**TEXAS CTE LESSON PLAN**

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| **Lesson Identification and TEKS Addressed** | |
| **Cluster** | Hospitality and Tourism |
| **Course** | Food Science |
| **Lesson/Unit Title** | Food Science? Food Scientists? |
| **TEKS Student Expectations** | **130.256. (c) Knowledge and Skills**  (4) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom.  (F) The student is expected to research and describe the history of biology and contributions of scientists. |
| **Basic Direct Teach Lesson** | |
| **Instructional Objectives** | **Students will:**   * Trace the development of the scientific study of food * Describe areas included in the field of food science * Identify different types of work that food scientists do |
| **Rationale** | When you sit down to a meal, do you think about all the scientific research that has gone into creating your food? Do you worry about how your vegetables were grown? Or how your dairy products got to your local supermarket? For most of you, the answer is probably ‘No’.  The things we eat have been of interest to scientists since the early fifteenth-century. Throughout this course, you will discover the interesting and ever-changing connection between science and the food we eat. Without the field of food science, we would not have the safe and tasty food supply that we enjoy every day! |
| **Duration of Lesson** | Three 45-minute class periods |
| **Word Wall** | **Biotechnology:** Scientists use the tools of modern genetics in the age-old process of improving plants, animals, and microorganisms for food production.  **Evaluation:** A before and after process  **Food Chain:** Through this process, matter, and energy transfer between organisms as food  **Food Production:** Techniques for raising crops and animals for food  **Food Science:** Study of producing, processing, preparing, evaluating, and using food  **Processing:** Takes food that has been produced and puts it through steps to create a final marketable result  Note: Many other terms on the slide presentation can be identified. Encourage students to include the definition in the assignment. |
| **Materials/Specialized Equipment Needed** | **Equipment:**   * Computer and PowerPoint * Projector and screen * Student computers with internet access   **Supplies:**   * Food items   + Veggie burgers   + Omega-3 peanut butter   + Gluten-free breakfast cereal * Index cards * Sheets of white paper * Copies of handouts   **PowerPoint:**   * Food Science? Food Scientists?   **Online Database:**   * Encyclopedia Britannica   **Handouts:**   * Famous Food Scientists Research * Famous Food Scientists Research Key * Food Science? Food Scientist? Guided Note taking * Food Science? Food Scientists? Guided Note taking Answer Sheet * Thanks to Food Science |
| **Anticipatory Set** | Hand each student an index card as they enter the classroom. Instruct them to define the term “FOODSCIENCE” on their card. Allow for classroom discussion. |
| **Direct Instruction with Special Education Modifications/Accommodations** | Introduce lesson objectives, terms, and definitions.  Distribute handout, Food Science? Food Scientists? Guided Note taking. Instruct students to use the handout to take notes over the presentation. Begin PowerPoint Food Science? Food Scientists? Allow for questions and classroom discussion throughout the presentation.  Class review:  Guided note taking  Checking for understanding  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * providing a copy of the slide presentation and/or guided note taking answer sheet * checking for understanding |
| **Guided Practice with Special Education Modifications/Accommodations** | **Before class begins:**  Arrange desks into groups of four or five. For each group, place samples of the following food items:   * Veggie burgers * Omega-3 peanut butter * Gluten-free breakfast cereal   These items can be purchased at your local supermarket and are a result of years of food science research.  Distribute Thanks to Food Science taste testing handout. Students will sample each food item and record their observations. Ask students to use a variety of adjectives to describe the flavor, texture, color, smell, and overall quality of each food item.  Use the following questions to guide discussion following taste testing:   * What do these items have in common? * Why would we need food scientists to develop these types of food alternatives?   *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * pair special education students with a partner for research and end of lesson activity |
| **Independent Practice/Laboratory Experience with Special Education Modifications/Accommodations** | Distribute handout, Famous Food Scientists Research. Students may conduct their research independently or with a partner.  Direct students to use reliable internet sources and materials in the classroom to research a variety of famous food scientists. Encourage students to use reliable online databases such as Encyclopedia Britannica. Check with your librarian regarding additional resources available to your students.  When their research is complete, have students create flashcards with the information they just gathered.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * pair special education students with a partner * allow students to make notecards over the famous food scientist to be used during the ‘Who Am I?’ game. |
| **Lesson Closure** | Participate in Who Am I? activity.  **Option 1:** Before class begins: Write the names of famous food scientists on index cards. One card will be needed for each student. Some scientists may be used twice depending on the number of students in the class.  Provide each student with the name of a food scientist, instructing them NOT to reveal the name on their index card. Students will then mingle and introduce themselves to other students by describing the life and contributions of the food scientist they are depicting. Students will guess the identity of the food scientist.  Examples of introductions:  “I developed… Who am I?”  “I am responsible for… Who am I?”  “I helped… Who am I?”  “If it wasn’t for… Who am I?”  **Option 2:** Before class begins: Write the names of famous food scientists on sheets of paper. One sheet will be needed for each student. Some scientists may be used twice depending on the number of students in the class. Locate a roll of tape.  Tape a sheet with the name of a food scientist on the back of each students. Instruct students NOT to reveal the names on the sheets. Once everyone has been tagged with the name of a food scientist. Provide game instructions. Students will ask “Who am I?” Classmates will provide clues regarding the identity of the food scientist. The individual wearing the tag will then guess their own identity based on the clues.  Based on the research they have completed, students should be able to identify each food scientist. Play until everyone’s identity is discovered. Participation in this activity may be used as a daily grade.  Using the flash cards created at the end of Independent Practice, allow students to quiz each other.  Review lesson objective, terms, and definitions. |
| **Summative/End of Lesson Assessment with Special Education Modifications/Accommodations** | Famous Food Scientist project will be assessed with Famous Food Scientists Research Key.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * allowing students to use their research note cards during this activity |
| **References/Resources** | **Textbook:**   * Kay Yockey Mehas and Sharon Lesley Rodgers. *Food Science: The Biochemistry of Food and Nutrition.* Fourth. New York, New York: Glencoe McGraw-Hill, 2002. 23-33. Print.   **Websites:**   * Encyclopedia Britannica Online Encyclopedia<http://www.britannica.com/> * Fannie Farmer Quotes World’s largest quotation site. [www.Brainyquote.com](http://www.Brainyquote.com)<http://www.brainyquote.com/quotes/authors/f/fannie_farmer.html> * Quote World  Over 15,000 famous quotes<http://www.quoteworld.org/quotes/863> * Emma Bombeck Quotes Goodreads is the largest site for readers and book recommendations in the world. [www.goodreads.com](http://www.goodreads.com)<http://www.goodreads.com/author/quotes/11882.Erma_Bombeck> * Scientific American A Scientific Feast of Articles about our Relationship with Food<http://www.scientificamerican.com/article.cfm?id=a-scientific-feast-of-articles-about-our-relationship-with-food> |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** | * Word wall * Have students create note cards for unfamiliar terms and their definitions |
| **College and Career Readiness Connection[[1]](#footnote-2)** |  |
| **Recommended Strategies** | |
| **Reading Strategies** | * Allow students to examine internet articles while researching their famous food scientists. See: Scientific American A Scientific Feast of Articles about our Relationship with Food<http://www.scientificamerican.com/article.cfm?id=a-scientific-feast-of-articles-about-our-relationship-with-food> * At the end of each class period, have students respond to a journal topic, (see Writing Strategies section of this lesson plan). Student responses should be between 1 and 2 paragraphs in length. Have students share their responses and check for understanding. Verify that students have responded with correct information and answer any questions that may arise during discussion. |
| **Quotes** | I am not a glutton – I am an explorer of food.  **-Erma Bombeck**  Progress in civilization has been accompanied by progress in cookery.  **-Fannie Farmer**  Natural abilities are like natural plants; they need pruning by study.  **-Francis Bacon** |
| **Writing Strategies** | **Journal Entries:**   * People need to make thorough use of the foods grown on earth because… * People have been interested in understanding the science of food for a long time because… * Without technology and the advancements in food science, we would not have…   **Writing Strategy:**   * IBC (Introduction-Body-Conclusion) Strategy   + Remind students to use this writing strategy when responding to all journal entries. Writing format should be part of journal entry evaluation. |
| **Communication 90 Second Speech Topics** | * Why can we consider cookbooks to be the first food science ‘textbooks’? * What are the four areas of food science and how are they interconnected? * How has food science increased the safety and availability of our food supply? |
| **Other Essential Lesson Components** | |
| **Enrichment activity** | Create and conduct a survey that helps students gather information about their friends and families understanding of food science innovations.  Allow students to complete more extensive research on a food scientist of their choice. |
| **Family/Community Connection** | Have students develop informational fliers promoting healthy food options and increasing awareness of new products produced though food science. Provide fliers to school and community organizations. |
| **CTSO connection** | Family Career and Community Leaders of America (FCCLA)<http://texasfccla.org>  **STAR Event:**   * Illustrated Talk – Individuals or teams research and make a presentation about life issues concerning family and consumer sciences. * Food Innovations – Individuals or teams demonstrate knowledge of the basic concepts of food product development by creating an original prototype formula, testing the product through focus groups, and developing a marketing strategy. Participants must prepare a display, product packing, and an oral presentation. There will is a junior, senior, and occupational category. |
| **Service Learning Projects** | Service learning is a way for youth to gain knowledge and develop skills while meeting real community needs. After identifying and examining local issues, students agree on a plan, take action, and evaluate results.  Possible Ideas:  Set up informational meetings with local teen parents through community centers in your area or other organizations that provide teenage parent education.  Host meetings to help raise awareness of food science innovations for children. Ideas for meeting topics may include, but are not limited to:   * Nutritional content of store brand vs. name brand baby foods * Chemicals present in diaper wipes * Formulas and baby foods new on the market. Help parents understand the benefits of food choices with added vitamins, minerals, and those with easy digestible options. * How to safely store formula once it has been mixed and the repercussions of not doing this correctly. |

1. Visit the Texas College and Career Readiness Standards at <http://www.thecb.state.tx.us/collegereadiness/CRS.pdf>, Texas Higher Education Coordinating Board (THECB), 2009. [↑](#footnote-ref-2)