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| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Law, Public Safety, Corrections, & Security |
| **Course Name** | Forensic Science |
| **Lesson/Unit Title** | Crime Scene Investigation |
| **TEKS Student Expectations** | **130.339. (c) Knowledge and Skills**  (2) The student, for at least 40 of instructional time, conducts laboratory and/or field investigations using safe, environmentally appropriate, and ethical practices.  (A) The student is expected to demonstrate safe practices during laboratory and field investigations.  (B) The student is expected to demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.  (3) The student uses scientific methods and equipment during laboratory and field investigations.  (F) The student is expected to collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, gel electrophoresis apparatuses, micropipettors, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, cameras, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures.  (G) The student is expected to analyze, evaluate, make inferences, and predict trends from data.  (H) The student is expected to communicate valid conclusions supported by the data through methods such as investigative reports, lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.  (4) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom.  (A) The student is expected to analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, to encourage critical thinking.  (B) The student is expected to communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials.  (C) The student is expected to draw inferences based on data related to promotional materials for products and services.  (D) The student is expected to evaluate the impact of scientific research on criminal investigation, society, and the environment.  (E) The student is expected to evaluate models according to their limitations in representing biological objects or events.  (F) The student is expected to research and describe the history of science and contributions of scientists within the criminal justice system.  (6) The student recognizes the procedures of evidence collection while maintaining the integrity of a crime scene.  (A) The student is expected to compare and contrast the roles of forensic scientists and crime scene investigators.  (B) The student is expected to demonstrate the ability to work as a member of a team.  (C) The student is expected to conduct a systematic search of a simulated crime scene for physical evidence following crime scene search patterns such as spiral, line, grid, and strip.  (D) The student is expected to apply knowledge of the elements of criminal law that guide search and seizure of persons, property, and evidence.  (E) The student is expected to describe the elements of a crime scene sketch such as measurements, compass directions, scale of proportion, legend-key, and title.  (F) The student is expected to develop a crime scene sketch using coordinates/measurements from fixed points.  (G) The student is expected to outline the chain of custody procedure for evidence discovered in a crime scene.  (H) The student is expected to demonstrate proper techniques for collecting, packaging, and preserving physical evidence found at a crime scene. |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | The students will be able to:   * Work as a productive member of a team * Conduct a systematic search of a mock crime scene * Develop a crime scene sketch * Demonstrate proper techniques of collecting and packaging evidence at a crime scene |
| **Rationale** | Crime Scene Investigation is critical to the criminal justice system. The role of the crime scene investigator is critical in obtaining, photographing, and preserving evidence at a crime scene. An understanding of crime scene investigation is crucial for the forensic scientist to further analyze the crime and suspect. |
| **Duration of Lesson** | 5 to 6 hours total  – 50 min. lecture  – 2–3, 50 min. mock crime labs  – 50 min. room sketch  – 50 min. final sketch  – 50 min. review |
| **Word Wall/Key Vocabulary**  *(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* |  |
| **Materials/Specialized Equipment Needed** | * **Room Sketch Activity:** * Paper * Pen/ Pencil * Ruler * **Mock Crime Scene Activity:**   + Room for a Mock Crime Scene   + Materials to set up as crime scene evidence (plastic weapons, table, chairs, etc.)   + Paper or poster board   + Black pens and pencils   + Clipboard   + Rulers   + Compass   + Tape measure   + Camera   + Latex gloves   + Crime scene tape   + Crime scene badge (optional)   + Mock Crime Scene Investigation Handout   + Data Table   + Mock Crime Scene Investigation Post Lab Questions   + Mock Crime Scene Investigation Responsibilities Handout   + Crime Scene Investigation Review and Key |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | Show a crime scene clip of your choice (if a video is not available, you can role play a crime scene investigator that does not follow protocol). Have students discuss the procedures that they feel are true to crime scene investigation and those they feel are not true. Use the Discussion Rubric for assessment. |
| **Direct Instruction \*** | I. Process a Crime Scene  A. Isolate and secure the scene  B. Document the scene  C. Search for the evidence  D. Collect and package the evidence while maintaining the chain of custody  E. Submit the evidence for analysis  II. First Officer on the Scene  A. A- Assess the crime scene and assist the injured  B. D- Detain the witness(es)  C. A- Arrest the perpetrator  D. P- Protect the crime scene  E. T- Take notes  III. Secure the Crime Scene  A. Look for signs of life  B. Cordon off the scene (only allow authorized personnel in)  C. Bodies should be certified as “dead” by a medical examiner (ME) before being moved  IV. Survey the Crime Scene  A. A walkthrough is performed by the crime scene investigator, the first officer, and sometimes the lead detective  B. Record initial observations of who, what, where, when, and how  C. Make a plan of action  V. Document the Crime Scene  A. Record the crime scene and potential evidence with  1. Notes – record the following while at the crime scene (details are the key)  a. Date  b. Time  c. Description of the location, weather, and environmental conditions  d. Description of the crime  e. Location of the evidence relative to other key points  f. Names of all people involved  g. Any other relevant information  2. Photography  a. Nothing should be moved until photographed  b. Take photos of the scene and the surroundings  c. Photograph entrances and exits  d. Use wide and close-up photos  e. Use various angles of each piece of evidence  f. Use a ruler to show size  3. Sketches – draw a rough sketch at the scene (reconstruct a better one later) including  a. Date, time, and location  b. Scale  c. Recovered items  d. Important features  e. Accurate distance measurements of objects (from two fixed points)  f. A legend for the description of items  g. A compass designating north  h. Names of the investigators, victims, and suspects  4. Videography  a. Narrate the video  b. Be objective  c. Record from different perspectives  VI. Measuring Techniques  A. Triangulation  1. For each piece of evidence being recorded, use two permanent objects as reference points that are not likely to be moved  2. The two reference points and the piece of evidence form a triangle, hence the term triangulation  3. Whatever object you are measuring to or from, use the same spot on the object every time  B. Rectangular Coordinates – Baseline  1.The simplest form of the rectangular coordinate system  2. Using a straight line between two known points, items are measured along the line and then measured perpendicular to the line  3. Inside or outside of a house, this line can be a straight wall  4. For outdoor scenes, use a string or a long measuring tape as the reference or baseline  C. Rectangular Coordinates – Grid  1. Measure the distance of the items from two perpendicular base lines  2. This technique is particularly appropriate in a room with perpendicular walls or in the outdoors with perpendicular streets  D. Polar Coordinates  1. Measure both the distance and the direction (angle) an object is from a known reference point  2. For example, 40 feet from the edge of the house and 15 degrees east of north  VII. Search the Crime Scene  A. When searching a crime scene wear the following, if available, to minimize contamination  1. Disposable gloves  2. Masks  3. Coveralls with a hood  4. Slippers  B. Search Patterns  1. Depend on the size and the location of the crime scene and the number of investigators available  2. Stick to one pattern and one supervisor  3. It’s better to collect everything and not need it than fail to collect something and need it later  4. Spiral – may move inward or outward; best used where there are no physical barriers  5. Grid – basically a double-line search; effective, but time-consuming  6. Line (Strip) – best in large, outdoor scenes  7. Zone (Quadrant) – most effective in houses or buildings; teams are assigned small zones for searching  VIII. Collect and Package Evidence  A. Physical evidence must be packaged and collected before time and weather can alter it  B. Physical evidence – any object that can establish that a crime has been committed or links a crime and the victim or suspect  C. The Golden Hour – the window of opportunity to collect time-sensitive information or evidence  D. Each item must be placed in a separate container, and sealed and labeled.  E. The most fragile evidence is collected and packaged first  F. Different types of evidence require specific or special collection and packaging techniques  G. The body is the property of the coroner or medical examiner; collection of evidence on the body is done by that department  H. Containers such as vials, envelopes, plastic bags, paper bags, canisters, and cardboard boxes are good packaging devices  I. Most items should be placed in a primary container and then in a secondary container  J. Trace evidence may be placed on a piece of paper which is then folded in a “druggist fold” and placed in a secondary container  K. Containers should be sealed with tamper proof tape, and dated and initialed  L. Each package should contain  1. Date, time, and location  2.Case number  3. Agency and collector’s name  4. Victim’s name(s)  5. Description of contents  M. Never package two items from two different sources or locations  IX. Chain of Custody  A. There must be a written record of all of the people who have had possession of an item of evidence, beginning at the time of the collection  B. Every person who has handled or examined the evidence must be accounted for  C. Chain of Custody should include  1. Date and time of transfer  2. Location of transfer  3. To/From names  4. Purpose of the transfer  X. National Databases  A. Crime scene investigators can submit evidence for analysis to several national databases depending on the type of evidence  B. Examples include  1. Automated Fingerprint Identification System (AFIS)  2. Integrated Automated Fingerprint Identification System (IAFIS)  3. Combined DNA Index System (CODIS)  4. Integrated Ballistics Identification System (IBIS)  5. International Forensic Automotive Paint Data Query (PDQ) |
| **Guided Practice \*** |  |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | * Mock Crime Scene Investigation. Students will enter a mock crime scene. They will work as a team to investigate the crime scene. Each student will have a specific responsibility assigned to them by the team. Use the Mock Crime Scene Investigation Responsibilities handout. Using all of the team’s information, each student will submit a final sketch of the crime scene and form a hypothesis about what happened. Use the Mock Crime Scene Investigation Handout, the Data Table, and the Mock Crime Scene Investigation Post Lab Questions for the activity. Use the Individual Work Rubric for assessment. * Teacher note: You will need to set up a mock crime scene the day before the activity (see the materials list for Activity 2). You will need to decide what evidence and weapons will be included. Step-by-step student instructions are found in the Mock Crime Scene Investigation Handout. * Crime Scene Investigation Review. Students will research and answer the questions on the Crime Scene Investigation Review. The students may work as individuals or in small groups. Use the Crime Scene Investigation Review for the activity and the Crime Scene Investigation Review Key for the assessment. * Room Sketch. For homework, have students pick a room in their house and make a rough sketch of the room. They will bring it back to class and discuss how they decided what to include in their sketch and relate that to a crime scene. Students will then make a final sketch from their rough sketch. Use the Crime Scene Sketch Rubric to assess the final sketch. |
| **Lesson Closure** |  |
| **Summative/End of Lesson Assessment \*** | * Crime Scene Investigation Quiz and Key * Crime Scene Investigation Review Key * Crime Scene Sketch Rubric * Discussion Rubric * Individual Work Rubric * Research Rubric   **Accommodations for Learning Differences:**  For reinforcement, students will be given a rough sketch and produce a final sketch from looking at the rough sketch. Use the Crime Scene Sketch Rubric for assessment. |
| **References/Resources/**  **Teacher Preparation** | * ISBN: 0135158494, Saferstein, Richard. *Forensic Science: An Introduction*. New Jersey: Pearson Prentice Hall, 2008. * ISBN: 0757518257, Ball-Deslich, Barbara and John Funkhouser. *Forensic Science* *for High School*. 2ndEdition. Kenall/Hunt, 2009. |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** | Science Standards  I. Nature of Science: Scientific Ways of Learning and Thinking  C. Collaborative and safe working practices  1. Collaborate on joint projects. |
| **Recommended Strategies** | |
| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy**  **Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** |  |
| **Writing Strategies**  **Journal Entries + 1 Additional Writing Strategy** |  |
| **Communication**  **90 Second Speech Topics** |  |
| **Other Essential Lesson Components** | |
| **Enrichment Activity**  (e.g., homework assignment) | Students will research a case where the crime scene was compromised. Examples include the OJ Simpson, JonBenét Ramsey, and Enrique Camarena cases. |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | SkillsUSA |
| **Service Learning Projects** |  |
| **Lesson Notes** |  |

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)