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| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Human Services |
| **Course Name** | Cosmetology II |
| **Lesson/Unit Title** | Chemistry of Hair Relaxing |
| **TEKS Student Expectations** | **130.284. (c) Knowledge and Skills**  (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:  (K) demonstrate knowledge of practical skills such as manicure, pedicure, or hairstyling.  (2) The student applies academic skills to the field of cosmetology. The student is expected to:  (B) summarize the structure, composition, and growth of skin, nails, and hair;  (D) evaluate solutions, suspensions, and emulsions that may be used during cosmetology services such as shampoos, conditioners, and nail care products;  (E) select chemical services to maintain a normal pH of hair and skin;  (H) formulate a salon infection control plan to maintain health and safety of employees and clients. |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | **Student will:**   * Analyze the chemicals of hair * Explain the impact of acids, alkalis and ph on the hair and scalp * Analyze material safety data sheets for chemical information * Determine the relevance of porosity, density, texture, and elasticity of the hair for chemical services * Describe structural changes that take place in hair because of chemical relaxers * Demonstrate safety and sanitation precautions related to chemical relaxers |
| **Rationale** | Cosmetologists who are skilled in the art of chemical hair relaxing are in great demand today. Chemical hair relaxing is used for clients of many nationalities who have extra curly hair. In salons, curl permanents and hair relaxers are priced higher than many other salon services. Therefore, it is of great benefit to you as cosmetology students to become proficient in these services. |
| **Duration of Lesson** | Five 45-minute class periods |
| **Word Wall/Key Vocabulary**  *(ELPS c1a, c, f; c2b; c3a, b, d; c4c; c5b) PDAS II (5)* | **Chemistry:** The science that deals with the composition, structures, and properties of matter and how matter changes under different conditions  **Disulfide bond:** Strong chemical side bond that joins the sulfur atoms of two neighboring cysteine amino acids to create one cysteine, which joins together two polypeptide strands like rungs on a ladder  **Hydrogen bonds:** Relatively weak physical side bonds that are the results of an attraction between opposite electrical charges easily broken by water as in wet setting, or heat as in thermal styling and reformed as the hair dries or cords  **Hydroxide relaxers:** Relaxers with a very high pH, sometimes over 13  **No base relaxers:** Relaxers that do not require application of a protective base  **Normalizing solutions:** Conditioners with an acidic pH that condition the hair and restore the hair’s natural pH prior to shampooing  **pH (potential hydrogen):** Represents the quantity of hydrogen ions  **pH scale:** A measure of the acidity and alkalinity of a substance  **Salt bonds:** Relatively weak physical side that are the result of an attraction between opposite electrical charges are easily broken by changes in pH as in permanent waving and reform when the pH returns to normal  **Thio relaxers:** Relaxers that usually have a pH above 10 and higher concentration of ammonium thioglycolate than is used in permanent waving |
| **Materials/Specialized Equipment Needed** | **Equipment**   * Computer with Internet for slide presentation * Computers with Internet access (be sure to follow school district guidelines)   **Materials:**   * Cardstock   **Supplies:**   * Acid-balanced shampoo * Bowl and applicator brush * Conditioner * Disposable gloves * Hard rubber comb * Hydroxide relaxer * Hydroxide neutralizer * Manikins * Plastic clips * Plastic rattail comb * Pre-neutralizing conditioner * Protective base cream * Shampoo cape * Spray bottle * Stand * Styling comb * Thio neutralizer * Timer * Towels * Copies of handouts   **PowerPoint:**   * The Chemistry of Hair Relaxing   **Technology:**   * Free iPad App:   Hairstyles+  Amazing collection of the prettiest hairstyles from around the world  **Graphic Organizers:** -   * The Chemistry in Hair Relaxing Notes * The Chemistry in Hair Relaxing Notes (Key) * Client Consultation Card   **Handouts: -**   * Chemical Hair Relaxing Flashcards * Chemical Hair Relaxing Quiz * Chemical Hair Relaxing Quiz (Key) * Chemical Relaxers Product Data * Cosmetologists Administrative Rules * Rubric for Chemical Hair Relaxing |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | **Before class begins:**  Print the Chemical Hair Relaxing Flashcards on cardstock and separate. Laminate the cards, if possible. Place the cards in a basket. Some will be printed red (answers) and some will be printed black (statements).  In the front of the room, use a table to display as many of the supplies from the Materials and Specialized Equipment Needed section.  These supplies will serve as a basic guide to the process of using chemicals to permanently straighten the hair.   As students enter the classroom, have each one selects one red (answers) and one black (questions) card from the basket. Each student will have two cards.  Once everyone is seated, begin by asking the following questions:   * Do you wish you had straight hair? * Why would someone with curly hair want straight hair? * Do you like studying chemistry? * Why do we need to know chemistry to straighten hair?   Matching  Allow each student to read the black card (question) as the other students try to decide if they have the correct answer by reading the red card. Place the question and corresponding answer cards on the wall with tape so that students may review for the quiz. |
| **Direct Instruction \*** | Introduce lesson objectives, terms, and definitions.  Distribute graphic organizer The Chemistry of Hair Relaxing Notes so that students may take notes during slide presentation.  Introduce PowerPoint The Chemistry of Hair Relaxing and discuss how important an understanding of chemistry is in straightening hair.  View YouTube video:   * Basics of Chemistry   Clip from the Milady Standard Cosmetology 2012 DVD Series<http://youtu.be/N0PVlegJv8Y>   *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 \*** | Distribute handout Chemical Relaxers Product Data and explain to students that similar products produce different results depending on the client’s hair.  Assign students to locate material safety data sheets (MSDS) on the Internet for various products and complete the worksheet.  Remind students of the following tips:   * Any relaxer can burn the scalp if used the wrong way * Lye is found in hair relaxers allowing the product to work but can burn the skin * Do not leave the relaxer on longer than the directions instruct * Use a neutralizing shampoo to wash out the relaxer * Use a conditioner after the hair relaxer * Ask for help from another cosmetologist   Review the Cosmetology Administrative Rules for the general requirements of the Health and Safety Standards.  These standards include:   * Clean and disinfect equipment, tools, implements and supplies before use on each client * Use clean towels for each client * Use clean cutting and shampoo capes for each client * Use a sanitary neck strip or towel * Employ good personal hygiene habits while providing cosmetology service   Distribute the Client Consultation Card from the Client Consultation lesson and review the Hair and Scalp Analysis section.  Explain the procedure for chemical hair relaxing:   * Determine the impact of the acids, alkalis, and ph on the hair scalp * Explain the relevance of porosity, density, texture, elasticity, and disorders of the hair for chemical services * Differentiate between a soft curl and a chemical relaxer * Identify factors critical to hair and scalp analysis * Compare chemical texture services and structure changes that occur in the hair   Demonstrate how to apply the chemical relaxer on a volunteer or a manikin.  Students will work independently practicing safety and sanitation techniques.  Re-teach as needed.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * peer tutor * shortened assignment |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | Students will:   * Work independently practicing applying a chemical relaxer * Work independently and perform strand tests following manufacturer’s processing directions * Rinse and shampoo thoroughly with warm water to remove traces of relaxer   Important: Students should follow the manufacturer’s processing directions to achieve the desired effect.  Distribute Rubric for Chemical Hair Relaxing so that students may know 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:*   * provide more time for practice * frequent feedback |
| **Lesson Closure** | Review lesson objectives, terms, and definitions.  Matching  Review the flashcards from the Anticipatory Set and allow students to match the answers with the correct statements.  Remind them to study for quiz. |
| **Summative/End of Lesson Assessment \*** | Students will present finished manikin or client with straight hair.  Students will be assessed with appropriate rubric.  Distribute Chemical Hair Relaxing Quiz to assess students’ knowledge.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * oral quiz if needed * use notes for quiz * reduce number of quiz statements |
| **References/Resources/**  **Teacher Preparation** | **Textbook**   * Halal, J. (2009). *Hair structure and chemistry simplified: Exam review/John Halal.* Clifton Park, NY: Milady/Cengage Learning. * *Milady standard cosmetology: Situational problems.* (2012). Clifton Park, NY: Cengage Learning.   **Websites:**   * Texas Department of Licensing and Regulation  To be the leader in public service, customer satisfaction, and innovation<http://www.tdlr.texas.gov/cosmet/saloncodeviolations.htm> * U.S Food and Drug Administration  Hair Dye and Hair Relaxers  Hair dye is used to color your hair. Hair relaxers are used to make your hair straight. Both hair dye and hair relaxers can hurt your skin, hair, and eyes, especially if you are not careful. Some of these problems can be prevented. Get the facts before using hair dyes and hair relaxers.<http://www.fda.gov/ForConsumers/ByAudience/ForWomen/ucm118527.htm>   **YouTube:**   * Basics of Chemistry   Clip from the Milady Standard Cosmetology 2012 DVD Series<http://youtu.be/N0PVlegJv8Y> |
| **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 |
| **College and Career Readiness Connection[[1]](#footnote-1)** |  |
| **Recommended Strategies** | |
| **Reading Strategies** | Other articles pertaining to this lesson that students may read include:   * How Does Hair Relaxer Work?  The chemicals in hair relaxers penetrate deep into the hair shaft and loosen the natural curl pattern located inside the hair cortex.<http://www.ehow.com/how-does_4566662_hair-relaxer-work.html> * Problems with Hair Relaxers  Without proper application and maintenance of hair relaxers, damaged hair, breakage, and chemical burns may occur.<http://www.ehow.com/list_7199615_problems-hair-relaxers.html> * The Long-Term Effects of Using Hair Relaxers  It is important to be aware of the long-term effects of hair relaxers before deciding to use these products. <http://www.ehow.com/list_7481305_longterm-effects-using-hair-relaxers.html>   Reading Strategy:  Ask and Answer Questions Having students form their own questions helps them recognize confusion and encourages active learning. Instruct students:   * Before reading, think about the subject based on the title, chapter heads, and visual information. Make note of anything you are curious about. * While reading, pause and write down any questions. Be sure to ask questions if there is confusion. * Look for the answers while reading. Pause and write down the answers. * Were all the questions answered? Could the answers come from other sources? |
| **Quotes** | Forget not that the earth delights to feel your bare feet and the winds long to play with your hair. **-Khalil Gibran**  I used to be very insecure about my curly hair, because I lived in a country where everybody had blonde straight hair. **-Diane von Furstenberg**  I have very curly hair and I straighten it every day – it takes maybe two minutes. I can’t imagine anyone having a bigger challenge than I do in the kinkiness that is my crazy ‘fro.’ **-Ginnifer Goodwin**  I love wearing my hair curly, but turning the curling iron all the way up creates curls that look really made up and artificial. **-Camila Alves**  I was 23, and that was my first professional job. Anybody who has curly hair knows you don’t want it to be brushed out because it becomes a never-ending tangle. **-Judy Davis** |
| **Writing Strategies**  **Journal Entries + 1 Additional Writing Strategy** | **Journal Entries:**   * People want to have straight hair because …. * Curly hair is difficult to keep neat because … * Long, straight hair is …. * Long, curly hair is …. * My preference in chemical relaxers is ….   **Writing Strategy:**  RAFT   * Role – cosmetologist * Audience – chemical relaxer manufacturer * Format – business letter * Topic – requesting directions on product be written more clearly   Flash Cards  Cosmetologists must memorize terminology associated with their specialty field. Like most other industries, cosmetologists should be well-versed in industry terminology to provide the best type of care for their clients. To engage students in this activity, make a list of terms and their definitions. Write the definitions on one side of a flash card and on the other, write the term. Make sure the backside of the card cannot be seen during the activity. To help students learn the names of supplies and tools used during their work, take pictures of the items, and glue the pictures onto a flash card with the answer written on the back of the card. |
| **Communication**  **90 Second Speech Topics** | * Name three products that are used in hair relaxers * The purpose of the neutralizer in chemical relaxing treatments is …. * The common ingredients in the Thio relaxer and permanent waving solution are …. |
| **Other Essential Lesson Components** | |
| **Enrichment Activity**  (e.g., homework assignment) | Skill activity  cosmetologists are responsible for ensuring makeup application, hairstyles or nails are exactly what the client desires.  A fun activity to sharpen the beauty skills of a cosmetologist is to write several different styles onto an index card and allow students to choose a card.  With a manikin, have the cosmetologist create the look stated on the index card.  Examples:   * 1950s pinup * Prom night * Southern belle * Gothic Lolita   Make sure to only place styles on the index cards the student has recently studied so the student is able to put theoretical study into practical use.  To make the activity more interesting, give the students a time limit and allow the other students to critique their work. |
| **Family/Community Connection** | Fix-It  The fix-it activity can be a fun way to end a hard week in school.  Ask for a few volunteers from the class to be made-under. Take these students into another room and mess up their makeup, hair, or nails.  Pair up the fix-it student with a peer who is responsible for correcting the mistakes on the student’s face, hair, or nails.  Allow the students only 30 minutes to work. Encourage using techniques and skills learned during class to fix the mistakes on the other student.  Have students interview a professional operator/shop owner in the community. |
| **CTSO connection(s)** | **SkillsUSA**  <http://skillsusa.org>  Cosmetology Students will demonstrate their skills in haircutting, hair styling and long hair design in four separate tests. All work is performed on manikins so everyone begins with the same model and the same type of hair. Contestants will create one 90-degree women’s haircut, one woman’s and one man’s cut from a finished photo. A display of creativity is seen in the long hair segment of the competition where these future salon professionals demonstrate their own design skills. A parade finale closes the contest with each contestant walking down the stage with their completed manikins to present to the audience. |
| **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 ideas, visit: [www.ysa.org](http://www.ysa.org)  Possible idea: Provide services to residents in a local nursing home. Provide opportunities for the special populations students at your high school to practice the techniques learned. |

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)