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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, and Security | |
| **Course Name** | Firefighter I | |
| **Lesson/Unit Title** | Donning and Doffing SCBA | |
| **TEKS Student Expectations** | **130.334. (c) Knowledge and Skills**  (3) The student executes safety procedures and protocols associated with fire management services.  (C) The student is expected to practice personal safety procedures  (11) The student analyzes the internal systems that sustain life in the human body and identifies the physical requirements of a self-contained breathing apparatus wearer.  (B) The student is expected to describe the National Fire Protection Association standards applicable to the self-contained breathing apparatus  (12) The student demonstrates confidence in performing firefighting skills while wearing a self-contained breathing apparatus.  (A) The student is expected to identify the safety requirements when using the self-contained breathing apparatus  (C) The student is expected to describe the safety rules when wearing the self-contained breathing apparatus  (E) The student is expected to demonstrate the various methods of donning and doffing the self-contained breathing apparatus while wearing protective clothing  (15) The student demonstrates the proper testing and operation of a personal alert safety system device.  (A) The student is expected to explain the proper operation of a personal alert safety system  (B) The student is expected to demonstrate the proper testing of a personal alert safety system | |
| **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: | | 1. Identify and describe the safety requirements when using the SCBA | | 2. Describe the safety rules when wearing the SCBA | | 3. Demonstrate the donning and doffing of the SCBA while wearing | | protective clothing | | |
| **Rationale** | |  | | --- | | The Self-Contained Breathing Apparatus (SCBA) is often the only source of | | breathable air for firefighters. Firefighters must be proficient donning and | | doffing the SCBA to execute these skills quickly during normal and | | adverse conditions. | | |
| **Duration of Lesson** | 4 to 6 hours | |
| **Word Wall/Key Vocabulary**  *(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* |  | |
| **Materials/Specialized Equipment Needed** | * Personal Protective Equipment (PPE) * Self-Contained Breathing Apparatus (SCBA) * Pens and paper, or computers with presentation software * Computers with Internet access or other resources for research * Donning and Doffing SCBA Quiz and Key * Donning SCBA Using the Coat-Method Checklist * Donning SCBA Using the Over-the-Head Method Checklist * Donning SCBA Using the Seat-Mounted Method Checklist * Peer Evaluation * Discussion Rubric * Individual Work Rubric | |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | | Have a class discussion using the following scenario and question:  Imagine you are a firefighter caught in a building collapse and the exit is too small for you to escape through while keeping the SCBA on your back. What do you do? |
| **Direct Instruction \*** | | |  |  | | --- | --- | | I. Donning and Doffing SCBA | | | A. Most common methods (IFSTA, 2008) | | | 1. | The over-the-head method | | 2. | The coat method | | 3. | Donning from a seat | | 4. | Donning from rear mount or compartment mount | | B. The wearer should follow the manufacturer’s instructions and local | | | standard operating procedures (SOPs) for donning his or her specific | | | SCBA unit | | | C. SCBA checks to complete at shift change or prior to donning the unit | | | include: | | | 1. | Check the air cylinder gauge to ensure that it is full | |  | a) National Fire Protection Association (NFPA) 1404: Standard | |  | for Fire Service Respiratory Protection Training | |  | b) NFPA 1404 Standard recommends that a minimum of 90% of | |  | the cylinder’s rated capacity is a full cylinder | | 2. | Check the remote gauge and the cylinder gauge | |  | a) Ensure that the gauges read within 100 psi of the same | |  | pressure | |  | b) Ensure that gauges not marked in increments of 100 psi are | |  | the same | | 3. | Check the harness assembly and the face piece to ensure that all | |  | of the straps are fully extended |  * 1. Operate all the valves      1. Ensure that they operate properly      2. Ensure that they are in the correct position   2. Check the personal alert safety system (PASS) device manually for proper operation   D. Donning SCBA from a storage case or apparatus compartment   * 1. The specific SCBA manufacturer’s recommendations for donning and use of the SCBA should always be followed   2. Over-the-head method      1. Position the SCBA with the valve end of the cylinder away from the user      2. Open the cylinder valve fully      3. Check the cylinder and the remote pressure gauges         1. Pressure readings must be within 100 psi         2. Needles on both gauges indicate the same pressure for gauges without 100 psi increments      4. Raise the SCBA overhead while guiding your elbows into the loops formed by the shoulder straps      5. Release the harness assembly and allow the SCBA to slide down your back      6. Fasten the chest strap, buckle the waist strap, and adjust the shoulder straps      7. Don the facepiece and check the facepiece seal      8. Connect the air supply to facepiece      9. Activate the PASS device if it is not integrated in the system      10. Don the hood, the helmet, and the gloves   3. Coat method      1. Position the SCBA with the valve end of the cylinder away from the user      2. Open the cylinder valve fully      3. Check the cylinder and the remote pressure gauges         1. Pressure readings must be within 100 psi         2. Needles on both gauges indicate the same pressure for gauges without 100 psi increments      4. Grasp the top of the left shoulder strap on the SCBA with your left hand and raise the SCBA overhead      5. Guide your left elbow through the loop formed by the left shoulder strap and swing the SCBA around your left shoulder      6. Guide your right arm through the loop formed by the right shoulder strap allowing the SCBA to come to rest in the proper position      7. Fasten the chest strap, the buckle waist strap, and adjust the shoulder straps      8. Don the facepiece and check the facepiece seal      9. Connect the air supply to the facepiece      10. Activate the PASS device if it is not integrated in the system      11. Don the hood, the helmet, and the gloves  1. Donning seat-mounted SCBA    1. Firefighters can don SCBA while en-route to an incident    2. It must be performed safely without the firefighter unbuckling his or her seatbelt    3. Three main types of seat-mounting hardware are       1. Lever clamp       2. Spring clamp       3. Flat hook    4. Facepiece should be in a quick-opening bag to protect it from dust and scratches    5. Do not keep the facepiece connected to the regulator during storage       1. These parts must be separated to check for a proper facepiece seal    6. Procedure to don seat-mounted SCBA       1. Open the cylinder valve fully       2. Check the cylinder and the remote gauge readings          1. Pressure readings must be within 100 psi          2. Needles on both gauges indicate the same pressure for gauges without 100 psi increments       3. Position your body in the seat with your back firmly against the SCBA and release the SCBA hold-down device       4. Insert your arms through the shoulder straps       5. Fasten the chest straps, buckle the waist strap, and adjust the shoulder straps       6. Fasten your seat belt before the apparatus moves       7. Don the facepiece and check the facepiece seal       8. Connect the air supply to the facepiece when you are ready to use it       9. Activate the PASS device manually if it is not integrated in the system       10. Don the hood, the helmet, and the gloves    7. Exit the fire apparatus carefully to avoid slips or falls due to the extra weight on your back 2. Donning SCBA from a Side or Rear Mount    1. Takes more time than the seat-mounted SCBA    2. Reduces the chances of slips and falls    3. Saves time compared to SCBA stored in the carrying case due to the elimination of the following steps       1. Removing the equipment case from the fire apparatus       2. Placing it on the ground       3. Opening the case       4. Picking up the unit to don   4.Waterproof covers are desirable   * 1. Donning steps are like seat-mounted units because firefighters only have to back into them  1. Donning from a Compartment or a Back-up Mount    1. Compartment mounts present the same advantages as side or rear-mounted units    2. Some disadvantages       1. Some compartments are too high to back into       2. Some compartment doors may interfere with donning    3. Back-up mounts provide quick access to SCBA    4. If back-up mounts are too high, they need to be removed and donned using the over-the-head method or the coat method    5. Back-up units at the right height can be donned similarly to the seat-mounted units 2. Donning the Facepiece    1. Important differences between facepieces       1. Some use a rubber harness with adjusting straps       2. Some use a mesh skullcap with adjusting straps       3. Some have a different number of adjusting straps       4. The regulator may attach in different ways          1. May attach to the facepiece          2. May be mounted on the waist belt    2. Interchanging facepieces, or any other part of the SCBA, from one manufacturer’s equipment to another voids any warranty and certification (IFSTA, 2008)    3. NFPA 1500 requires that each firefighter be fitted with a facepiece that conforms properly to the shape and size of his or her face    4. General considerations for donning all SCBA facepieces       1. Ensure that no hair comes between your skin and the sealing surface of the facepiece       2. Place your chin in the center of the chin cup and center the harness at the back of your head       3. Tighten the facepiece straps by pulling them evenly and simultaneously          1. Remember that pulling the straps outward may damage them          2. Tighten the straps in this order             1. The lower straps             2. The temple straps             3. The top strap (if present)       4. Check the facepiece for proper seal and operation          1. Ensure that the exhalation valve is functioning properly          2. Ensure that all connections are secure          3. Ensure that the donning mode switch (if present) is in the proper position       5. Check the positive pressure by gently breaking the facepiece seal          1. Insert two fingers under the edge of the facepiece          2. Confirm that you feel air moving past your fingers          3. If you cannot feel air movement, remove the unit from service and tag it for repair       6. Wear the hood over the facepiece harness or straps          1. All exposed skin must be covered          2. Vision must not be obstructed       7. Wear the helmet with the chin strap secured   I. Doffing SCBA   * 1. Doffing techniques differ for different types of SCBA   2. Actions that apply to all SCBA when doffing      1. Doffing SCBA Remove the backpack assembly while protecting the regulator      2. Close the cylinder valve      3. Relieve pressure from the regulator in accordance with the manufacturer’s instructions      4. Extend all the straps      5. Refill or replace the cylinder      6. Clean and disinfect the facepiece      7. Doffing SCBA Skill (IFSTA, 2008)         1. Remove the SCBA         2. Close the cylinder valve completely         3. Bleed air from the high- and low-pressure hoses         4. Check the air cylinder pressure and replace the cylinder if it has less than 90% of rated capacity         5. Return all the straps, valves, and components back to the ready state         6. Inspect the SCBA and facepiece for damage and/or needed cleaning         7. Clean the equipment as needed, remove the damaged equipment from service, and report it to an officer, if applicable         8. Place the SCBA back into the storage area so that it is ready for immediate use   *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 \*** | Donning SCBA –  *Introduction:* Re-engage the students by reviewing the components andlimitations of the SCBA. Demonstrate donning the SCBA using the over-the-head method and the coat method. Stress the importance of safety checks (i.e. cylinder pressure, low-air alarm, PASS device, remote gauge within 100 psi, and good face seal). (*Note:* This activity is designed for groups with limited SCBA resources. If you can assign to each student an SCBA with a mask, the students can practice the entire donning procedure from the beginning.)  *Instructions:* Divide your class into groups (ideally 5 students per group).Assign a leader to each group that is responsible for the group’s learning. If possible, assign each member his or her own SCBA mask; if this is impossible, assign each group a mask and demonstrate how to properly disinfect the mask between users. Assign one SCBA unit per student if possible; if not, then one per group. Have the students with SCBAs don the cylinder and secure the shoulder straps and waist straps within 20 seconds. (*Note:* Have each student repeat this until the time limit is successfully met.). At the same time, have the students with the masks complete the following while in a kneeling position: remove their helmets, put on their masks, check for a good seal, don their hoods, and then don their helmets. (*Note:* Have each student repeat this until the time limit is successfully met.). Have the students rotate between donning the cylinder and the mask until they are proficient. Assign an SCBA and a mask to each student or group. Have the students combine the donning procedures of the cylinder and the mask. Each student should complete the following tasks within one minute:   * Read the cylinder pressure * Open the cylinder valve * Acknowledge that the low-air alarm and the PASS device are working * Verify that the remote gauge and the cylinder gauge are within 100 psi * Don the SCBA cylinder using one of the methods * Don the mask * Check for a good seal * Don the hood * Don the helmet * Connect the air supply to the mask * Don the gloves   Remind the students that they must practice repeatedly. Use the following checklists for assessment:   * Donning SCBA Using the Coat-Method Checklist * Donning SCBA Using the Over-the-Head Method Checklist * Donning SCBA Using the Seat-Mounted Method Checklist * Peer Evaluation   *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 \*** | *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  NONE | |
| **Lesson Closure** |  | |
| **Summative/End of Lesson Assessment \*** | Donning and Doffing SCBA Quiz and Key  Donning SCBA Using the Coat-Method Checklist  Donning SCBA Using the Over-the-Head Method Checklist  Donning SCBA Using the Seat-Mounted Method Checklist  Peer Evaluation  Discussion Rubric  Individual Work Rubric  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  **Accommodations for Learning Differences:**  For reinforcement, students will write and memorize the steps for the methods of donning SCBA or create a computer-based presentation illustrating the procedures. Use the Individual Work Rubric for assessment. | |
| **References/Resources/**  **Teacher Preparation** | 0135151112, *Essentials of Firefighting and Fire Department Operations* (5th Edition), International Fire Service Training Association (IFSTA), 2008. | |
| **Additional Required Components** | | |
| **English Language Proficiency Standards (ELPS) Strategies** |  | |
| **College and Career Readiness Connection[[1]](#footnote-1)** | Cross-Disciplinary Standards  I. Key Cognitive Skills  C. Problem solving   1. Analyze a situation to identify a problem to be solved. 2. Develop and apply multiple strategies to solve a problem. | |
| **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, students will research the SCBA manufacturer’s specifications and summarize their findings. Use the Individual Work 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)