tracking system survey. Students describe the benefits and drawbacks of their food tracking system. Students develop a presentation to the class and nutrition expert that explains their system and how it was received by the participants. |
| 1718 | Students compare food tracking systems. Students demonstrate effective presentation skills. |
| 19 20 | Students write a research report based on survey results and feedback from presentations. |

**Day One**

**Key Question of the Day**: What role does food play in your everyday life?

(Each day the key question should be prominently displayed and used to open the lesson.)

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet (Appendix 1)
* “What role does food play in your everyday life?”

**Learning Objectives**

As a result of this lesson, students will be able to:

* Compare personal eating habits to standard American diets.
* Explain the impact of historical events on personal eating habits.
* Discuss the cultural significance of food.

**Required Materials for Daily Lesson**

* Weekly Bell-Work journal – Appendix 1 – One per student
* Daily Exit Slip – Appendix 2 – One per student
* Research journals (blank notebooks or binders with lined paper. Binders work well so handouts can be added easily)
* Internet
* Flip chart
* Markers
* Computers (iPads will work too, or any device with access to the Internet)

**Estimated Instructional Time:** One 50-minute class period

**Opening –** (*Designed to prepare students for learning. Students are prepared for learning by activating an overview of the upcoming learning experience, their prior knowledge, and the necessary vocabulary*.)

* Read the Bell-Work question and solicit responses from the students.
* Possible answers may include:
	+ Provide energy
	+ Sustain life
	+ Celebrations (e.g., birthdays, holidays, etc.)
	+ Social events
* Write the responses on a flipchart or somewhere visible in the room.
* Ask the class, “How do these different roles affect the choices you make about the foods you eat?” and briefly discuss their responses.
* Explain that even though food has a cultural and social significance, we ultimately need food to survive. But, it’s the foods that we eat and the choices we make that have more serious impacts, such as impacts on our health.

**Middle -** *(Designed to provide a structure for learning that actively promotes the comprehension and retention of knowledge through the use of engaging strategies that acknowledge the brain's limitations of capacity and processing.)*

* Distribute students’ research journals. Explain that they will use these for the remainder of the course to keep track of the research that they do and write reflections. Provide students with a format for research journal entries.
	+ **Teacher TIP!** If there is a specific format you or your school uses for taking notes, feel free to use that with the research journal. Use a format that works best for you.
* Ask the class if they have ever seen an infographic. Explain that infographics are a fun, visual way to present information.
	+ **Teacher TIP!** Have an example of an infographic ready to show in case the response for having seen one is low.
* Explain that to create their infographics, each team will have to do a bit of research to compile supporting facts for the questions they are responding to.
* Ask the class, “How do you know if a resource is reliable?”
	+ Have a discussion about reliable sources and explain:
		- When it comes to websites, .edu and .gov are the best because they are sources that come from schools/universities and the government. Some .org websites are trustworthy, but not all.
		- The first few websites listed at the top of the Google search are usually the most reliable.
		- Consider the author. Is it a blogger? Is it a college professor? Is it a doctor? What is their background and purpose for writing the article?
* Remind students that whenever they conduct research they must cite their sources. There are many formats for citing sources but for this course, we will use the APA (American Psychological Association) Format.
	+ **Teacher TIP!** As students work through all of the projects, they can refer to the Purdue Online Writing Lab (<http://owl.english.purdue.edu/owl/resource/560/05/> ) for appropriate formats for different sources.
	+ The following format should be used for web resources:

Author, A. A., & Author, B. B. (Date of publication). Title of document. Retrieved from http://Web address

* Divide the class into four teams. Each team will be assigned one of the following questions:
	+ What did you eat today (or this week/last week)?
	+ What impacts how you eat?
	+ How do most Americans eat?
	+ How have the eating habits of Americans changed over time?
* Give each team a flip chart (or allow them to have as many sheets of paper as they will need) and markers.
* Students will be responsible for answering the question posed to the team by creating an infographic. The infographic can include a combination of numbers, words, and/or images.
* Citations for references should be documented at the bottom of the page.
* When they are finished, each team should hang their papers somewhere in the room.
* Have a gallery walk giving each team one minute to visit and review each infographic.

**Closing** - *(Designed to promote the retention of knowledge through the use of engaging strategies designed to rehearse and practice skills for the purpose of moving knowledge into long-term memory.)*

* Provide each student with the weekly Exit Slip handout (Appendix 2)
* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“What similarities or differences did you notice between what we ate today and Americas eating habits?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Two**

**Key Question of the Day**: (Project Roll-out) Do you understand our project?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet (Appendix 1)
* “Based upon what you learned yesterday, what do you think is wrong with the American diet?”

**Learning Objectives**

As a result of this lesson, students will be able to:

* Describe the purpose of the project.
* List the tasks and products related to the project.
* Describe the project in one sentence.

**Required Materials for Daily Lesson**

* Project Scenario and Essential Question – Appendix 3 – One per student
* All rubrics – Appendix 17, 18, 19, 22, 23 – One per student

**Estimated Instructional Time:** One 50-minute class period

**Opening** – 10 minutes

* Read the Bell-Work question and solicit responses from the students.
* Debrief the infographic activity by revisiting each question and summarizing the key information about each. Lead into a discussion about the Bell-Work responses and the connection to what they learned the previous day.
* Explain that, “Today, we will develop an understanding of the project.”
* Using their notes from the previous class, each student will create a concept map (in research journals) that represents what he or she already knows about the American diet and eating habits, causes and consequences of poor eating habits, and the tools an individual can use to improve his or her eating habits.
	+ **Teacher TIP!** A concept map is a graphic organizer or diagram that shows the relationship between different ideas or concepts. This can take on any form. If there are specific concept maps you are encouraged to use within your school, this would be a great opportunity to integrate them.
* Students will swap concept maps with a classmate and each student will write a 3-4 sentence summary of what he or she knows about the poor eating habits from viewing his/her classmate’s concept map. Students should write these summaries on the back of the page that holds the map.

**Middle** – 35 minutes

* **Teacher TIP!** Students will create a portfolio at the end of the project (on the last day) where they will compile the bodies of evidence they have created throughout the project. Remind students to save important artifacts as they complete different tasks throughout the project. Feel free to determine the best way for students to create their portfolios based upon your particular situation (e.g., if your school/district has any specific requirements, etc.).
* Provide students with copies of the essential question and project scenario (Appendix 3).
* Provide students with copies of all rubrics.
* Instruct each student to use an INSERT strategy as they read the scenario. Place an “!” behind each sentence that surprises you; a “?” behind each sentence that you have questions about; an “\*” behind each sentence you disagree with; and a line under each word you do not understand. (Add to or delete INSERTS as desired.)
* Next, have students pair together and share their INSERT marks. Provide time for discussion.
* Lead a discussion of the project as each group shares its questions, surprises, disagreements and needed definitions.
* Key discussion points should be summarized on the board or projected.
* Assign teams that the students will work in for the duration of the project.
* Have each team design a logo/graphic that represents the project as they understand it. Segments of the graphic/logo should include – tasks (which they believe should be accomplished), products, learning activities needed, etc., and any other segments the group might use.
* Teams should determine a name to go with their logo.
* Teams should share their logo and post them in the room. (This could be a gallery walk.)
* **Teacher TIP!** An option is to have teams initiate a **management log** at this time. They simply predict (anticipate) all of the activities and research they believe should occur in order to complete the project. This is reviewed and discussed as a class. The log provides the teacher with insight to the students’ understanding of the project and can help the teacher make adjustments to the instruction. This log should be maintained in conjunction with the research notebook and updated from time to time. At some point early in the project, the teacher should actually provide the students with a calendar of activities so the teams can “check off” completed tasks and plan for up-coming events. At the same time, teams should maintain and adjust original management log. Students should make adjustments without erasing their original plan so that they can track how their ideas about the project have changed.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

 “Write one sentence that could be used to describe the project to a friend.”

* Collect the Exit Slip for the day as students leave the classroom.

**Day Three**

**Key Question of the Day**: What do experts say about how we should eat?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet (Appendix 1)
* “Based upon what you learned over the past few days, what do you think is wrong with the American diet?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* List recommendations for healthy diets.
* Compare recommendations from different sources.
* Examine careers in the field of nutrition.
* Determine if sources of information are reliable.

**Required Materials for Daily Lesson**

* Computers
* Projector
* Journal articles about nutrition
* Internet access
* Nutrition texts (books, magazines, etc.)
* Research Notes – Appendix 4 (make additional copies as needed) – One per student
* Project Management Log – Appendix 5 – One per student
* Flip chart
* Markers

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* As students share their thoughts, compile a master list on a sheet of flip chart paper.
* Have a brief discussion about their responses and ask why they felt the things they listed are a problem with the American diet.
* Explain that, “Many people have opinions about what and how we should eat. We’re going to learn more about that today.”

**Middle –** 40 minutes

* Pose the questions for the class, “Who are the nutrition experts? What do the experts say about what and how you should eat?”
* Students will work with their teams to research the advice they can find from nutrition experts.
	+ Have a brief discussion about nutrition careers and explain why students should pay attention to this information when researching recommendations from experts. Careers include nutritionist, registered dietician, doctor, etc.
	+ **Teacher TIP!** It’s important to highlight that a nutrition blogger may not be a reliable person to make nutrition recommendations if they are just a person with a blog. A nutrition blogger who is an actual registered dietician would have more credibility. So, the source of the information is key because anyone can make a recommendation, and we have to be able to determine what information is valid and credible versus what isn’t.
	+ Each team will delegate members to conduct research in different ways (e.g., Internet, articles/books in your school library, textbooks in classroom, etc.).
	+ Students should note these assignments on the Project Management Log Team Tasks(Appendix 5).
* Each student will complete a Research Notes (Appendix 4) page for each source to be included in the team’s research journal. They should also fill out each section of the Research Notes form.
* Each team will brainstorm a list of search terms that they can use. Remind them that they can use these terms to for the index of a book, the library catalog, and an internet search engine. Circulate among the teams and allow each to begin their search when they have a good list of search terms.
* Give students about 10 minutes to do an initial search.
* When time is up, have a brief discussion, “What is a trustworthy source? How do we decide?” Talk about the agenda of the publishing agency, explain the peer review publication process (a group of scientists in a field read/review research before it can be published in a peer reviewed journal and decide if the research was done properly, adds to the field, and has merit), then have students re-evaluate their sources.
* Teams should go through their *Research Notes* and highlight the sources they believe are trustworthy.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“List two characteristics of a good source of information.”

* Collect the Exit Slip for the day as students leave the classroom

**Day Four**

**Key Question of the Day**: (Continuation of Day Three) What do experts say about how we should eat?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet (Appendix 1)
* “What questions do you have about the work we started yesterday?”

**Learning Objectives:**

Students will:

* List recommendations for healthy diets.
* Compare recommendations from different sources.
* Examine careers in the field of nutrition.
* Determine if sources of information are reliable.

**Required Materials for Daily Lesson**

* Computers
* Projector
* Journal articles about nutrition
* Internet access
* Nutrition texts (books, magazines, etc.)
* Research Notes – Appendix 4 (make additional copies as needed) – One per student
* Project Management Log – Appendix 5 – One per student
* Flip chart
* Markers

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5minutes

* Read the Bell-Work question and solicit responses from the students.
* This is meant as an opportunity to check progress and answer any questions the students might still have.
* Then, have students share questions within the team and develop a list of search terms for today’s work.
* Make research assignments for the day and have students record them in the Project Management Log Team Tasks (Appendix 5)*.*

**Middle –** 40 minutes

* Create a class list on the board of sources that the teams have decided are trustworthy.
* Students will continue to work on their research.
* As part of their research, students should include a summary about the expert whose advice they are noting. Information about the expert should include a career summary with the following information:
	+ Job title
	+ Brief job description
	+ Educational background
	+ Any other career related information they can find about the person
* Once they seem to have enough information, students should develop a summary about the experts who provide the recommendations they gathered.
	+ **Teacher TIP!** Students can determine the best way to create the summary (e.g., written, bulleted list, etc.)
* Then, they should create a bulleted list of the eating recommendations they have found. Each bullet point should include the citation for where the information was found.
* This list will be used as a guide for the class for the remainder of the project. Students will refer to this list when they begin to develop their food diary.
* Once students are finished building their summaries and lists, have each team select one expert and one recommendation to share with the class. Be sure they share the career background for the expert.
* Have a discussion about the recommendations and whether or not they came from people who should be giving nutrition advice.
	+ Highlight the point that not all recommendations are credible. It depends upon the source and whether or not the person is qualified to be giving such advice.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“What is one eating recommendation you will try to follow this week?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Five**

**Key Question of the Day**: How do we categorize food?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet (Appendix 1)
* “What are the main categories of food?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Define fruits, grains, dairy, vegetables, and proteins.
* Assign foods to the categories used in USDA MyPlate.

**Required Materials for Daily Lesson**

* Samples of foods or their packaging from each category (e.g., protein, fruit, vegetable, grain, dairy – and foods that aren’t in the categories – oils & fats, sugars)
* Internet access or printouts of the MyPlate graphic – Appendix 6 – One per student
* Pie Chart Pre-Test – Appendix 7 – One per student

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* Guide the direction of the discussion towards the main food groups.
* Distribute samples of food items around the room. Ask students to share a brief description of the food item that’s handed to them on a scrap piece of paper.
* Students should share their descriptions of the food item with the class, along with the food group they think the food item belongs to.
* Explain that, “Now that we know the recommendations for eating different categories of foods, we need to know which foods belong in each category and how much a serving is.”

**Middle –** 40 minutes

* Ask the class, “So, how can we classify these foods?”
* Use a flip chart to create a poster of the MyPlate categories without labeling what the categories are.
	+ **Teacher TIP!** If you have a larger class, make two flip chart posters and divide the class into two teams. The teams can compete to see who can categorize the foods the fastest with the most correct.
* Organize the food packages/samples on tables around the room.
* Have students work together as a whole class to organize the foods/samples into the MyPlate categories where they think they belong.
	+ Students would be categorizing the foods at this point based upon their prior knowledge of food groups and the size of the MyPlate categories.
* Once they are done organizing all of the foods, students should develop a definition and description for each category.
* Post the MyPlate graphic and ask students, “How do your categories fit with the USDA’s?” Don’t provide definitions yet, just provide titles.
* Distribute copies of MyPlate (Appendix 6)
	+ Students can write category definitions on this sheet.
* Share the USDA definitions of the categories and see if any adjustments need to be made to the ones the students created.
	+ Fruit: Any fruit or 100% fruit juice (e.g., fresh, canned, frozen, or dried)
	+ Vegetable: Any vegetable or 100% vegetable juice; sub-groups include dark green, beans and peas, starchy, red and orange, and other (e.g., fresh, canned, frozen, or dried)
	+ Grains: Any food made from wheat, rice, oats, cornmeal, barley, or other cereal grain; sub-groups include whole and refined
	+ Proteins: All foods made from meat, poultry, seafood, beans and peas, eggs, processed soy products, nuts, and seeds
	+ Dairy: All fluid milk products and many foods made from milk; calcium content is the key to being part of this group
	+ Oils: Fats that are liquid at room temperature (e.g., from plants and fish)
* Next, students should reorganize the foods as needed into the MyPlate categories.
* Ask the class, “What foods are left?” and discuss why some of the foods do not fit in the categories and what that means for their eating habits.
* After the discussion, distribute the Pie Chart pre-tests (Appendix 7).
	+ **Teacher TIP!** Do not “grade” these. Read them for correct concepts, procedures, and answers. These should not be returned to students; they will fixate on getting the right answer instead of developing understanding.
* Use the pre-tests to create homogenous pairs of students for tomorrow’s activities based on shared misconceptions.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“Refer to the MyPlate graphic and explain what it suggests about how we should eat?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Six**

**Key Question of the Day**: How do we represent data? How can we show numbers graphically?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“What is a pie chart?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Create pie or circle charts based on given data.
* Compare personal eating habits to those suggested by the USDA.

**Required Materials for Daily Lesson**

* Copies of MyPlate – Appendix 6 – One per student
* Internet access
* Pie chart pre-test – Appendix 7 – One per student
* MyPlate Pie Chart Exercise – Appendix 8 – One per student
* Pie Chart Traditional Math – Appendix 9 – One per student

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* After students share their responses, review the definition of a pie chart and explain what they are used for. “What do we know about creating pie charts? How are they made? What decides how big each piece of the pie is?”

**Middle –** 40 minutes

* Ask students to sit with the partners assigned the previous day.
* Give each pair a fresh copy of the pie chart pre-test (Appendix 7) to work through together.
* Circulate to monitor groups’ progress.
* When you feel that most of the misconceptions have been addressed, bring the class back together as a whole group.
* Have students work through Pie Chart Traditional Math (Appendix 9)individually.
* Review the problems when everyone is finished.
* Next, students will create a pie chart based on MyPlate.
* Distribute MyPlate Pie Chart Exercise (Appendix 8) and allow students to work with a partner to check their work. Boys and girls will have different pie charts.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“Summarize what you learned about using pie charts for organizing data.”

* Collect the Exit Slip for the day as students leave the classroom
* For Homework: For the next three days, students will keep a food diary on the chart “Food Diary.” They will record each meal using the chart and measuring foods by cups. Tomorrow they will work with their team to develop simple visuals to represent the correct amounts of foods.

**Day Seven**

**Key Question of the Day**: How much is a serving?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“How do you decide how much of something you should eat?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Measure servings of foods from each MyPlate category.
* Compare serving sizes to the sizes of foods commonly served.

**Required Materials for Daily Lesson**

As a result of this lesson, students will be able to:

* Food serving containers from a variety of restaurants or food products (e.g., cups, bowls, plates, chip bags, etc)
* Measuring cups and spoons
* Water
* Rice (or other dry food product such as cereal)
* Scales
* Post-It notes

**Estimated Instructional Time:** One 50-minute period

**Opening –** 10minutes

* Read the Bell-Work question and solicit responses from the students.
* Put out serving containers from a variety of restaurants or packaged foods.
* Have students measure how much liquid or dry food fits in the cup or package.
* Give each team a few serving containers and have them measure how much the containers hold.
* Students should write the amount the container will hold on a post-it, attach the post-it to the container, and put it back in front of the room.
* Ask students to share their reactions to the test they conducted.

**Middle –** 35 minutes

* Each team will take a few of the containers and determine which category of food each container holds.
	+ For example, cups at fast food restaurants usually hold soda which is considered sugar, french fries are a starchy vegetable and oils, etc.
* Compare the amount of food the containers hold to the amount of food suggested by MyPlate.
* Each team will present their containers to the class and explain how many servings they contain and of what category.
	+ For example, if it contains three cups of grains, how many meals worth of grains is that according to MyPlate?
* After each team has presented, allow each team to create a meal from the food options given. The meal does not have to come from the same establishment (if using containers from local restaurants).
* Teams should research the calories in their meal and drink. Some restaurants print the calorie counts and nutritional information on the packaging while others have it available online.
* Each team will create a display for their meal that shows the packaging, a pie chart of the meals categories (as done yesterday), and a calorie count.
	+ To determine the calorie count, simply add the calories for each item together to find the total.
* Once each team is done, have students rotate so that they are working with a new food display. They will respond to the question, “Is this a good meal? Why or why not?”
* Bring the class back together and discuss their findings. Take a poll to determine how many of the meals were good (healthy) options and how many were not good options.
* Allow the discussion about the meals options that aren’t healthy lead to the question, “What is a calorie?”
* Explain that, “We’re going to learn how to measure calories scientifically. We know that food labels list calories per serving and we hear people talking about calories but what are they and why do they matter?”
* In their research journals, students should take the last few minutes of class to write a reflection on the following prompt, “What do we overeat? What do we under-eat? Why do we overeat some foods and under-eat others?”

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“What does fast food do to our diet?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Eight**

**Key Question of the Day**: How do diet and lifestyle contribute to energy balance? How do we calculate caloric needs?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“What is a calorie? Make a list of everything you know about calories.”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Calculate calorie requirements for a variety of people in order to maintain energy balance.
* Describe how different factors impact energy balance.

**Required Materials for Daily Lesson**

* Flip chart
* Markers
* Energy Balance Lab – Appendix 10 – One per student
* Calculators
* Scales (students to weigh selves)
* Energy Balance Scenarios – Appendix 11 – One per student
* Concept Map Rubric – Appendix 12 – One per team

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and ask students to swap with a neighbor and add to each other’s list (1 minute).
* Swap back and discuss the findings as a class (1 minute).
* Share the definition of calorie: A calorie is the amount of food having an energy-producing value of the amount of heat required to raise the temperature of one kilogram of water one degree Celsius. In other words, it’s a measure of the energy in a food item.

**Middle –** 40 minutes

* Transition to the “Building a calorie balance equation” activity:
	+ Post the definition of calorie balance on a flip chart somewhere in the room
		- Calorie Balance = The mathematical summation of your caloric intake and energy expenditures
	+ Working with a partner, students should list all of the ways that they expend calories in a normal day.
	+ Have students share their responses with the class and create a master list.
	+ Ask the class, “How can we account for all of these?”
	+ Write the following words on the board. Students will use these terms to create an equation:
		- Calorie balance
		- Food ingestion
		- Basal (or resting) metabolic rate
		- Work or exercise metabolism
	+ Have students work in their project teams to create an equation on a sheet of flip chart paper.
		- Remind them that equations can include addition, subtraction, multiplication, and division.
	+ Each team will post their equation on the wall somewhere in the room.
	+ Take a few minutes for students to look at them for similarities and differences.
	+ Ask students to think of their calorie balance as a bucket of calories. What pieces of the equation would add calories to the bucket and what pieces would subtract? Revisit and revise the equation to arrive at a class equation:
		- Calorie Balance = Calories Ingested – Basal (resting) Metabolic Rate – Working or Exercise Metabolic Rate (cardiorespiratory endurance ratings)
	+ Students remain with their partners while you distribute Appendix 10 and give students a few minutes to weigh themselves.
	+ Walk through the first calculation – converting pounds to kilograms – with students. Students work with their partner to complete the rest of Part I.
	+ What does a resting metabolic rate mean to us? Watch: <http://www.youtube.com/watch?v=OJOIXjrV4qo>. Discuss:
		- Why are we using a calculation instead of a test? Is an approximation ok?
		- What is a resting (or basal) metabolic rate? What does it include?
		- What isn’t included in a BMR (or RMR)? Evoke a list of things that students do that are not considered in a basal metabolic rate.
		- What happens if we only eat enough calories to meet our needs for a basal metabolic rate?
	+ Students will complete Part II on their own over the next few days. They should keep it in their research journals.
	+ Review the directions for completing it with the students and ask them to keep track of their levels of activity the next few days.
* Next, students will create a concept map on a sheet of flip chart paper to summarize what they learned about calorie balance. It should include the concepts discussed in the equation.
	+ Students may work with a partner for this activity.
	+ **Teacher TIP!** Use the concept map rubric (Appendix 12) to evaluate the concept maps.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“How do basal metabolic rate and working metabolic rate relate to a person’s calorie balance?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Nine**

**Key Question of the Day**: How do we track our eating?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“How do people know how much they have eaten in a day?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Compare systems for tracking eating.
* Develop a system to track food consumption.

**Required Materials for Daily Lesson**

* Computers
* Internet

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* Have a discussion about the importance of serving sizes and portion sizes. Discuss the impact that the size of dishes and silverware can have on the amount of food a person consumes.
* Explain that, “Today we are going to explore different methods or systems available to help with food tracking. This will be the first step your team will take in creating a food diary.”

**Middle –** 40 minutes

* Explain that, “As we start thinking about how to create an effective food diary system, let’s start by making a hypothesis about how many calories we consume in a day. We’ve done the background research, which has given us a better idea about diet and nutrition, and the meaning and purpose of calories.”
* In their research journals, students should make a hypothesis about how many calories they believe they consume in an average day. They will refer to this throughout the remainder of the project.
* Next, each team will research existing food tracking/food diary systems based upon the knowledge they have gained over the past few days about what foods we should eat and American eating habits.
* As they research the food tracking/food diary systems, they should document the following information for each in their research journals:
	+ One to two sentences describing the system.
	+ Who is the system sponsored by? (e.g., is it from a credible source?)
	+ Is it free to use or do you have to pay for it?
	+ What is the means in which it can be accessed (e.g., mobile app, downloadable, software tool, web access, etc.)?
	+ What are the user and/or dietary guidelines for the tracking method? (e.g., Weight Watchers uses a points system, My Fitness Pal uses calorie counting, etc.)
	+ List the pros and cons of the tracking system.
	+ Citation of where the information came from.
* **Teacher TIP!** Keep an eye on the information students are gathering so that they aren’t compiling information on diet or weight loss plans. While many tracking systems may be intended for weight loss, this exercise should focus specifically on the act of tracking food intake.
* Each team will compile a list and of resources, which will be used as a base to create their own tracking system.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“Based upon the research you conducted today, list the components of a good food diary?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Ten**

**Key Question of the Day**: (Continuation of Day Nine) How do we track our eating?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“What can you conclude so far about the food tracking systems that are available for consumers?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Compare systems for tracking eating.
* Develop a system to track food consumption.

**Required Materials for Daily Lesson**

* Computers
* Internet

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* Have a brief discussion about the different systems that are available and the pros and cons of the different resources.
* Explain that, “Today, you will continue your research and begin to develop a system for tracking eating that aligns with our master list of guidelines. As you develop your food diary, the system can be completely original or it can be a compilation of pieces your team likes from existing systems. The goal is to create a system that will be the most effective tool for the consumer.”

**Middle –** 40 minutes

* Teams will continue their research on the food tracking systems.
* Students should compare each system to the class recommendations list to determine if/how the system is meeting those guidelines.
* Students should be creative about how they develop a system that can easily be used throughout the day to monitor their eating habits.
	+ The tracking system should include a way to track calories in order to determine if their calorie intake hypothesis were accurate.
* By the end of the class period, each team should have a prototype of their food tracking system and should be able to provide an example to show how the system is used to track food.
	+ Explain that a prototype is a preliminary model of something that can help to test a concept.
	+ Students should plug in an example of food consumption for a day in order to demonstrate how their tracking method works.
* Visit each team to check progress and review their examples. Once they have teacher approval on the prototype, bring the class together and have each team share a brief summary of the prototype and why they created it the way they did.
	+ Students should ask questions and share any input for each team that might be helpful as they move forward with creating the final version.
* After the presentations, students can proceed with implementing any edits and planning for the final version.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“How do you think your food tracking system will help consumers in comparison to the resources that already exist?”

* Collect the Exit Slip for the day as students leave the classroom
* Homework: Students will use the food diary to track their consumption for the next 24 hours. Students should bring this with them to class the next day, as this data will be used to help them evaluate the validity and accuracy of their food diary before giving it to participants to use.

**Day Eleven**

**Key Question of the Day**: How does your eating compare to MyPlate’s recommendations?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“What conclusions can you make about your food diary entries for the past 24 hours?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Create a pie chart representing personal eating habits.
* Compare pie charts of personal eating habits to the MyPlate pie chart.

**Required Materials for Daily Lesson**

* Team food diary

**Estimated Instructional Time:** One 5- minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* Next, ask the class to share any surprises about their food tracking experience from the past 24 hours.
* Ask students to take a look at their food diaries to confirm that they know which MyPlate categories their tracked food items belong to.
* Explain that, “Now that you’ve had an opportunity to test out the usability of your food tracking system, let’s see where the food items you tracked fall in accordance with the MyPlate guidelines. From there, we’ll focus on finalizing the design of your tracking systems.”

**Middle –** 40 minutes

* Students refer to their food diary entries from the past 24 hours.
* Average the amount of each food category you’ve eaten at each meal. Choose one meal and use its averages to create a pie chart.
* Using the steps used earlier to create pie charts, create a pie chart that reflects the average for each food category.
* Discussion:
	+ What is the problem with using a pie chart here?
		- Pie charts always show categories as parts of a whole, it doesn’t matter how big the “whole” is as long as all of the pieces add up to 100%
	+ What if you eat all of the categories in the correct proportions but eat much more than you should?
		- The pie chart will look good but you will have eaten too much
	+ What will happen?
		- You will not have energy balance even though you have eaten the correct proportions
	+ So what should we do?
		- Monitor calorie balance and MyPlate to eat the right amount of food and the foods that are good for us
	+ Which tool is easier for you to use? Why?
* Give students about five minutes to meet with their teams to discuss how their food diary worked. They should document notes about any changes they would like to make in their research journals.
* Ask students to take a look back at the number of calories they hypothesized they would consume in the 24 hour timeframe.
	+ In their research journals, each student should write a reflection about what they learned about their perceptions of what they ate in comparison to what they actually ate in a day.
		- **Teacher TIP!** Since this can be a sensitive topic, don’t ask students to share their answers. If having a class discussion about this, focus on the lessons learned about the importance of being aware of food consumption.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“Are you eating a balanced diet? Why or why not? How can you tell?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Twelve**

**Key Question of the Day**: What does a consumer need to know about using a food diary?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“What message do you want consumers to know about why they should use your food diary system?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Identify necessary information for someone to follow their guide.
* Develop a one page explanation of the diary and how to classify foods.

**Required Materials for Daily Lesson**

* Team’s Food Diaries – 20 copies per team
* Food Diary Survey – Appendix 13 – 20 copies per team
* Computers with access to Word or other word processing program

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* After hearing the responses from the students, ask the class, “Why do we need to provide clear instructions and background information about using your food diary system?”
* Explain that, “The last step in finalizing your food diary system is to create instructions for how to use the system. Clear instructions are critical so that the consumer understands the purpose of the tool and its intended use.”

**Middle –** 40 minutes

* Students should meet with their project teams and develop instructions for using their diary. Be sure to clarify amounts and classifications of foods.
* The instructions should be no more than one page.
* This should also be the final opportunity to make any changes necessary to the diary, since the next step is to distribute it for people to use.
* Next, each team should develop a plan for distributing their diary to at least 20 people who will use it track consumption for 2 days.
	+ Each participant will need a copy of the diary, the instructions, and a copy of the Food Diary Survey (Appendix 13).
	+ **Teacher TIP!** The easiest way to do this would be to find as many health classes as you have groups of students and have each class do one group’s diary for 2 days. The teacher will have to make copies of the food diaries for each team in time to distribute before class tomorrow. They will collect them again before class on Day Fifteen. Be sure to tell the participants when the surveys will be collected.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“What are your hopes and expectations for sharing your food diary with the participants?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Thirteen**

**Key Question of the Day**: How should we present information to a group?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“What are the qualities of a good presentation?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Explain the structure of a presentation.
* Describe the kinds of evidence that sway audiences.

**Required Materials for Daily Lesson**

* Mean Pre-Test – Appendix 14 – One per student

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* Capture the student’s responses and have a brief discussion about why it’s important to understand how to deliver a proper presentation.
* Explain that, “Today we are going to explore the qualities of a good presentation so that you have the tools needed to prepare for your presentations about your food diaries.”

**Middle –** 40 minutes

* Explain the steps of preparing for a good presentation:
	+ Develop an outline
		- Ensures good flow and completeness
	+ Develop a good hook
		- Spark audience interest
		- Give a reason to listen
	+ Focus on one key point at a time
	+ Maximize slide impact
		- Keep minimum amount of text, maximum size
		- Use other visuals with words
		- Avoid clutter
	+ Involve the audience
		- Ask them questions
	+ Include all required components
	+ Summarize the main points at the end
	+ Assign roles within the team
	+ Practice, practice, practice!
* Following this discussion, teams will develop an outline for their presentation to the class and nutrition expert.
	+ Remind them that their purpose is to use the evidence they are collecting about their food diary and the diary itself to convince the class and the nutrition expert to select their diary to be used for the rest of the year. They must use their background research on healthy eating habits and the data they collect in their surveys to support their stance about their food diary.
* Students can use PowerPoint, Prezi, or other similar means to create an electronic visual for their presentations.
* For the last 5 minutes of class, distribute the Mean Pre-Test (Appendix 14).
	+ **Teacher TIP!** Review this pre-test before class tomorrow to identify common errors and misconceptions and create homogenous pairs for tomorrow based on misconceptions. Do not score and return pre-tests; they are just to inform you about the students’ existing knowledge.
* Students will complete the pre-tests and turn them in.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“List the characteristics of a good audience member.”

* Collect the Exit Slip for the day as students leave the classroom

**Day Fourteen**

**(optional, cut if class does well on pre-test and go to Day Fifteen)**

**Key Question of the Day**: How do we calculate mean responses? Why do we use mean responses?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“In mathematics, what is the mean?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Calculate mean.
* Explain why one uses mean responses.

**Required Materials for Daily Lesson**

* Calculators
* Calculating Means Practice – Appendix 15 – One per student
* Calculating Mean Slips – Appendix 16 – One per student

**Estimated Instructional Time:** One 50- minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* Capture responses on the board.
* Put students in their assigned homogenous pairs and give each pair a set of Calculating means slips (Appendix 16).
* Give students time to match the calculated means or equation to the correct set of numbers.
* Monitor groups and allow students to work until they have worked through some of their misconceptions.
* Explain that, “As we prepare to receive the survey data about our food diaries, we need to understand how to calculate the mean so that we can accurately analyze the data and draw conclusions.”

**Middle –** 40 minutes

* Provide the definition, “A mean ($\overbar{x})$ is a numerical average. It tells you the average of a set of numbers. To calculate it, you take the sum ($\sum\_{}^{})$ of all of the numbers (x) in a set ($\sum\_{}^{}x)$ divided by the amount of numbers in the set (n).”

Equation $\overbar{x}= \frac{\sum\_{}^{}x}{n}$

*Example 1:*

You have mowed lawns for the neighbors for several months and earned a different amount each month. You want to know the mean amount of money you have earned each month based on the following earnings:

|  |  |
| --- | --- |
| **Month** | **Amount earned** |
| **April** | $55 |
| **May** | $80 |
| **June** | $130 |
| **July** | $150 |
| **August** | $110 |
| **September** | $75 |

Equation: $\overbar{x}=\frac{(55+80+130+150+110+75)}{6}$ = $100

* Students complete Calculating Means Practice (Appendix 15) with their partner.
* Explain the following, “Let’s try an example from your survey data. Each item on your survey has a numerical answer. Your participants circled a number under the headings Strongly Disagree to Strongly Agree for each item. You can calculate an average for each item to determine, overall, how your participants felt about the item.”
* Have one team read you the numerical responses to one item from all of their surveys and write them on the board.
* Ask each student to write out their equation based on the given numbers. Check with a neighbor.
* Visit each team to check their equations as they work out any differences with their partner.
* Have students calculate the mean and have each pair post their equation and answer on the board.
* Work through the equations and answers together to show them the correct equation and answer.
* Have each team break into pairs or threes. Assign one pair/threesome the even numbers from their surveys and the other pair the odd numbers and have them calculate the mean score for each of their assigned items.
* Return to whole groups and check their answers with the other pair/threesome.
* Match these scores to the category (Strongly Disagree to Strongly Agree). These are the scores students will use in their presentations about their food diary.
* Use a few examples from the groups to demonstrate for the class. (e.g, A mean score of 4.2 means that the student agreed with the statement that the diary was easy to use).

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“What does a mean score represent? Why do we use mean scores to summarize data?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Fifteen**

**Key Question of the Day**: How well did your food tracking system work?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“What are you expecting to see today for the results of the study?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Analyze the results of the food tracking system survey.
* Describe the benefits and drawbacks of the food tracking system.
* Develop a presentation for the class and nutrition expert that explains the system and how it was received by the participants.

**Required Materials for Daily Lesson**

* Surveys collected back from students who participated in the food diary test
* Calculators
* Computers
* Internet

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* Have a brief discussion about the overall predictions students made about their results.
* Explain that, “Today we are going to analyze the data on the surveys and integrate that information into your final presentations.”

**Middle –** 40 minutes

* Each team must calculate the mean scores for each question on the survey and respond to the following questions:
	+ Which items on your survey (about the food tracking system) had the highest mean responses?
	+ Which items on your survey had the lowest mean responses?
* Once the calculations are complete, each team should add their mean scores to their presentation. They must explain what the mean scores for each indicate about their food tracking system. For example, if the mean score for all items about ease of use was a 4 or higher, participants agreed or strongly agreed that the tracking system was easy to use.
* Visit each team as they work to determine what their mean scores indicate about each item.
* Post the following on the board as a guide:

|  |  |
| --- | --- |
| $$\overbar{x} range$$ | *Response* |
| 0-1.49 | Strongly Disagree |
| 1.5 – 2.49 | Disagree |
| 2.5-3.49 | Neutral |
| 3.5-4.49 | Agree |
| 4.5-5 | Strongly Agree |

* Remind students that their presentation must include a discussion of these survey results. Each team must address which components of their tracking system work well and which need changes. They should draw conclusions and make recommendations about the changes they would make.
* Any remaining time in the class period should be focused on teams finalizing their presentations.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“How do you feel about the results of your data? Do you agree or disagree with the findings of the study?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Sixteen**

**Key Question of the Day**: (Continuation of Day Fifteen) How well did your food tracking system work?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“What questions clarification do you need to finish up your presentations?”

**Learning Objectives:**

As a result of this lesson, students will be able to:

* Analyze the results of their food tracking system survey.
* Describe the benefits and drawbacks of the food tracking system.
* Develop a presentation to the class and nutrition expert that explains the system and how it was received by the participants.

**Required Materials for Daily Lesson**

* Computers
* Internet
* Project Rubric – Appendix 17 – One per team
* Collaboration Rubric – Appendix 18 – One per team

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* Answer any questions the students still have about their presentations.
* Explain that, “This is the last day you will have in class to work on finishing up your presentations.”

**Middle –** 40 minutes

* Have computers available for students to work on their presentations.
* Teams should work to complete their presentations.
* Remind them to review the project description and the presentation rubric to ensure that they are addressing the entire project.
* If any teams finish early, ask to see their work to assess progress.
* Then, as teams finish, ask them to complete the collaboration rubric (Appendix 18).
* Each team should provide an electronic copy of the presentation to you before the end of the day.
	+ **Teacher TIP!** Even if students are going to make changes for homework, they must give you what they have at the end of the class. This will eliminate issues at the start of the presentations if someone on a team is absent or can’t log into a computer. You’ll have a copy available to work from.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“What is your role in the team’s presentation? Are you ready for it?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Seventeen**

**Key Question of the Day**: Which components of each food tracking system worked well?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“List two questions you can ask each team about their food diary.”

**Learning Objectives:**

As a result of this lesson, students will:

* Compare food tracking systems.
* Demonstrate effective presentation skills.

**Required Materials for Daily Lesson**

* Computers
* Project Presentation Audience Feedback – Appendix 19

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and but don’t solicit responses from the students. The questions should be saved for the presentations.
* Review the qualities of a good audience before the presentations begin.
* Introduce the nutrition expert guest and review presentation procedures (time limits if you’ve set them, who may ask questions, completion of peer reviews) before the first team presents. It is suggested to determine order of presentation by random draw.

**Middle –** 40 minutes

* Each team presents.
* As each team finishes their presentation, students in the audience should ask their questions.
* After the question and answer session, the students in the audience should complete the presentation rubric (Appendix 19).
* Students should also write, in their research journals, which components of the team’s tracking system they think worked well and should be considered for the final product.
* If there is time at the end of the class, following the presentations, each team should meet for five minutes to compare individual notes about the other teams’ tracking systems. Each team should have a shared list in their research journals of the components they think worked well. They will refer to this information the next day.

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“Explain a new fact about food tracking that you learned from the presentations today?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Eighteen**

**Key Question of the Day**: (Continuation of Day Seventeen) Which components of each food tracking system worked well?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“List three things you can do during the presentations to show your classmates respect?”

**Learning Objectives:**

As a result of this lesson, students will:

* Compare food tracking systems.
* Select components of food tracking systems that worked well.
* Develop a food tracking system to use for the rest of the course.

**Required Materials for Daily Lesson**

* Computers
* Project Presentation Audience Feedback – Appendix 19 – One per student

**Estimated Instructional Time:** One 50-minute period

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* If the class is large enough to continue presentations today, introduce any guests, review the presentation procedures, and remind students to have their questions ready to ask each team when they are finished.

**Middle –** 40 minutes

* Complete presentations and peer evaluations.
* Solicit feedback from your expert(s) to begin class discussion about the components of each system that worked well.
	+ Teams may refer to their notes.
* The students will work with the expert to revise their tracking system based on components from the teams’ work. They do not have to represent each team’s work in the final product.
* Students will write a reflection in their research journals responding to the following questions:
	+ How do you feel about the final food tracking system?
	+ How well do you think it will work? Why?

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“List at least one component or attribute of another team’s food diary that you would like to incorporate into yours.”

* Collect the Exit Slip for the day as students leave the classroom

**Day Nineteen**

**Key Question of the Day**: How do you write a report on your food diary research?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“What are the key components of a research report?”

**Learning Objectives:**

As a result of this project, students will:

* Write a report based on their research.

**Required Materials for Daily Lesson**

* Computers
* RMIT Sample Research Report – Appendix 20 – One per student
* Research Report Outline – Appendix 21 – One per student
* Report Rubric – Appendix 22 – One per student

**Estimated Instructional Time:** One 50-minute periods

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* Make a list of responses on the board.
* Have a brief discussion about the expectations for the research report.
* Explain that, “Now that we have received input from the expert, the final step is to update the food tracking system and create your final report on the entire development process.”

**Middle –** 40 minutes

* Distribute RMIT Sample Research Report (Appendix 20) to the students.
* Students should read the document and underline the components of the report that they think are important.
* Add these to the class list.
* Share with students the Research Report Outline (Appendix 21).
	+ Remind students about APA format citations and have them use the sample research report to format headings.
	+ Give students remainder of day nineteen and all of day twenty to complete their reports.
* Students should consider the feedback they received on their surveys and from their peers and the nutritionist during their presentation, and address the following questions in their reports.
	+ What pieces of the food diary you created worked well?
	+ What pieces should be changed? Why?

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“What surprised you about people’s reactions to the food diary? What did you think would work better/worse?”

* Collect the Exit Slip for the day as students leave the classroom

**Day Twenty**

**Key Question of the Day**: (Continuation of Day Nineteen) How do you write a report on your food diary research?

Bell-Work (Each day the Bell-Work question should be prominently displayed and used to open the lesson)

* Provide students with the weekly Bell-Work sheet – Appendix 1

“What questions do you have about your reports?”

**Learning Objectives:**

As a result of this project, students will:

* Write a report based on their research.

**Required Materials for Daily Lesson**

* Computers
* RMIT Sample Research Report – Appendix 20 – One per student
* Research report outline – Appendix 21 – One per student
* Report Rubric – Appendix 22 – One per student
* Self-Reflection Form – Appendix 23 – One per student

**Estimated Instructional Time:** Two 50-minute periods

**Opening –** 5 minutes

* Read the Bell-Work question and solicit responses from the students.
* Answer any questions the students have about the research reports.

**Middle –** 40 minutes

* Students should have the rest of this class period to continue working on their research reports.
* Share with students the Research Report Outline (Appendix 21).
	+ Remind students about APA format citations and have them use the sample research report to format headings.
	+ Give students remainder of day twenty and day twenty-one (if needed) to complete their reports.
* Students should consider the feedback they received on their surveys and from their peers and the nutritionist during their presentation, and address the following questions in their reports.
	+ What pieces of the food diary you created worked well?
	+ What pieces should be changed? Why?
* When students are finished with their reports, they should complete the self-reflection form (Appendix 23).
* Next, students will collect their evidence for this project and add it to their portfolio with their captions and descriptions for each item. Portfolios are due to the teacher at the end of the day.
* The portfolio should include a description and explain that items from each project will be added to the portfolio on the final day of each project and that students will have time to write a reflection statement for each project.

|  |  |
| --- | --- |
| **Item** | **Description** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Closing** – 5 minutes

* Students will turn in their Exit Slip for that day. They will respond to the following prompt:

“What is the most important message you learned from completing this project?”

* Collect the Exit Slip for the day as students leave the classroom