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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** | Law Enforcement II |
| **Lesson/Unit Title** | Emerging Technologies in Law Enforcement |
| **TEKS Student Expectations** | **130.337 (c) Knowledge and Skills**  (20) The student explores new and emerging technologies in law enforcement. The student is expected to:  (A) research new technologies used in law enforcement such as robots to diffuse potential explosives; and  (B) explain the importance of continuing education in law enforcement. |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | The student will be able to:  1. Recognize the considerations law enforcement agencies contemplate in determining whether to update or integrate emerging technologies  2. Distinguish between current, new, and futuristic law enforcement technologies  3. Define the applicability of a particular technology |
| **Rationale** | As technology develops, law enforcement agencies must stay ahead of the curve to serve the public safely and combat crime. It is important for students who want to pursue law enforcement careers to understand technological advancements and their impact on officer performance. |
| **Duration of Lesson** | 2 to 4 hours |
| **Word Wall/Key Vocabulary**  *(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* |  |
| **Materials/Specialized Equipment Needed** | Computers with Internet Access |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | Show a video demonstrating one or more new technologies. To find a video perform an Internet search for the following key words: NLECTC Minutes channel.  (Note: This channel is produced by the National Law Enforcement and Corrections Technology Center.) Use the following discussion questions to lead the students in a discussion:  • How do these technologies prevent/deter crime?  • How do these technologies protect law enforcement officers?  • How do these technologies protect the public?  • How do these technologies assist in investigations or in evidence capturing?  Use the Discussion Rubric for assessment. |
| **Direct Instruction \*** | Agency Considerations   * 1. Financial challenges      1. Budget of the agency      2. Cost savings      3. Service and maintenance costs of technology      4. National Law Enforcement and Corrections Technology Center (NLECTC) Technology Decision Tool – to help an agency assess the cost benefit of its technology   2. Training      1. Little/no training vs. extensive training      2. Size of the agency   3. Operational needs      1. Geographical area that the agency serves      2. Demographics of the area that the agency serves      3. Increased efficiency and effectiveness      4. Expected outcome of the technology’s use   4. Necessity vs. Luxury      1. Will the technology improve the agency’s basic services?      2. Does the technology improve the response time?      3. Does the technology provide more information to the officer when needed?      4. Will the use of the technology increase the confidence of the public?      5. Will the use of the technology increase officer safety and efficiency?  1. Currently Used Technologies (not an exclusive list)    1. Prevention       1. Radios          1. Wireless and digital capabilities          2. Ability to share information in seconds (i.e. pictures, records, fingerprints, video footage)          3. Ability to share in secure, real-time mode       2. Mobile Computer Systems within a Patrol Unit          1. Computerized records check          2. Dispatch information          3. Report-writing from the field             1. Reduces the amount of paperwork             2. Improves an officer’s availability          4. Graphical Information Systems (GIS) – mapping technology       3. Audio/Video Cameras          1. In-car cameras          2. Photo enforcement system             1. At traffic lights             2. Monitor speeding and red-light violations       4. Graffiti Cameras          1. Talking surveillance – warns the person of illegal behavior, such as graffiti spraying, illegal dumping, or loitering          2. Warns the person that a picture, through video, is being captured          3. Is wireless and solar-powered for easy movability of camera    2. Investigation       1. Crime Lights          1. Differing preset light wavelengths that detect hair, fibers, and body fluids          2. Time efficient – speeds up time it takes to process a crime scene       2. Thermal Imaging          1. Produces images of radiated or reflected surface energy          2. Assists in finding fleeing fugitives, missing children, or missing elderly persons          3. Takes less time for locating          4. Easy use, storage, and maintenance       3. Criminal Investigations Record Systems          1. Software matches suspects to particular crimes          2. Matches occur through the use of aliases, partial names, physical descriptions, or vehicle descriptions    3. Protection       1. In-car camera – increases officer accountability and protects officers falsely accused of unprofessional behavior       2. License Plate Tag Readers – automatically recognizes license plates to locate stolen vehicles       3. Global Positioning System (GPS) – track the location of police units       4. Robots – to defuse bombs or to take real-time video in high-risk areas       5. Weapons          1. Non-lethal             1. Stun gun – emits volts of electricity affecting the major motor muscles; suspects are disarmed and incapacitated with little to no physical side effects             2. Beanbag gun          2. Lethal             1. Service handgun             2. Shotgun    4. Prosecution       1. Diagramming Systems – produces high-quality digital diagrams that can be used in court       2. In-car Camera System – captures evidence that can be used as a silent witness (i.e. traffic stops, DWI’s) 2. Newly Developed Technologies in Use (not an exclusive list)    1. Prevention       1. Cell phone applications          1. Can look up a suspect’s records from a phone          2. Can locate persons of interest, which can lead to arrests          3. Has field-reporting capabilities          4. Uses nationwide data transfer networks       2. Automobile pursuit systems          1. Deploys GPS tag to track fleeing suspect vehicle          2. Launches from the grille of the patrol vehicle          3. Challenges             1. Ineffective adhesive on tag             2. Operator error             3. Distance/terrain-related misses       3. Surveillance Video Systems          1. Real-time video monitoring and servicing system          2. Live video monitoring centers          3. More efficient response times    2. Investigation       1. Central database software – multi-agency sharing of information       2. Side scan sonar for water searches          1. Locates drowning victims          2. More time efficient          3. Challenge: cannot detect smaller objects       3. Forensic comparison examinations          1. High-resolution cameras and light sources to improve results          2. Documents comparison process       4. Aviation technology          1. Low cost (as opposed to helicopters)          2. Safe alternative          3. Light supporting aircraft          4. Unmanned aircraft systems             1. Operated via remote control             2. Small systems – 5 pounds or less             3. Flies to altitudes of 500-1500 feet             4. Easy to fly             5. Camera mounted to search for missing children/elderly and/or suspects       5. Social media          1. Search engines             1. To look up individuals, phone numbers (cell and landlines), and addresses             2. To upload images to search for likenesses             3. To look up names of neighbors          2. Microblogs             1. One-way feed of information             2. Limited number of characters             3. Online journals/diaries    3. Protection       1. Body-Worn Cameras          1. Reduces agency liability and citizen complaints          2. Provides departmental transparency to citizens          3. Very mobile and easy to attach          4. Can integrate with in-car video systems          5. Less expensive option for agencies without in-car video systems          6. Challenge: battery life       2. Automobile pursuit systems          1. Avoids dangerous pursuits          2. Increases officer and public safety    4. Prosecution       1. Social Media          1. Use as evidence          2. Challenge: Courts divided on reasonable expectation of privacy       2. Forensic Comparison Examinations          1. Meets the criteria of the Daubert standard in court       3. Body-Worn Cameras          1. Provides evidence in court 3. Developing Technologies (This is not an exclusive list and usually technologies are developed initially by the military)    1. Prevention       1. Facial-recognition software          1. Compares images with previously arrested or convicted persons          2. Merged with driver’s license and identification systems       2. Enhanced GIS capabilities          1. Crime analysis regarding previous activity or time periods to predict future activity          2. Tracking vehicles and personnel       3. Aviation technology          1. Unmanned drones             1. Border protection             2. Drug enforcement agencies             3. Surveillance             4. Missions conducted without harm to humans             5. High-quality images/videos             6. Track targets       4. Vehicle camera systems and body-worn cameras          1. Automatic license plate recognition          2. Facial-recognition software          3. Voice analysis system          4. Follow suspects’ movements    2. Investigation       1. Facial-recognition systems (see above)       2. Fingerprint technology          1. Contactless fingerprinting          2. Scans fingerprints with no pressure          3. Does not required trained operators          4. Faster to produce          5. Natural state of the fingerprint, thus eliminating inconsistencies in collection       3. Databases          1. Shoeprint database          2. Forensic mapping database          3. Acoustic gunshot detection database    3. Protection       1. Enhanced 911 services (Next Generation 911)          1. Public’s ability to send texts, pictures, and/or video through the 911 system          2. Will decrease response time          3. Will increase productivity       2. Enhanced satellite images software – overlays onto satellite images of criminals’ residences and high-risk areas       3. Meta-material cloaking          1. Holographic discs that camouflage into the environment          2. Developing shape-changing liquids       4. Metabolic supplements          1. Oral consumption or injections          2. Tailors to specific needs (i.e. eating, rest, energy, endurance) of officer       5. Weapons          1. Lethal             1. Personalization of handgun whereby only authorized user can fire             2. Combination weapons with high capacity, stacked ammunition; programmable, rapid, and quickly reloadable ammunition (i.e. 24,000 grenade rounds per minute launched via internet connection)          2. Non-lethal – used for riot control and defense of high-risk areas             1. Sound waves – projection of high decibel sound waves causing persons to move             2. Smells – significant odors that induce vomiting, inability to focus, and dulling of other senses; produces a desire to move from the area             3. Light – high-intensity focus that creates confusion             4. Heat – microwaves sent to heat up the targeted areas; painful and uncomfortable; incapacitates target       6. Body Armor          1. Material not only protects from bullet and knife penetration, but also protects from blunt trauma force          2. Production of lightweight body armor with layers of ballistic material and ceramic composites, which gives three times the protection          3. Power assisted/hydraulic suit of armor – senses the direction of movement; prevents muscle strain; enhances strength, speed, and endurance       7. Wearable computer with an optical head-mounted display          1. Records and analyzes everything seen by the officer          2. Has a built-in screen equipped with information about area and facial recognition system    4. Prosecution       1. Fingerprint technology          1. Higher-quality images          2. No need for expert witness testimony verifying suspect’s print       2. Enhanced 911 services          1. Additional real-time evidence accumulation 4. Continuing Education    1. Laws change       1. Every two years the state legislature makes new laws and changes old ones       2. It is important for officers to stay current on these new laws because they impact the way that an officer does his or her job       3. Failure to stay current on new laws through continuing education could result in violations of civil rights, criminal penalties, or job loss    2. Well-rounded       1. Officers who attend continuing education (in-service) training are better qualified to do their jobs       2. Maintaining a student’s perspective helps officers to better relate to those they serve       3. Officers stay current on new trends and methods for investigating and performing their job duties, leaving less for the investigators to do after the report has been taken       4. Being better educated reflects in court, as well as in everything an officer does    3. Higher pay       1. Many departments have higher pay scales for officers with a college education, or intermediate, advanced, or master level Texas Commission on Law Enforcement Officer Standards and Education (TCLEOSE) certifications    4. Promotion       1. Most departments require a certain education or certification level to promote to higher ranks within the department    5. Keep current       1. Continuing education keeps officers up-to-date on   *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  NONE |
| **Guided Practice \*** | “It Can Happen Here” Video Activity – Watch the NLECTC’s video, “It Can Happen Here”, https://www.justnet.org/school\_safety.html (57:49 minutes). (Note: This video is about the use of technology to make schools safer using tragedies such as the Columbine and Platte Canyon High School shootings as examples.) Have the students discuss the critical stages of school safety planning: mitigation and prevention, preparedness, response, and recovery and remediation. Topics should include the pros and cons of utilizing the emerging technologies to keep our schools safe. Use Discussion Rubric for assessment.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  NONE |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | 1. **Research Presentation** – Have students conduct research to compare and contrast the tools used by law enforcement from differing eras. Students will present their information in a computer-based presentation. Use the Research Rubric and/or the Presentation Rubric for assessment. 2. **Mock Policies and Procedures** – In groups, have the students create mock policies and procedures for a specific use of new technology for an imaginary agency. Have the students include the training requirements, the use in the field, the legal considerations (i.e. privacy issues), and the maintenance responsibilities of the equipment. Use the Cooperative Teams Rubric for assessment. |
| **Lesson Closure** |  |
| **Summative/End of Lesson Assessment \*** | * Emerging Technologies Quiz and Key * Cooperative Teams Rubric * Discussion Rubric * Individual Work Rubric * Presentation Rubric * Research Rubric * Writing Rubric   *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  Have the students research, on the internet, some of the technologies discussed to see what is available for law enforcement or military officers. Use the Research Rubric and/or the Individual Work Rubric for assessment. |
| **References/Resources/**  **Teacher Preparation** | * Texas Commission on Law Enforcement Officer Standards and Education (TCLEOSE) * http://www.policechiefmagazine.org/magazine/index.cfm?article\_id=1527&f useaction=display&issue\_id=62008 * <http://www.nena.org/?NG911_Project> * <http://www.its.dot.gov/ng911/> * <https://www.justnet.org/> * <https://www.justnet.org/pdf/SharingResources_508.pdf> * <https://www.justnet.org/pdf/Technology-Decision-Tool.pdf> * <https://www.justnet.org/school_safety.html>   Do an Internet search for the following:   * Listverse top 10 future law enforcement technologies * Top Law Enforcement Officials to Convene Over Latest in Police Technology * Emerging technologies in law enforcement: their impact on officer response and efficiency |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** | Cross-Disciplinary Standards   1. Foundational Skills   E. Technology   1. Use technology to gather information. 2. Use technology to organize, manage, and analyze information. 3. Use technology to communicate and display findings in a clear and coherent manner. 4. Use technology appropriately. |
| **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) | For enrichment, have the students contact a law enforcement agency that has implemented a newer form of technology. Have the students interview an officer about that particular technology. Have the students write a report of the interview, including the information regarding the technology. Use the Writing Rubric for assessment. |
| **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)