Reviewing and Adapting a Cognitive Lesson Plan

Format: Whole class (instructor guided)

Time Frame: 30 minutes

Description
This instructor-guided activity provides students with an opportunity to review cognitive instructional materials and determine which elements of the lesson plan, learning environment, and resources need adaptation.

Materials
- Cognitive Lesson Plan Checklist (see Online Resources)
- Lesson plan: Characteristics and Functions of Fire Service Ground Ladders (included) or similar
- Pen or pencil

Instructions

Scenario: You are given a lesson plan designed for students with no prior knowledge of ground ladders. As you begin teaching you realize your audience already has a solid basic understanding and does not require the level of detail included in the plan. How would you adapt the plan to meet this challenge?

1. Review the attached lesson plan.
2. Determine the adaptations required to revise the lesson plan to meet the following condition:
   - Audience already has a basic understanding of the content
   - Material can be delivered in a 15-minute timeframe
3. Evaluate each component to identify required adaptations.
4. Using the checklist and the space on the course plan, document required adaptions.

Sample Lesson Plan

Topic: Characteristics and Functions of Fire Service Ground Ladders

Time Frame: 30 minutes

Level of Instruction: Level II

Authority: Fire Fighter 1 Certification Training Standard (2019)

Terminal Learning Objective:

At the end of this topic a student, given single and extension ladders, and assignment, team members (if needed), and personal protective equipment, will be able to set up ground ladders, assess hazards, ensure ground ladders are stable and their angles are correct for climbing, extend extension ladders to the necessary height and lock their flies, place the tops of the ladders against reliable structural components, and accomplish the assignment.

Enabling Learning Objective:

1. Identify the types, parts, and construction features of ground ladders
2. Identify the uses of ground ladders

Materials Needed:

- Writing board with markers/erasers
- Appropriate audiovisual training aids

References:

- *Essentials of Fire Fighting* (IFSTA, 7th edition)
- *Fire Service Ground Ladders* (IFSTA, 9th edition)
- *Firefighter's Handbook* (Delmar, 3rd edition)

Preparation:

The ladder is a basic and important tool of the fire fighting profession. It is imperative that the fire fighter be familiar with a ladder's components and the correct terminology. This understanding is one of the first steps towards proper ladder uses.

I. LADDER CHARACTERISTICS AND TERMS

A. Major components

1. Beam

a) One of two principal structural members of a ladder

i. Exception is Pompier ladder with only one beam

ii. Some wooden ladders have a main beam and a truss beam

- Truss beam has a smaller diameter and a slight curve

b) Tie rods

i. Bolts which pass through both rails at a truss block of a wooden ladder

c) Two types

i. Solid

ii. Truss

- Also referred to as rails or side rails
- Two lengthwise members of a trussed ladder beam
- Separated by truss or separation blocks

2. Rungs

a) Cross members which provide a handhold and foothold for climbing

b) Extend from one beam to the other

3. Bed section

    a) Lowest and widest section of a ground ladder

4. Fly section(s)

    a) Upper section of

        i. Extension ladders

        ii. Pole (Bangor) ladders

        iii. Some combination ladders

B. Attachment components

1. Anchor (halyard)

    a) Part of the ladder which the halyard is attached to

2. Dogs

    a) Also known as pawls and locks

    b) Devices which hold the fly sections at desired height during use

    c) Found on all extension ladders

3. Guides

    a) Wood or metal strips on an extension ladder which guide the fly section while being raised

    b) Sometimes in the form of slots or channels

4. Halyard

    a) A rope or cable used for hoisting and lowering the fly section of an extension ladder

    b) Minimum ⅜-inch diameter per manufacturer

c) Minimum breaking strength 825 pounds

5. Cable (wire rope)

a) Used in place of halyard on three and four section extension ladders

b) Minimum 3/16-inch diameter (5mm)

c) No splices allowed

6. Butt

a) Also called heel or base

b) Bottom end of the ladder

c) The end which is placed on the ground

d) Used as supporting surface when ladder is being raised

7. Tip

a) Also called top

b) The extreme top of the ladder

8. Heel (butt spurs)

a) Metal safety plates or spurs attached to heel of a ground ladder to prevent slippage

b) Different arrangements for wood, metal, and fiberglass ladders

c) Protects the beams

d) Most effective on soft surfaces

9. Hooks

a) Curved, pointed metal devices at the tip of the roof ladder

b) Generally used in pairs

c) Fold outward from each beam 90°

d) Secures a ladder on a pitched roof

10. Protection plates

a) Plates fastened to a ladder

b) Prevents wear where the ladder comes in contact with mounting brackets

11. Pulley

a) Small grooved wheel through which the halyard is drawn

12. Safety shoes

a) Rubber or neoprene spike plates, usually of swivel type

b) Attached to heel of a ground ladder

13. Spurs

a) Metal points at the lower end of tormentor or stay poles

b) Butt spurs refer to metal plates or spurs at the bottom of a ground ladder

14. Toggle

a) A device by which a tormentor pole is attached to a ladder

15. Tormentor poles

a) The poles that are attached to long extension ladders

b) Also called stay poles

16. Stops

a) Wood or metal pieces which prevent fly section from being extended too far

17. Tie rods

a) Metal rods running from one beam to the other

b) Found on wooden ladders

c) Used to secure beams together

18. Truss block

a) Separation pieces between the rails of a trussed ladder

b) Sometimes used to support rungs

19. Identification

a) Serial number

i. Each ladder bears a unique identification number

b) City inventory

i. Unique number for each ladder

c) Apparatus or assignment markings

i. Apparatus identification

ii. May be color coded

iii. Identifies length

20. Heat sensor label

a) A label affixed near the top of each section of the ladder

i. Turns color at a present temperature

ii. Color change indicates the ladder has been exposed to excessive heat

- Exposure to excessive heat requires testing

II. LADDER TERMINOLOGY

A. Measurement

1. Angle of inclination

a) Refers to the angle of an in-place ladder in relation to the horizontal

b) Recommended proper angle of inclination is approximately 75°

2. Designated length

a) Total extended length

b) Length marked on ladder

3. Working length

a) Total length at proper climbing angle

4. Inside width

a) The distance measured from the inside of beam to the inside of the opposite beam lock

5. Outside width

a) The distance measured from the outside of one ladder beam to the outside of the opposite ladder beam

6. Maximum extended length

a) The total length of an extension ladder or some combination ladders, when all fly sections are fully extended with the dogs (pawls) engaged

B. Operations

1. Bedded position - Definition #1

a) Also called grounded

b) Fully retracted position of an extension ladder

2. Bedded position - Definition #2

a) Position in which the ladder is carried on the apparatus

3. Nesting

    a) Procedure whereby ladders of different sizes and/or types are racked partially within one another

    b). Reduces storage space

    c) Most common arrangement

4. Pivot

    a) Method used to turn ladder in vertical position by leaning on one beam

5. Retracted

    a) Another term for bedded position

6. Tying off

    a) Tying knot to secure excess halyard used to extend fly sections of a ladder

Summary:

Fire service ground ladders are designed to perform varying functions. The specific task will determine which types of ladders are to be used. Although these functions are usually similar in different parts of the country, the nomenclature and trade terms may vary considerably. Because of these semantic variations, it is difficult to discuss ladder terms without first having an understanding of their meaning.

Evaluation:

The student will complete the written test at a time determined by the instructor.

Possible Adaptations

- Change Topic to: Components of Fire Service Extension Ladders
- Change Time Frame to: 15 minutes
- Change Level of Instruction to: Level I
- Change Condition to: Formative Test
- Change Behavior to: The student will confirm a knowledge of the components of fire service extension ladders
- Add extension ladders or AV images of same to “Materials Needed”.
- Re-word “Preparation” to emphasize immediacy of the lesson to students, for example:

  A fire fighter's life regularly depends on an extension ladder. Several important components comprise the ladder, and your understanding of these will have a direct effect on your ability to use, inspect, and maintain them, in turn affecting the safety of yourself and your crew.
- Change outline item I. to: Components of Extension Ladders
- Under A. Major Components, 1. Beam:
  - Delete “Exception is Pompier ladder with only one beam” (because not applicable);
  - Delete Tie Rods (because redundant with item #17);
  - Delete info on #9 Hooks
- Delete sections II and III of outline; measurements and operation of ladder are not components of a ladder.
- Re-word Summary to emphasize how understanding components of a ladder impacts safety, for example:

  As a fire fighter, it is critical that you know and understand the tools you are using. An extension ladder has several parts that must work together to keep it safe and functional. You must know each component, what it does, and how to inspect it to ensure you will be able to use the ladder safely and effectively at the scene of an emergency. Any confusion or error based upon lack of knowledge can have tragic consequences.