|  |  |
| --- | --- |
| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Hospitality and Tourism |
| **Course Name** | Food Science |
| **Lesson/Unit Title** | Nutrients and Beyond! The Six Nutrient Groups |
| **TEKS Student Expectations** | **130.256. (c) Knowledge and Skills**  (5) The student analyzes the role of acids and bases in the food sciences. The student is expected to:  (B) analyze the relationship of pH to the properties, safety, and freshness of food  (7) The student examines the chemical properties of food. The student is expected to:  (A) describe elements, compounds, mixtures, and formulas related to food science |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | **Students will:**   * Identify the six nutrient groups * Create a 3-dimensional project illustrating the functions, food sources and recommended daily allowances of vitamins, minerals, carbohydrates, protein, and fats * Study various nutrition games to reinforce nutrient knowledge |
| **Rationale** | Why do we eat? Food provides nutrients and fuel to our bodies as well as nourishment required by our bodies to stay alive. In this lesson, we are going to find out what nutrients are, why we need them and what they do for us as well as what can happen if we don’t get enough of the nutrient and what can happen if we eat too much of the nutrient. |
| **Duration of Lesson** | Four 45-minute class periods |
| **Word Wall/Key Vocabulary**  *(ELPS c1a, c, f; c2b; c3a, b, d; c4c; c5b) PDAS II (5)* | **Carbohydrate:** A nutrient that serves as the body’s main energy source  **Mineral:** An inorganic nutrient that is essential for health and growth  **Nutrients:** Food components necessary to sustain life  **Nutrient dense:** Describes a food that provides a relatively high quantity of nutrients in comparison to a low-to-moderate number of kilocalories.  **Nutrition:** The science of how the body uses food  **Protein:** A nutrient the body uses to build new cells and repair injured ones  **Recommended Dietary Allowances (RDAs):** The adequate amount of a specific nutrient needed by most healthy people  **Vitamin:** A nutrient that regulates body processes and helps other nutrients do their work  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 with projector for PowerPoint presentation * Computers with Internet access (be sure to follow district guidelines)   **Materials:**   * ChooseMyPlate Poster * Dietary Guidelines for Americans 2010 * Food model replicas (if available)   **Supplies:**   * Cardboard box (empty) * Cardboard box lid * Cookie sheet (old) * Glue * Legos® * Magazines * Picture frames (various sizes) * Poster board * Ribbon * String * Styrofoam balls * Wooden skewers * Copies of all handouts   **PowerPoint:**   * Nutrients and Beyond! The Six Nutrient Groups   **Technology:**   * Free iPad App:   + A – Z Food Nutrition Facts lite Provides detailed information nutrition [https://itunes.apple.com/us/app/z-food-nutrition-facts-lite/id484101503?mt=8](http://cte.sfasu.edu/wp-content/uploads/2013/11/KWL-Nutrients.pdf?mt=8) * Pinterest® * Snapguide®   **Graphic Organizer:**   * KWL – Nutrients * Nutrients and Beyond! The Six Nutrient Groups * Nutrients and Beyond! The Six Nutrient Groups (Key)   **Handouts:**   * ChooseMyPlate Poster * Dietary Guidelines for Americans 2010 * Nutrient Flashcards * Rubric for 3-D Nutrient Model |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | **Before class begins:**  Display as many of the items from the Materials or Specialized Equipment Needed section as you have available on a table in front of the classroom. Allow the students to view items and ask questions.  Ask the students the following questions:   * Why do we eat? * Why do we need food? * Can we eat any foods? * Why do we need to eat certain types of food?   Answers will vary but the discussion about eating the right foods with the necessary nutrients will begin.   * Distribute graphic organizer KWL – Nutrients and ask students to answer the first two statements. The last statement will be completed during lesson closure. |
| **Direct Instruction \*** | Introduce lesson objectives, terms, and definitions.  Distribute handout Nutrients and Beyond! The Six Nutrient Groups Notes so that students may take notes during slide presentation.  Introduce PowerPoint - Nutrients and Beyond! The Six Nutrient Groups. Lead a discussion on the importance of eating the nutrient-dense foods every day.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * checking for understanding * providing assistance with note-taking |
| **Guided Practice \*** | Allow students to practice what they have learned by playing several interactive nutritional games available on different websites. These games will reinforce the nutrient groups and eating healthy.  Allow only one class period to introduce games. Students may continue to play the games at home.  If a computer lab or tablets are not available, connect one laptop to a projector and allow students to take turns playing short segments of the games for everyone to view.   * ChooseMyPlate<http://www.choosemyplate.gov/kids/Games.html>   + Blast Off!   + Smash Your Food   + Food Hero   + Nutrition Sudoku   + Trainer   + Hey Now Quiz Show   + Kevin’s Build-A-Meal   + Combo Kitchen   + Dining Decisions   + Track and Field Fuel-up * Pacific Science Center   + Nutrition Sleuth   + Grab a Grape   + Have a Bite Cafe   Observe students as they move through various games and learn more about nutrition.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * providing peer tutoring * check for understanding |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | **Before class begins:**  Print the Nutrients Flashcards on cardstock, cut and separate.   Place Nutrient Flashcards in a basket or box and allow each student to choose a card.  Students are to create a 3-dimensional model of the chosen nutrient and include the following information:   * Functions * Food sources * Recommended daily allowance   What can happen if I:   * Don’t get enough of the nutrient * Get too much of the nutrient   Allow students to be creative and make the model using items available in the classroom and at home.  Examples:   * Cookie sheet collage * Mobile * Picture frame collage * Shadow box   Students may also utilize the quadarama to highlight the nutrient information. Steps on how to make a quadarama are available in the Instructional Strategies section of our website. Scroll down and click on image.  Students may use Pinterest® and Snapguide® for more ideas.  Option: For extra credit – Allow students to design a t-shirt depicting their nutrient and wear the day of their presentation. This will bring attention to your class and bring public recognition as to what your students are studying.  Distribute Rubric for 3-D Nutrient Model so that students will understand what is expected.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * assist student in gathering information * provide praise and encouragement |
| **Lesson Closure** | Review terms, definitions, and objectives.  Discuss with your students what they have learned about the six nutrient groups. Re-distribute the KWL – Nutrients so that students may complete what they have learned about the nutrients. |
| **Summative/End of Lesson Assessment \*** | Students will present their creative 3-D models of their nutrient.  Student presentation will be assessed with appropriate rubric.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * grading according to work done * providing praise and encouragement |
| **References/Resources/**  **Teacher Preparation** | **Textbooks:**   * Duyff, R. L. (2010). *Food, nutrition & wellness.* Columbus, OH: Glencoe/McGraw-Hill. * Mehas, K. Y. & Rodgers, S. L. (2006). *Food science: the biochemistry of food and nutrition.* New York, New York: Glenco/McGraw-Hill. * Ward, J.D., & Ward, L.T. (2013). *Principles of food science.* Tinley Park, IL: Goodheart-Willcox Company.   **Websites:**   * ChooseMyPlate Illustrates the five food groups that are the building blocks for a healthy diet using a familiar image— a place setting for a meal. [http://www.choosemyplate.gov/kids/Games.html](http://cte.sfasu.edu/wp-content/uploads/2013/11/Nutrients-and-Beyond-The-Six-Nutrient-Groups-PPT.pdf) |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** | * Word wall * Draw visual representations of terms on word wall * Add terms and definitions to personal dictionary * Utilize Four Corners Vocabulary/Word Wall Activity |
| **College and Career Readiness Connection[[1]](#footnote-1)** |  |
| **Recommended Strategies** | |
| **Reading Strategies** | Have students read several one-page prints from the ChooseMyPlate 10 Tips Nutrition Education Series.   * Ten Tips Education Series Provides consumers and professionals with high quality, easy-to-follow tips in a convenient, printable format. These are perfect for posting on a refrigerator. * Reading strategy: Encourage students to “visualize” as they read. Many students are visual learners and will benefit from making sketches or diagrams on scrap paper as they read. Providing students with graphic organizers to help them organize their thoughts is also helpful. |
| **Quotes** | Civilization as it is known today could not have evolved, nor can it survive, without an adequate food supply. **-Norman Borlaug**  I’m nutty for nutrition. I’ve become one of those people who can’t stop talking about the connection between food and health. Now that I know how much changing what you eat can transform your life, I can’t stop proselytizing. **-Robin Quivers**  A diet is when you watch what you eat and wish you could eat what you watch. **-Hermoine Gingold**  I believe that parents need to make nutrition education a priority in their home environment. It’s crucial for good health and longevity to instill in your children sound eating habits from an early age. **-Cat Cora** |
| **Writing Strategies**  **Journal Entries + 1 Additional Writing Strategy** | **Journal Entries:**   * I think good nutrition and good health impact my appearance by ……………. * The essential nutrients that I think are most useful when I exercise are………. because…………. * I think food labels are useful in providing………… * It is important for teenagers to eat foods with all the nutrients because ….   **Writing Strategy:**   * Informative/Descriptive:   + Format: Short essay   + Topic: fortification of cereals with folic acid The fortification of cereals with folic acid has been required by law since 1998. Write a short essay explaining why this is important to pregnant females as well as to healthy babies. |
| **Communication**  **90 Second Speech Topics** | * How do health claims affect consumers’ rights and responsibilities? * Why do you think health claims on food labels should be regulated? * The nutrition choices I make as a teenager will have an impact on my health as I grow older because…. |
| **Other Essential Lesson Components** | |
| **Enrichment Activity**  (e.g., homework assignment) | Listen to the Podcast from TEDxHarvard Law, MindStream Academy that discusses the effect of our modern dietary patterns and disease. |
| **Family/Community Connection** | Encourage students to discuss the nutrients at home and inform their family of the importance to eating the right foods.   * Students can show younger brothers and sisters as well as nieces and nephews the nutrition games available. |
| **CTSO connection(s)** | **Family Career and Community Leaders of America (FCCLA)**   * <http://texasfccla.org>   **STAR Events:**   * Applied Technology – An individual or team event: Recognizes participants who develop a project using technology that addresses a concern related to Family and Consumer Sciences and/or related occupations. The project integrates and applies content from academic subjects. * Chapter Service Project (Display and Manual) – A team event – recognizes chapters that develop and implement an in-depth service project that makes a worthwhile contribution to families, schools, and communities. Students must use Family and Consumer Sciences content and skills to address and take action on a community need. * Nutrition and Wellness – An individual event that recognizes participants who track food intake and physical activity for themselves, their family, or a community group and determine goals and strategies for improving their overall health. |
| **Service Learning Projects** | Successful service learning project ideas originate from student concerns and needs. Allow students to brainstorm about service projects pertaining to lesson. For additional information on service learning see [http://www.servicelearning.org](http://www.servicelearning.org/)  Possible idea:  Students may present their 3-dimensional projects to an after-school program and provide nutritious snacks.  Have students offer to teach a class on nutrients to help a local girl scout or boy scout troop earn one of their merit badges related to good nutrition. |

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-1)