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| **Topic: Bacteria May Be Friends!**  |
| **Instructor:** | **Level:** | **Age:**  | **Number of Students:** | **Length:** |
| Rachelle Jo | Upper Intermediate | Adults | 6 | 30 minutes |
| **Materials:**Realia (Laboratory gown) Picture (Bacteria)Posters (Title/Topic, Main Task, Achievement Aims, Procedure Aims) Vocabulary Cards Reading Passage- Bacteria May Be Friends! (6 copies) Reading Worksheet 1 – Vocabulary (6 copies) Reading Worksheet 2– Comprehension Questions (6 copies) Reading Worksheet 3 – True or False (6 copies)Computer and beam projectorWhite board and board marker |
| **Aims:**-SWBAT identify the main idea by visualizing pictures-SWBAT learn the new vocabulary related to the reading passage and use them to understand the passage-SWBAT answer the guiding questions and comprehensive questions after reading the passage-SWBAT communicate with his/her partner to complete the true/false worksheet-SWBAT create a poster by using the vocabulary words and enumerating the beneficial roles of bacteria and explain the poster to the other students |
| **Language Skills:**Listening- Ss will listen to each other during the various activitiesSpeaking- Ss will communicate through talking while completing the true/false worksheet and while creating and explaining the posterReading- Ss will read together the reading passage to answer the guide questions and comprehensiveWriting- Ss will write on the poster the beneficial roles of bacteria  |
| **Language Systems:**Phonology- Ss will listen to the teacher and classmates to become familiar with the vocabulary Function- Ss will learn how to ask questions during the vocabulary matching Discourse- Ss will communicate as pairs or groups to complete the various activitiesLexis- Ss will learn new vocabulary related to the reading passageGrammar – Ss will observe grammar rules during the various activities but grammar is not emphasized |
| **Assumptions:**Students already know:- how the class is set up and run - the teacher’s style of teaching and pace of the course- basic concept of bacteria- how to make a poster |
| **Anticipated Errors and Solutions**Students may not be able to do the activity on time→ cut-off the post-production Students may complete the task earlier than expected→ prolong the feed back and give filler activity |
| **References:**Coscia, S. (n.d.). *Five friendly microscopic creatures in your body*. In Big Think. Retrieved December 18, 2015 from http:// bigthink.com/think-tank/five-of-your-microbial-friendsDeVault, N. (September 26, 2015). *What is the difference between good bacteria & bad bacteria?* Retrieved December 17, 2015 [www.fundamentalistscience.com](http://googleads.g.doubleclick.net/aclk?sa=L&ai=CzoNb_F1xVub8K42j9AWp8YHwDtzalMEHpMqkyNIC6IeFngsQASCPsKQQYJvT6IS4KcgBAagDAaoEuQFP0Id6LzDtJRiUpwwQsn0Upsw526uL8LBNtBQ9d8l-nUUlBSFcaoXd1l1hkAepL7tjuTA5_mTTfyKl5fWIcSlTMcVcH2VwQUYmJLtBXba95gVntoPBYApjFWkkbYfCcAcVFTum-nCoGnayq21oZ8QhNyhxGQENhtlYgeyJC-5xqziAYjK2hOct3uK624auNt77Z_-sexZtYG07ttx8ViY9bVYTUbUrTDJyumUFCjxu2ClNET2iaiAy9IAHhKmHOagHpr4b2AcB2BMK&num=1&sig=AOD64_0xkfFD0ZCG15-4gRowODfIYYRbNw&client=ca-livestrong_html&adurl=http://fundamentalistscience.com/) Mahon, C. (2011). *Textbook of diagnostic microbiology* (4th ed.) Elsevier Inc. Microbes – friend or foe. (November 18, 2013). Retrieved December 17, 2015 from <http://www.open.edu/openlearn/nature-environment/microbes-friend-or-foe/content-section-1> |
| **Notes:** |

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| **PRE-TASK:** |
| **Aims:**-SWBAT understand what they are going to do in the lesson-SWBAT learn new key vocabulary words through matching and use them to understand the reading passage | **Materials:**Realia, Pictures, Posters, Reading Passage, Reading Worksheet – Vocabulary, Vocabulary Cards, Reading Worksheet – Comprehensive Questions, White Board, Marker |
| **Time** | **Set Up** | **Student**  | **Teacher** |
| 1 minute2 minutes3 minutes1 minute | Whole ClassMinglingWhole Class Whole Class | Greet back the teacherGuess and tell what they already know about the topicMatch the vocabulary Read together the passageAnswer the Concept Check Questions | **<Greetings>**Hello everyone! How are you today?**<Eliciting>**(Show pictures)What do you see in the picture? Yes! Those are microscopic view of bacteria. How do you think of them?Today, we will talk about how bacteria could be our friends. **<Vocabulary Matching>**I will tape the 6 vocabulary words at your back. You have to move around and match the correct vocabulary and the definition. You can write your answers at the Reading Worksheet.**<Reading>**I have here copies of your reading passage entitled “Bacteria- Friends or Foes?” **2 guiding questions** are on the board. While reading the passage, try to figure out the answers to the guiding questions. Let’s read this out loud together. (Reading)**<CCQ>**1. Is the process with the formation of bubbles known as nitrifying?2. Is it right to say “I want to inhibit my stomach ache”?3. Is decomposition bad for the environment? |
| **Notes:**Vocabulary1. Fermentation- a chemical change with effervescence (to bubble, hiss and foam as gas escapes)2. Alleviate- to reduce the pain or trouble3. Inhibit-to prevent or slow down the activity or occurrence4. Ubiquitous- seeming to be seen everywhere5. Nitrifying- an oxidation of ammonium salt to nitrites and further oxidation of nitrites to nitrates6. Decomposition- to cause something (such as dead plants and the bodies of dead animals) to be slowly destroyed or broken down |
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| **TASK PREPARATION:** |
| **Aims:****-**SWBAT to discussion with his/her partner to answer the true or false questions  | **Materials:**Reading Worksheet 3 – True or False |
| **Time** | **Set Up** | **Student**  | **Teacher** |
| 1 minute5 minutes2 minutes | Whole ClassPair WorkWhole Class | Listen to the instructionAnswer the Instruction Check QuestionsAnswer the True or False Worksheet with a partnerParticipate in the discussion and error correction | **<Instruction>**Here are copies of your True or False questions. On the blanks before each number, write “True” if the statement is correct and “False” if the statement is incorrect. If the statement is false, underline the word that makes it wrong and write the correct word above the underlined word. You can talk to your seatmate and you have 5 minutes to answer this.**<ICQ>**1. What do you do if the statement is incorrect?2. Do you work in silence?3. How much time do you have?**<True or False>**Go around the class and give help if necessary (monitoring)**<Discussion and Error Correction>**Let us discuss the answers. We will take turns to read the statement and give the answer |
| **Notes:** |
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| **TASK REALIZATION:** |
| **Aims:**-SWBAT use the vocabulary words to create a poster -SWBAT explain the poster by using the vocabulary words | **Materials:**Charts, Markers |
| **Time** | **Set Up** | **Student**  | **Teacher** |
| 1 minute7 minutes5 minutes | Whole ClassGroupMingling  | Listen to the instructionAnswer the Instruction Check QuestionsMake the comparative chartParticipate in the discussion | **<Instruction>**In groups of 3, you are tasked to make a poster. One group will make a poster about how bacteria can be friends in terms of food industry and the other group about how bacteria can be friends in terms of environment. You have 7 minutes to prepare the poster. Use the vocabulary you have learned awhile ago. After you finish making your poster, I will let you post them on both sides of the class and explain the poster to the other group.Be creative!**<ICQ>**1. Do you work alone?2. How long is the poster making?**<Poster Preparation>**Go around the class and give help if necessary (monitoring)**<Gallery Walk>**Look at the two charts! Let’s trade on group member from each group. You can  |
| **Notes:** |
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| **POST TASK:** |
| **Aims:**-SWBAT give feedback for the over-all lesson-SWNAT answer the final concept check questions | **Materials:**White Board, Marker, Paper, Coloring Material |
| **Time** | **Set Up** | **Student**  | **Teacher** |
| 2 minutes | Whole Class | Give feedbackAnswer the Concept Check Questions | **<Feedback>**Your charts are awesome! Did you learn something? **<Final CCQ>**1. Are fermentation and nitrifying processes beneficial for the food products?2. Can bacteria inhibit other bacteria?**<Filler-Answering of Comprehension Questions>****<Closing>**Excellent job! Thank you and see you all tomorrow! |
| **Notes:** |

**Reading Passage**

**Bacteria May Be Friends!**

Bacteria are small, unicellular or single-celled organism. Bacteria are so tiny and can only be seen with the aid of a microscope. Pathogenic or disease causing bacteria produce results ranging in severity from food poisoning, infections to death, according to the Virtual Museum of Bacteria. However, bacteria also have good roles for our body and the environment.

The good bacteria used for food industry, also called probiotics, are similar to that of normal flora, naturally found or non-disease causing bacteria, in human digestive tracts. Certain bacteria are safe in food and actually produce its desired taste and texture. For instance, bacteria are commonly used in dairy products such as yogurts, mozzarella cheese and milk.

Other food products that require fermentation such as beer, wine, olives, and soy sauce are all made with the help of different types of bacteria and yeast. In most of these food products, bacteria play a major role because they produce lactic acid. These probiotics help improve lactose intolerance, support immunity, alleviate digestive complications and inhibit other harmful bacteria.

Non-biodegradable and far too ubiquitous on this planet, plastic becomes a big problem when it comes to disposal. But in 2008, a Canadian student carried out a truly amazing science experiment in which bacteria were able to consume plastic. Earlier this year, scientists discovered that bacteria are already breaking down plastic debris in the world’s ocean.

 Bacteria benefit in the field of agriculture for soil enrichment. The nitrifying bacteria aid the cyclic movement of nitrogen in different chemical forms from the environment of nitrogen in different chemical forms from the environment to us and vice versa.

Bacteria also benefit the decomposition of organic wastes in septic tank, oil spills, and in some sewage disposal plants. This action helps ‘clean-up’ waste products and remnants of dead organisms.

**Reading Worksheet 1 (Vocabulary)**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_1. A chemical change with effervescence (to bubble, hiss and foam as gas escapes)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2. To reduce the pain or trouble

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_3. To prevent or slow down the activity or occurrence

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_4. Seeming to be seen everywhere

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_5. An oxidation of ammonium salt to nitrites and further oxidation of nitrites to nitrates

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_6. To cause something (such as dead plants and the bodies of dead animals) to be slowly destroyed or broken down

**Reading Worksheet 2**

**Guiding Questions**

1. How are bacteria beneficial for the food industry?

2. In what ways the bacteria are beneficial for the environment?

**Comprehension Questions**

**Literal**

1. What is produced by the bacteria that make it beneficial for food industry?

2. When was the experiment on plastic-eating bacteria carried out?

**Interpretive**

1. Why can’t bacteria be seen with our naked eye?

2. How are bacteria beneficial for the ecosystem?

**Applied**

1. Create a new title for this text

2. If you were a scientist, what experiment on bacteria would you like to perform?

**Reading Worksheet 3 (True or False)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**1. Probiotics are good bacteria that can aid the nitrifying process of dairy products.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**2. Some bacteria can help alleviate digestive complications.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**3. Certain bacteria have the ability to alleviate other harmful bacteria.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**4. Plastics are seemingly to be seen everywhere thus the discovery of plastic-eating bacteria is beneficial to the environment.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**5. Some bacteria can convert nitrogen into various chemical forms and this process is known as inhibition.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**6. Some bacteria can ‘clean-up’ waste products by the process called decomposition.