

The background of the slide is a teal color with a faint, semi-transparent image of industrial machinery, including pipes, tanks, and structural elements, overlaid on it.

TRAINING 101: DEVELOPMENT

**Presented to: NAPTA Instructor
Skills Conference VII**

PRESENTER BIO

Tammy D. Netherland
Director of Business Support
Systran

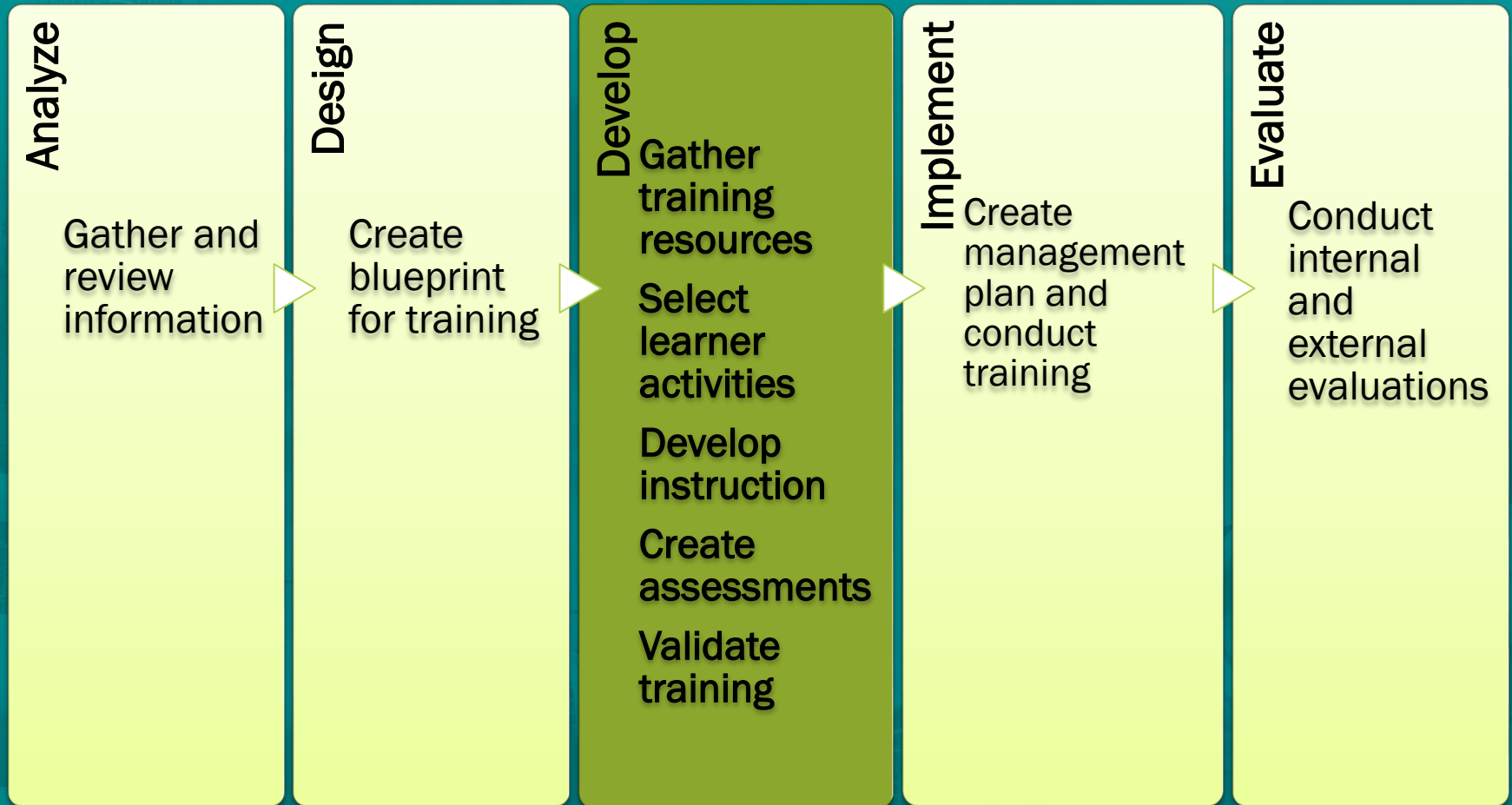
- Over 18 years in adult learning, training development, and project management
- Designed, developed, implemented and evaluated training material for multiple chemical and refining companies

LEARNING OBJECTIVES

After this session, the participant will be able to:

- List the steps in the development process
- List the elements of a learning event
- Identify appropriate media, exercise, and assessment techniques to ensure maximum knowledge transfer
- Demonstrate selection of learning activities to best achieve lesson objectives

INTRODUCTION



INTRODUCTION

What is Learning?

- Learners are capable of doing something that they could not do before the learning experience
- Relatively permanent change in behavior that occurs as a result of reinforced practice
- An observable change in behavior



PREPARING FOR DEVELOPMENT

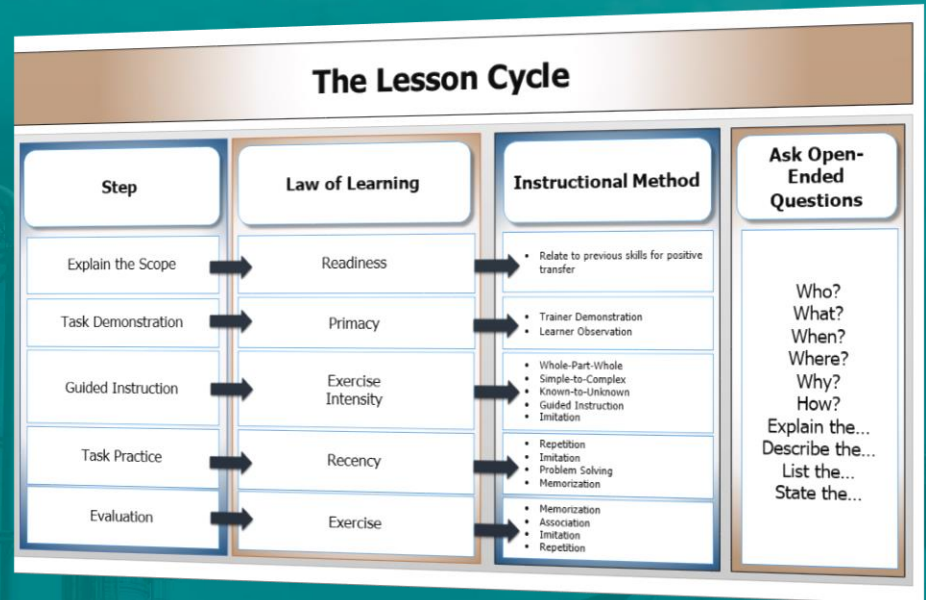
Outlines

- Initial specification for content requirements
 - Comes from Analysis and Design outputs
 - Determines the topics and level of detail
 - Identifies the learning activities
- Requires research to identify
 - Support materials
 - Sources of content
- Ensures alignment with customer requirements
- Keeps developer on topic



LEARNING EVENT STRUCTURE

- Explain the Scope
 - Objectives
 - Introduction
- Content
 - Task Demonstration
 - Guided Instruction
 - Task Practice
- Summary
- Assessment



LEARNING EVENT - LEARNING OBJECTIVE

- **Purpose**
 - Defines level and type of content to be developed
- **Components**
 - Measureable and observable
 - Action verbs
 - Criteria for success



*Keystone of Lesson Planning,
Development and Delivery*

LEARNING EVENT – OBJECTIVES EXAMPLES

After this lesson, the learner will be able to:

- List the major components of a heat exchanger
- Describe the purpose of the major components of a heat exchanger
- Explain the theory of operation of a shell and tube heat exchanger
- Trace the process flow through a heat exchanger with no errors
- Demonstrate the steps to return an exchanger to service with 100% accuracy

LEARNING EVENT – INTRODUCTION

Purpose

- Stimulates recall of previous knowledge and experience
- Personalizes learning
 - What YOU will learn
 - What YOU will get out of the training
- Includes WIIFM

Electrical Technician
Area Classification Module JG09

Introduction

As an electrical technician, your primary area of responsibility is to maintain electrically powered equipment. You will work in areas of the plant where volatile liquids and gases are considered flammable.

Under normal operating conditions, electrical equipment is a potential ignition source. Equipment such as motor starters, circuit breakers, switches and relays can create arcs when they open or close. Electrical equipment also has the potential of being an ignition source under abnormal operating conditions. Arcs can occur because of insulation breakdown, wire breaks or due to the opening of a fuse.

As an electrical technician, you must use equipment and work processes that eliminate the possibility of creating ignition sources. This module describes how area and zone classification helps to prevent hazardous conditions.

LEARNING EVENT – CONTENT

Chaining or Association

- Linkage to things you already know about
- Relevance to you improves retention
- Known-to-unknown

Multi-sensory

- What you see, hear, and do increases retention
- 70% of learning occurs in OJT/hands-on

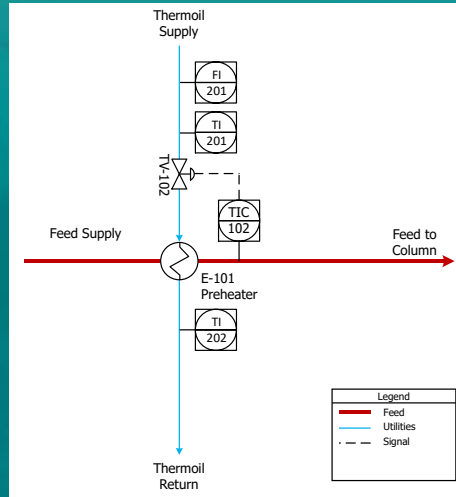
Chunking

- You store information in your brain in small segments
- Information organization improves retention
- Simple-to-complex
- Whole-part-whole

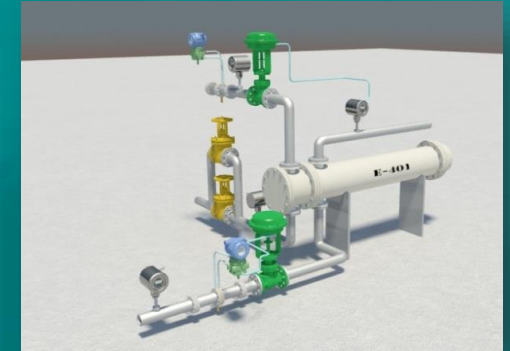
LEARNING EVENT – CONTENT MEDIA TYPES



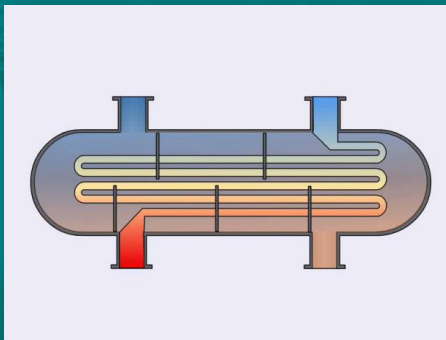
Photographs



Line drawings/diagrams



Illustrations



2D

Animations



3D

LEARNING EVENT – CONTENT TYPES

Facts/Concepts

- Location, appearance, purpose
- Job aids, mnemonics
- Descriptions
- Photos, illustrations

Processes

- Descriptive explanations
- Diagrams, illustrations

Procedures

- List of ordered steps
- Explanations of how to perform steps
- Photos, diagrams,
- Video, animations, simulations

Principles

- Cause and effect statements
- Rules or guidelines
- Examples and non-examples, analogies
- Cutaway illustrations, animations, simulations

LEARNING EVENT - MEDIA SELECTION & USE

Graphic Selection

- Related to training materials
- Appropriate for content
- Focus information

Labeling

- Content and labeling must connect

Layout

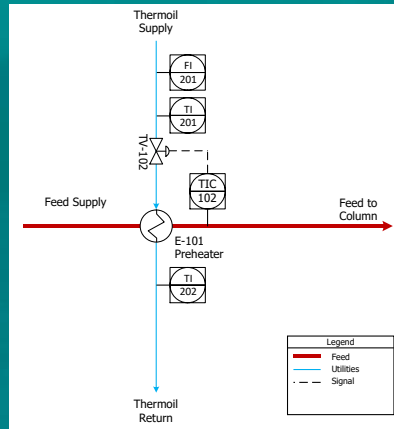
- Content first - graphic below it

CLASS DISCUSSION – MEDIA SELECTION

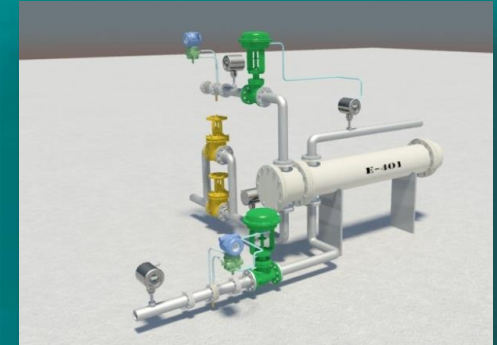
List the major components of a heat exchanger.



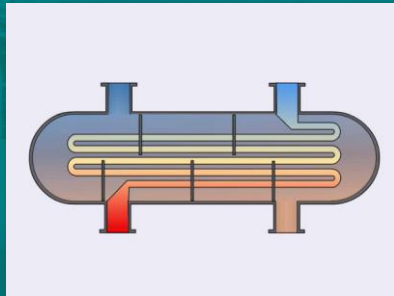
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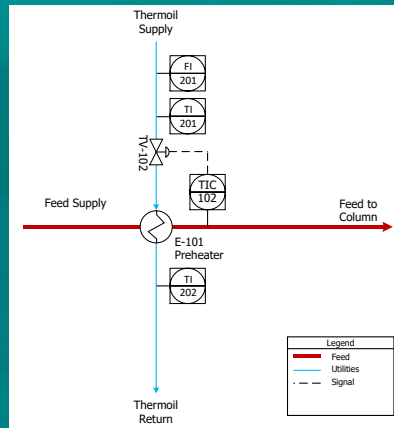
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CLASS DISCUSSION – MEDIA SELECTION

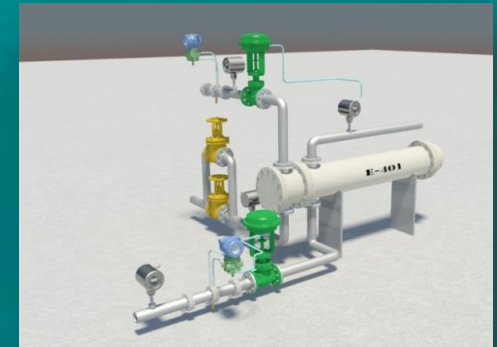
Explain the theory of operation of a shell and tube heat exchanger.



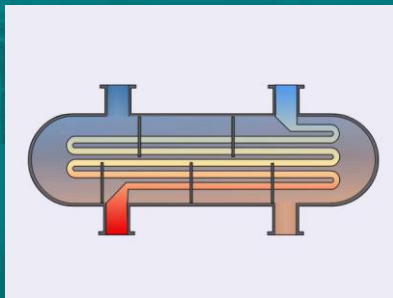
Photographs



Line drawings/diagrams



Illustrations



2D

Animations



3D

CLASS DISCUSSION - EXERCISE TYPES

Describe the purpose of the major components of a heat exchanger.

Facts/Concepts

- Job aids, mnemonics
- Design exercises that apply to job tasks
- Locate
- Identify
- Label
- Match

Processes

- Descriptive explanations
- Case studies
- Design exercises to solve problems/make predictions

Procedures

- List of ordered steps
- Practice steps
- Talk-through
- Walk-through
- Simulation

Principles

- Cause and effect statements
- Rules or guidelines
- Examples and non-examples, analogies
- Design exercises using problems, scenarios, role play
- Simulation

CLASS DISCUSSION - EXERCISE TYPES

Demonstrate the steps to return an exchanger to service with 100% accuracy.

Facts/Concepts

- Job aids, mnemonics
- Design exercises that apply to job tasks
- Locate
- Identify
- Label
- Match

Processes

- Descriptive explanations
- Case studies
- Design exercises to solve problems/make predictions

Procedures

- List of ordered steps
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Principles

- Cause and effect statements
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LEARNING EVENT - ASSESSMENT

Basic Rules

- Goal of assessment
- Relates to learning objectives
- Questions and answers covered in content
- Variety of question types

CLASS DISCUSSION - ASSESSMENT TYPES

Identify appropriate media, exercise, and assessment techniques to ensure maximum knowledge transfer.

Facts/Concepts

- Multiple choice
- Labeling
- Matching

Processes

- Labeling
- Sequencing
- Short answer

Procedures

- Listing
- Sequencing
- Talk-through
- Walk-through
- Simulation
- Demonstrate following steps

Principles

- What-if scenarios
- Demonstrate problem solving
- Short answer
- Simulations

LEARNING EVENT - SUMMARY

- Lesson objectives guide development
- Use outlines to keep alignment and focus
- Organize your content
 - Whole-part-whole
 - Simple-to-complex
 - Known-to-unknown
- Select media based on type of learning
- Choose exercises that reinforce learning
- Create assessments that align to objectives and are based on the information/tasks

SUMMARY

In this lesson, you learned about the development phase of the ADDIE model, including:

- Steps in the development process
- Components of a learning event
- Identification of appropriate media, exercise, and assessment techniques
- Selection of learning activities

QUESTIONS

For more information, contact:

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