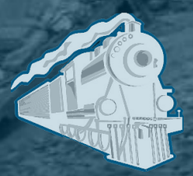
Learning Theory I



Train Systems

Introduction

Train Systems

Course overview

- Learning Theory I
- Train Systems employees for Training Delivery development
- 4 hours 20 minutes
- 4 modules
- Performance assessment will include questions and answers with tasks

Performance objectives

At the end of this course, participants will be able to do the following:

- Placeholder
- Placeholder
- Placeholder

Trains vision, mission, and goals

acela

VISION:

Moving America where it wants to go

Delivering intercity transportation with superior safety, customer service and financial excellence.

MISSION:

GOALS:

Safety & Security

Set the standard for safety and security in the transportation industry to ensure that every passenger and employee goes home injury-free every day.

Customer Focus

To acquire and retain the most satisfied customers of any travel company in the world.

Financial Excellence

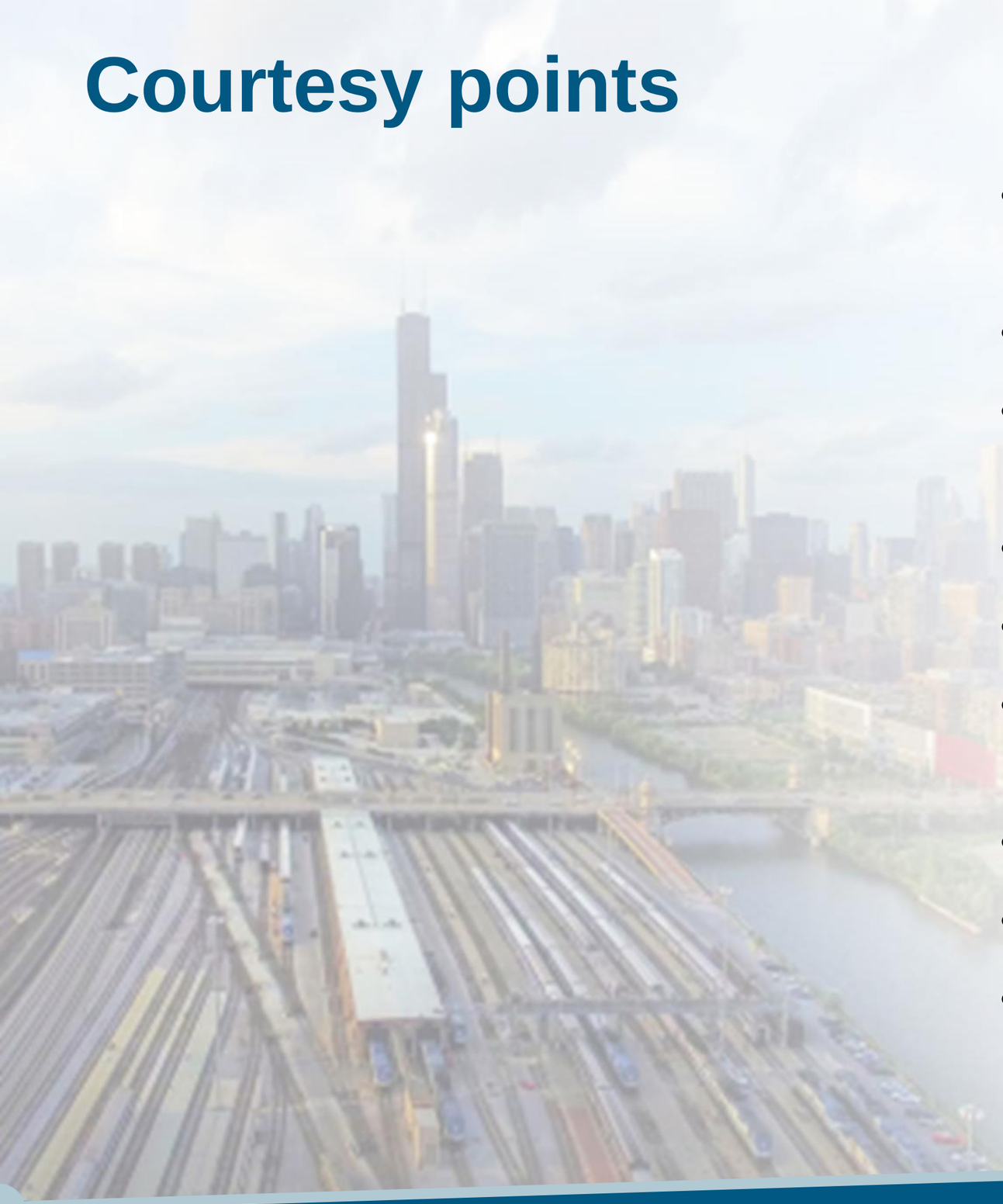
To be profitable on an operating basis (as defined by our operating ratio) and be good stewards of capital in order to secure our long-term viability as a company.

Trains safety statement

These principles must guide our actions at work at all times:

- Safe behaviors are a condition of employment.
- Working safely is everyone’s responsibility.
- Education and accountability are required for good safety performance.

Courtesy points



- Cell phones silenced; set to vibrate or turned off
- Refrain from texting
- Be respectful of other people’s thoughts and values
- Keep side conversations to a minimum
- Allow others to speak without interruption
- Disagreement is okay, as long as it is over ideas
- Ask questions freely and openly
- Learn from everyone
- Have fun!

Behavioral Learning Theory

Train Systems

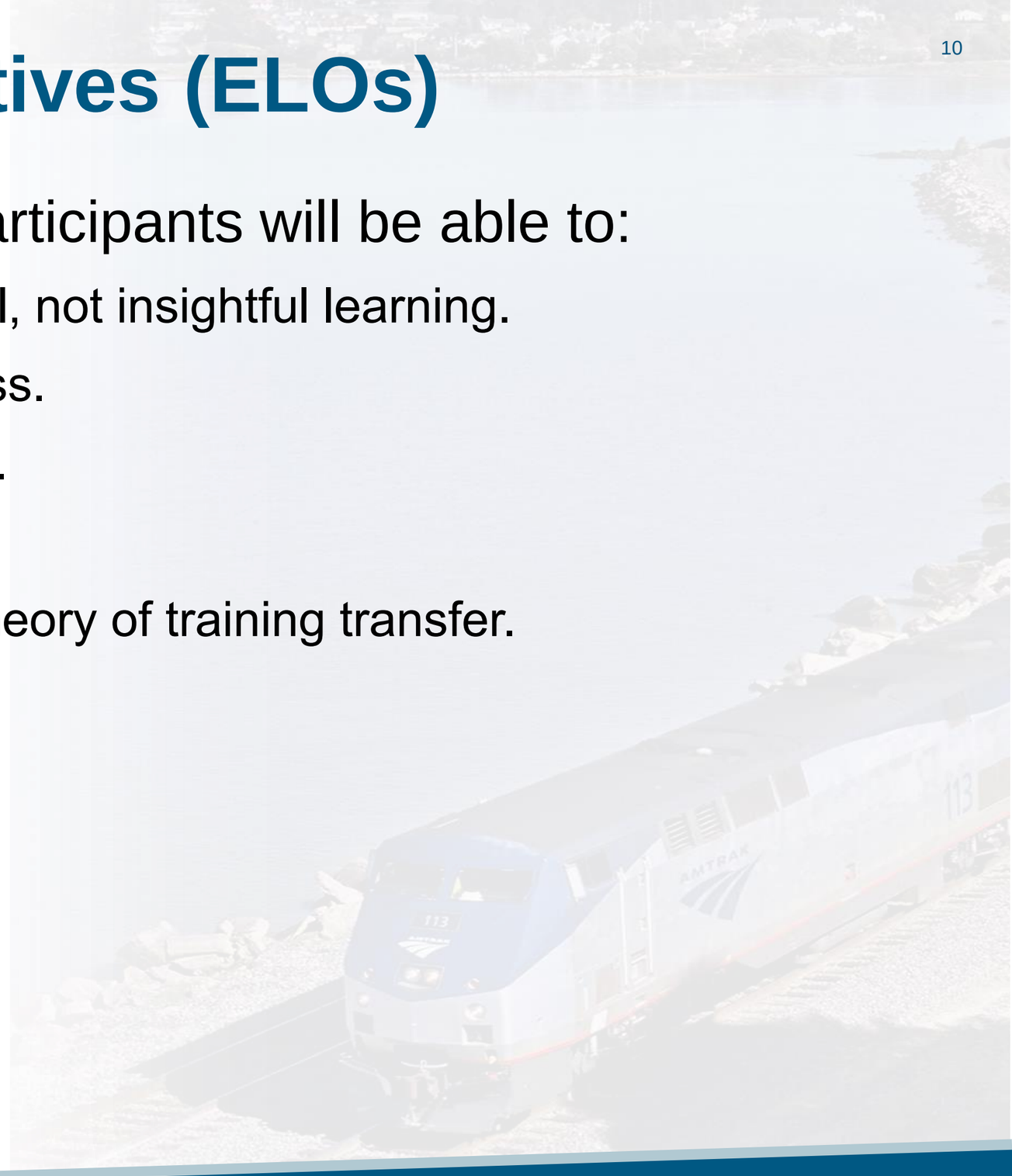
Edward Thorndike (1874-1949)

Train Systems

Enabling learning objectives (ELOs)

At the completion of this lesson, participants will be able to:

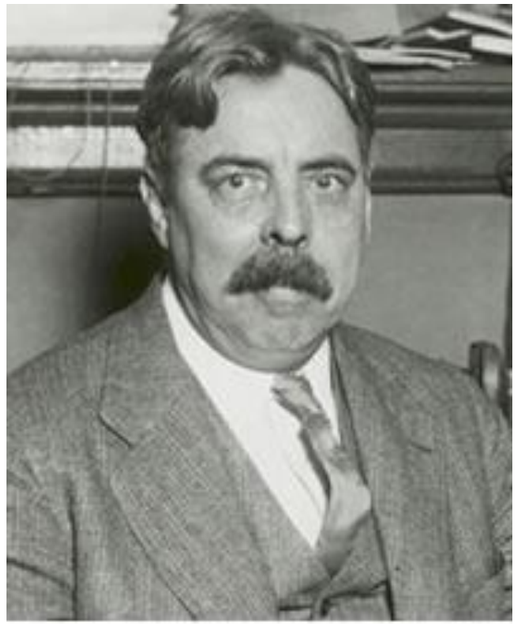
- Explain Thorndike’s idea of incremental, not insightful learning.
- Apply Thorndike’s idea of belongingness.
- Discuss Thorndike’s Law of Readiness.
- Discuss Thorndike’s Law of Effect.
- Apply Thorndike’s identical elements theory of training transfer.



Background

Edward Thorndike provided many contributions on reinforcement theory and behavior analysis. He believed that instruction should pursue specified, socially useful goals. His characteristics included:

- Prolific researcher
- Research centered on studying how animals learn
- Learning is building neural bonds/connections between stimulus and response (connectionism)

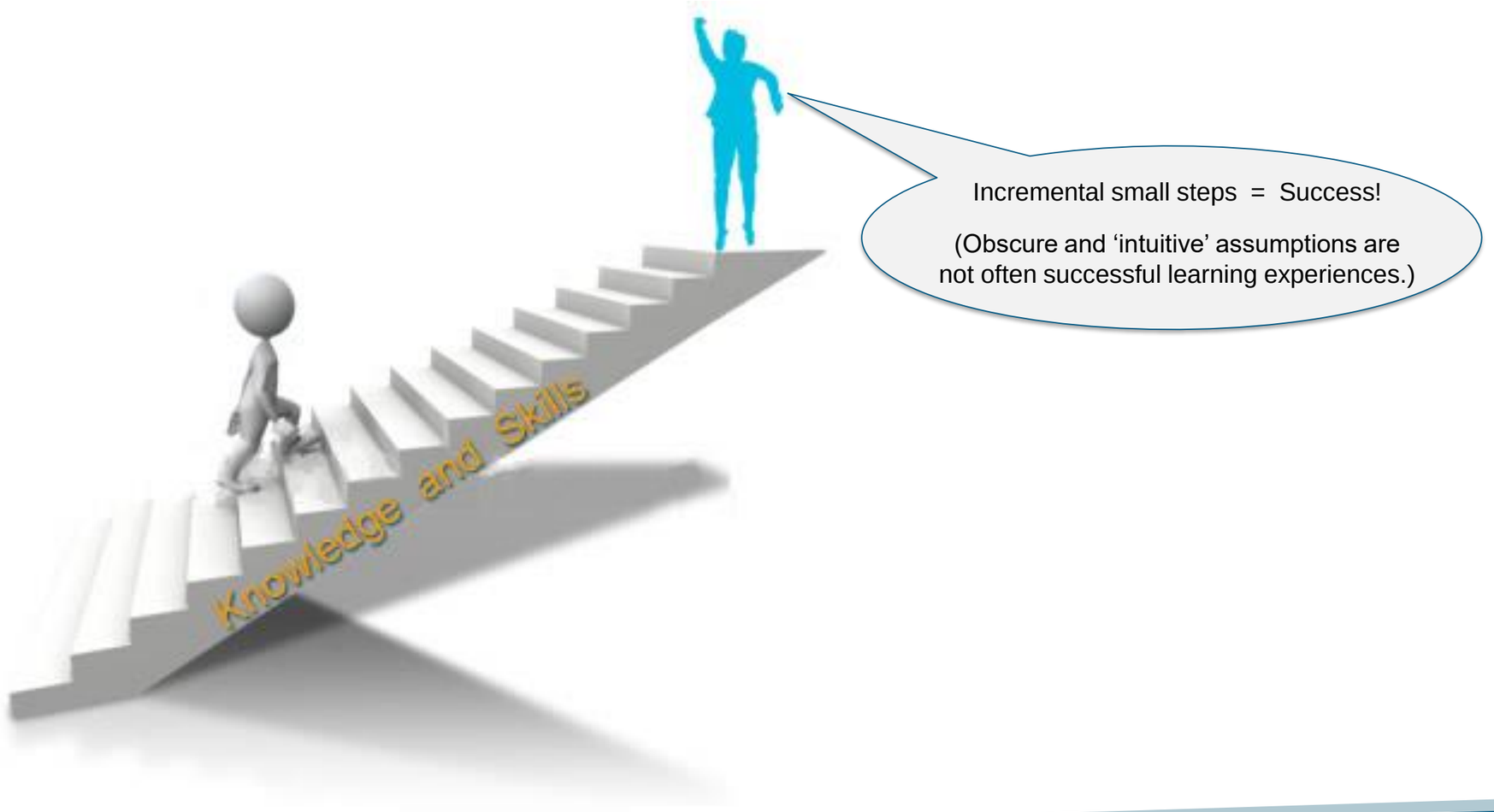


Edward Thorndike (1874-1949)

Learning is incremental, not insightful

Thorndike proposed that:

- Learning occurs in very small systematic steps rather than in huge jumps.



Belongingness

Thorndike further believed that:

- Things that are related or ‘belong together’ are easier to learn than things that don’t.

Related	Not related
Values Beliefs Morals	

Law of readiness

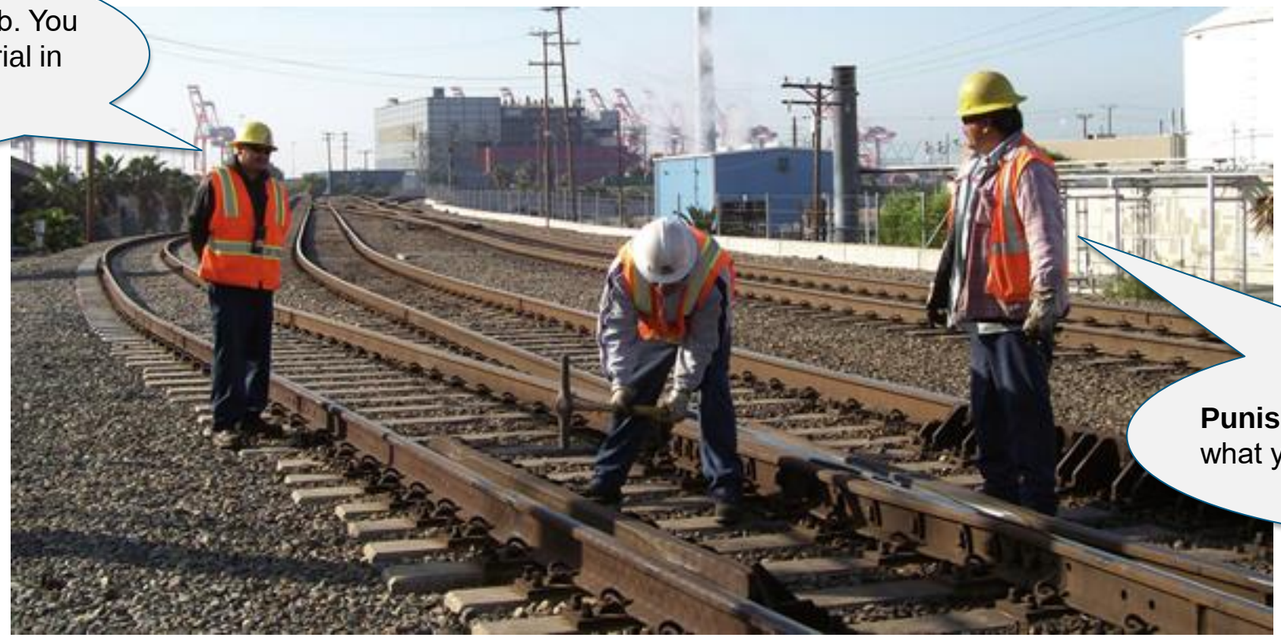
- When someone is ready to perform some act, to do so is satisfying.
- When someone is ready to perform some act, not to do so is annoying.
- When someone is not ready to perform some act and is forced to do so, it is annoying.

Ready	Not ready
	
Satisfying	**Annoying**

Revised law of effect

- Reinforcement increases the strength of a connection, whereas punishment does nothing to the strength of the connection.

Reinforcement: “Jim, that’s a great job. You really learned and practiced your material in training. Well done.”



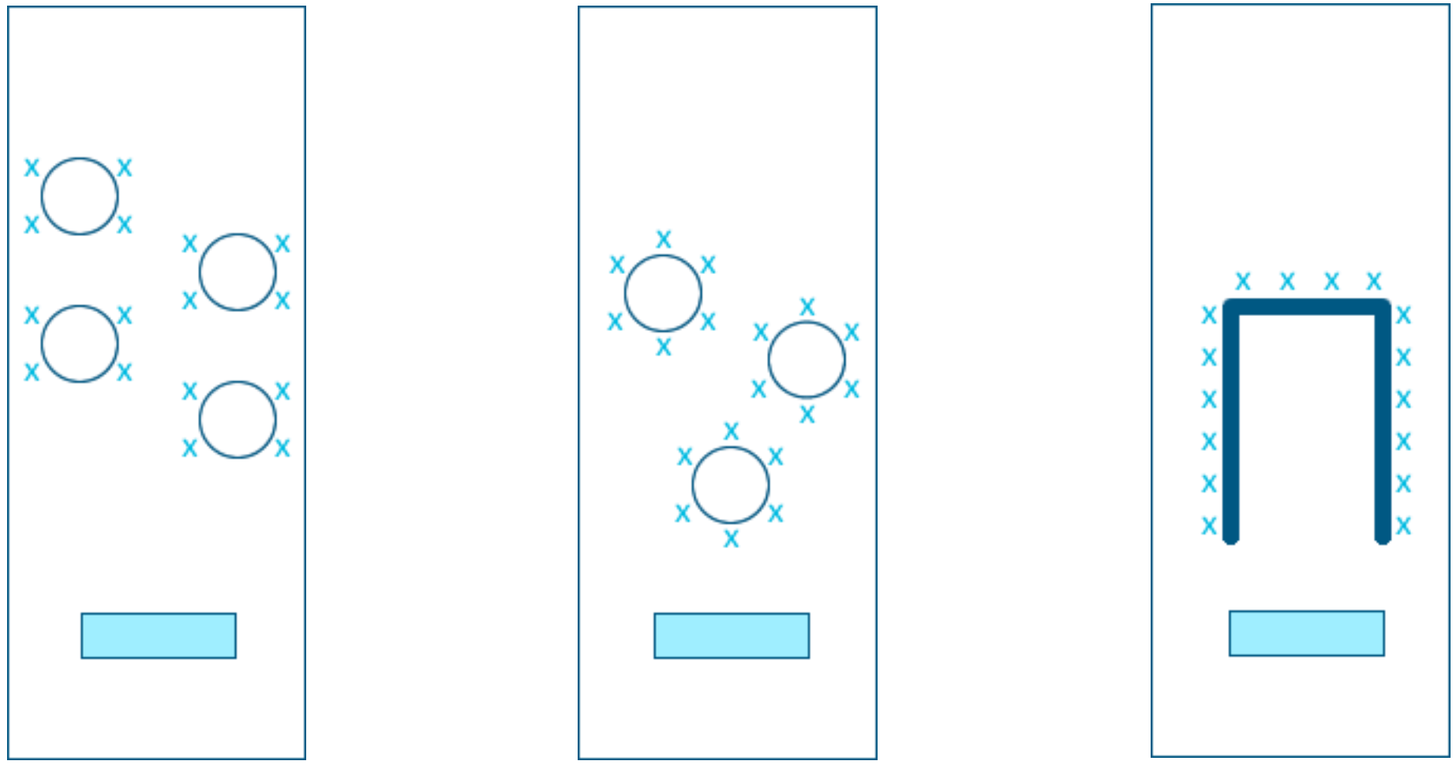
Punishment: “No, not that tool. Remember what you practiced during your training?”

Spread of effect

- When someone gains satisfaction with a response, it increases the probability of getting that response. It also increases the probability of getting responses that surround the initial response.

Identical elements of theory

- More training transfers when the situations have similar (or familiar) elements.



Room set-up examples

Practical exercise #1

Refer to your *Participant Guide* page 14.

- Let’s break into small groups (3-4 participants per group)
- Read the scenario
- Answer the questions together with all participant’s sharing
- Choose someone to report out to the class

60 minutes total time:

- 25 minutes for small groups to discuss
- 30 minutes for group report outs (5 minutes per group)

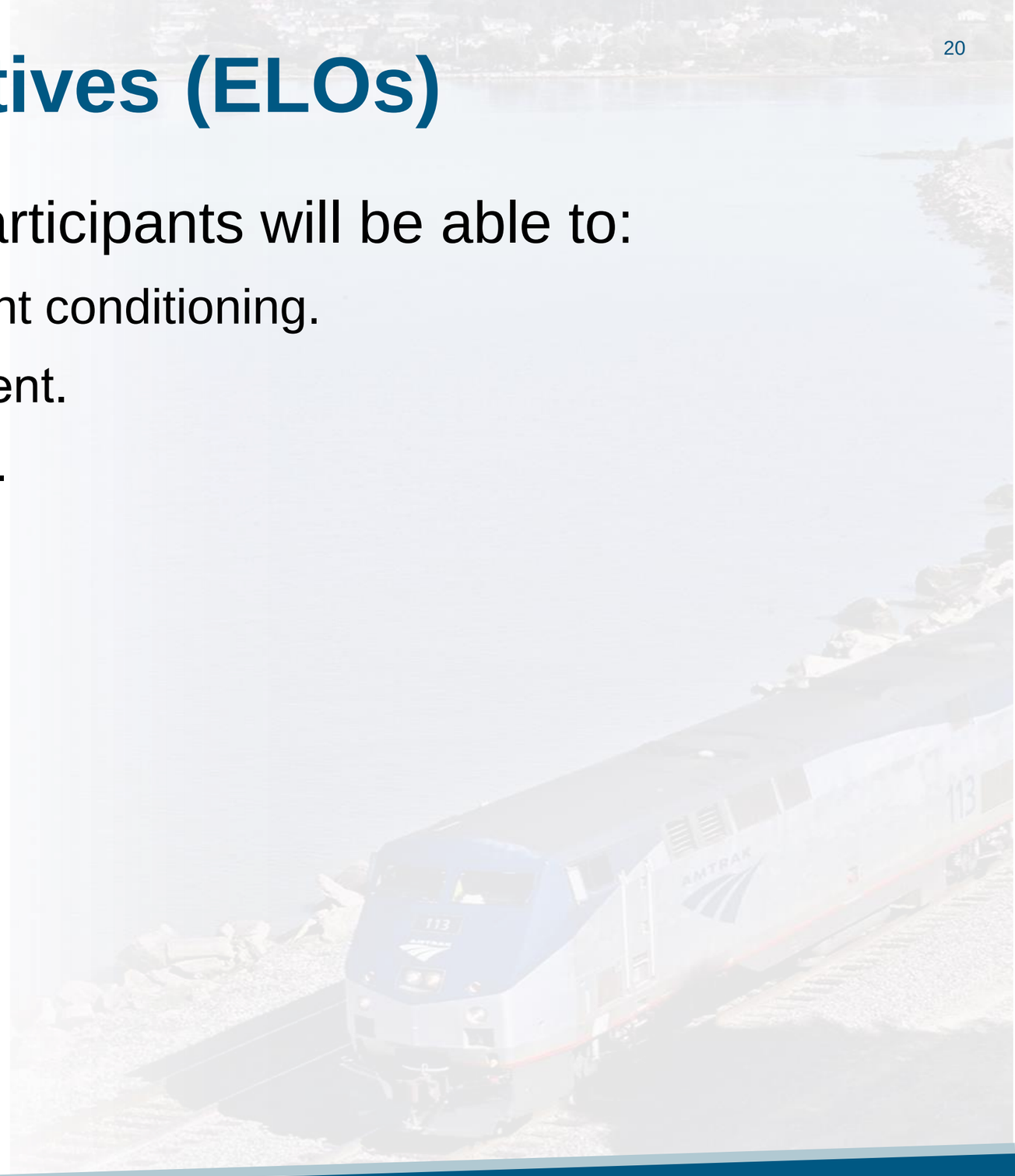
BF Skinner (1904-1990)

Train Systems

Enabling learning objectives (ELOs)

At the completion of this lesson, participants will be able to:

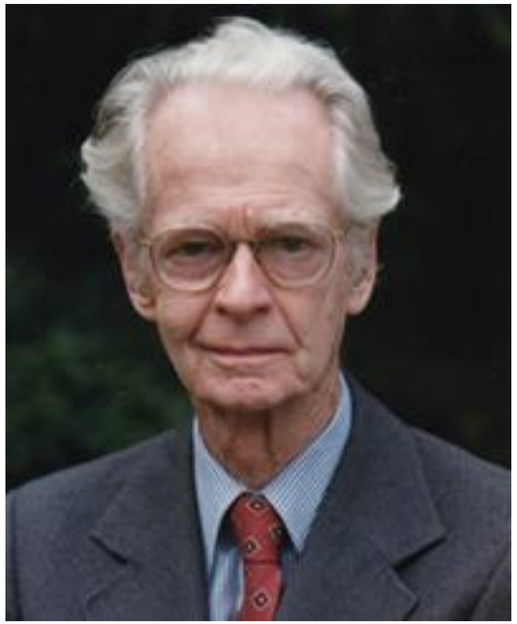
- Explain what Skinner defined as operant conditioning.
- Discuss Skinner’s ideas on reinforcement.
- Discuss Skinner’s ideas of punishment.
- Apply Skinner’s ideas on learning.



Background

BF Skinner was an American psychologist, behaviorist, author, inventor, and social philosopher. He considered free will an illusion and human action dependent on consequences of previous actions. His contributions included:

- Prolific researcher
- Arrange the environment to change behavior



BF Skinner
(1904-1990)

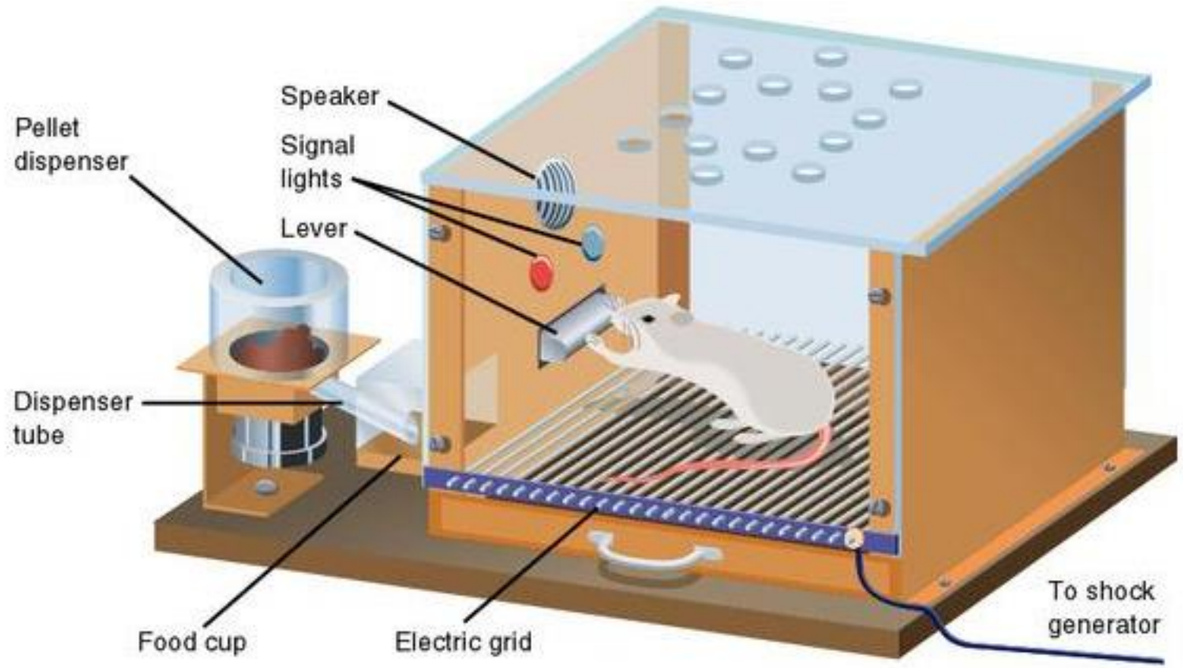
Conditioning

- Operant (Type R)
  - Emphasizes the response
  - Most of Skinner's work is in this area

In Skinner's research, the term *operant* was used to refer to any "active behavior that operates upon the environment to generate consequences."

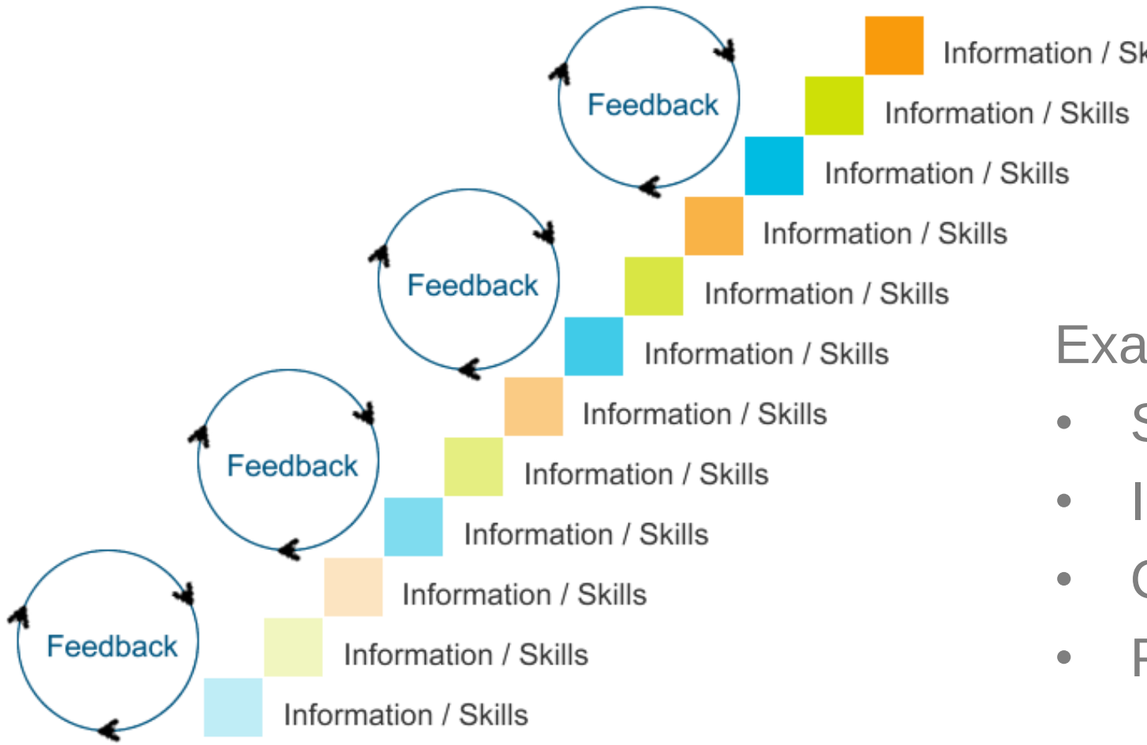
A study showed that if mice pressed a blue button, food was received (positive response). If a red button is pressed, a mild electric shock was received (negative response).

Mice learned to press the blue button and avoid the red button.



Learning

- Learning proceeds most effectively if:
  - Information is presented in small steps;
  - Learners are given rapid feedback concerning the accuracy of their learning; and
  - Learners are able to learn at their own pace.



Examples of learners able to learn at their own pace:

- Self study
- Independent reading
- Coaching/mentoring per learner time & opportunity
- Practice (with or without an instructor guiding)

Reinforcement

- A reinforcer is anything that increases the probability of a response recurring.
  - Positive reinforcers – presenting stimuli
  - Negative reinforcers – removing stimuli
  - Controlling reinforcement, controls behavior
- Punishment
- Either take away something an organism wants, or give it something it does not want.
- Temporarily suppresses behavior
- When punishment is removed, the rate of behavior returns to its original level.
- Alternatives to punishment may include:
  - Change circumstances that lead to undesirable behavior
  - Let the organism perform undesired behavior until satiated
  - Reinforce behavior incompatible with undesirable behavior
  - Ignore it
  - Let time pass

Practical exercise #2

Refer to your *Participant Guide* page 19.

- Let’s break into small groups (3-4 participants per group)
- Read the scenario
- Answer the questions together with all participant’s sharing
- Choose someone to report out to the class

60 minutes total time:

- 25 minutes for small groups to discuss
- 30 minutes for group report outs (5 minutes per group)

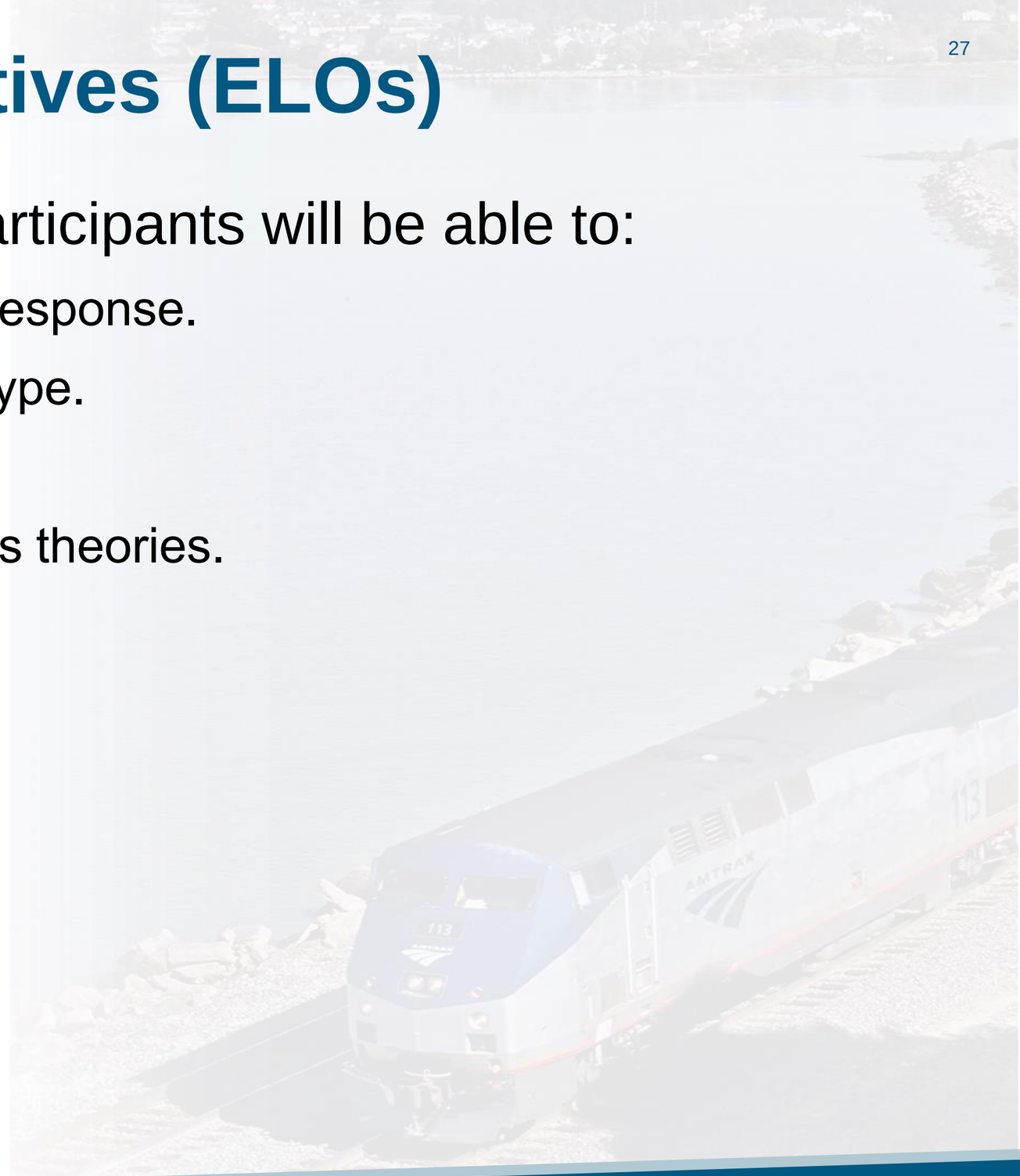
Ivan Pavlov
(1849-1936)

Train Systems

Enabling learning objectives (ELOs)

At the completion of this lesson, participants will be able to:

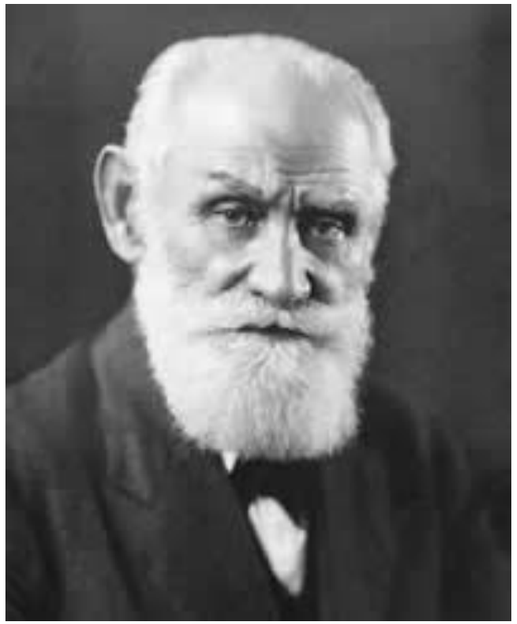
- Describe Pavlov's idea of conditioned response.
- Apply Pavlov's idea of dynamic stereotype.
- Apply Pavlov's idea of generalization.
- List challenges associated with Pavlov's theories.



Background

Ivan Pavlov had an unusual intellectual curiosity and instinct for research in the fields of physiology and psychology. He won the *Nobel Prize for Physiology or Medicine* in 1904 with his extensive work in classical conditioning. His studies included:

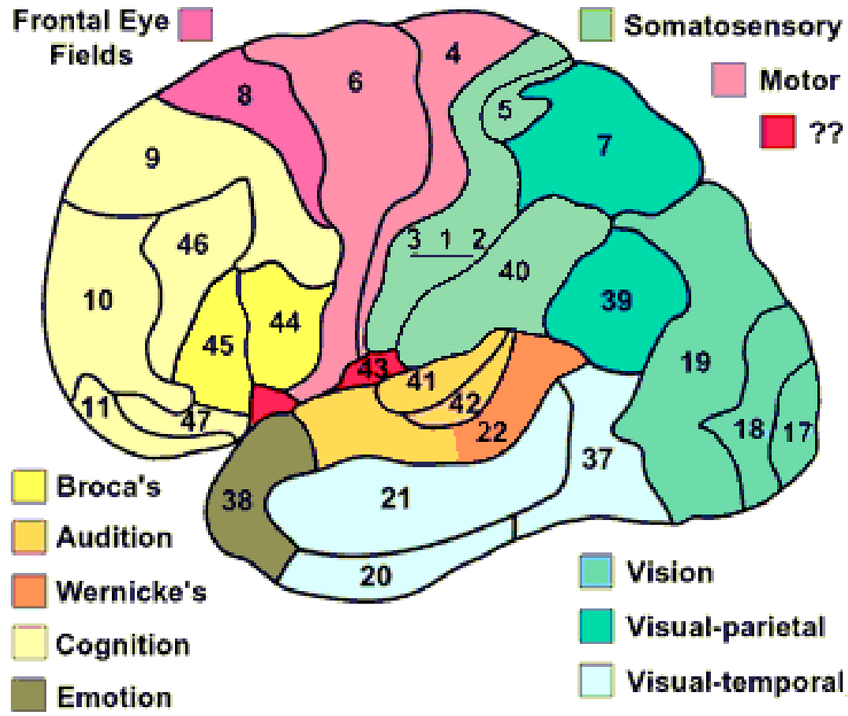
- Prolific researcher
- Experiments with dogs and salivation
  - Classical conditioning



Ivan Pavlov
(1849-1936)

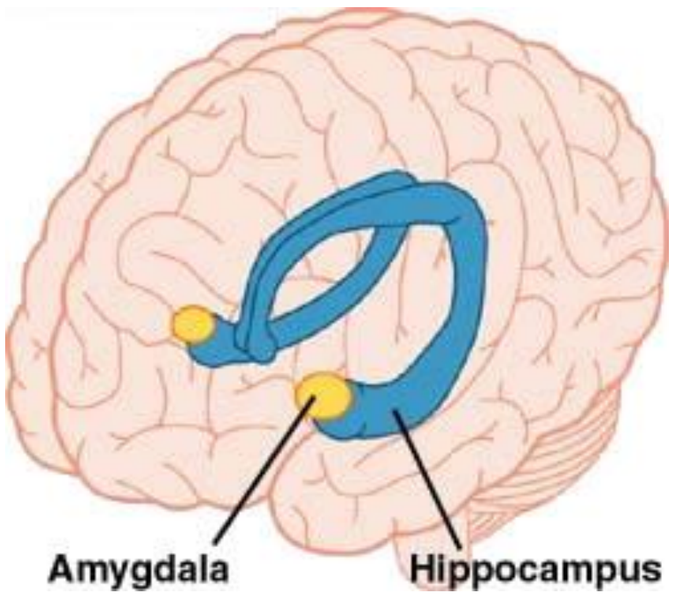
Excitation and inhibition

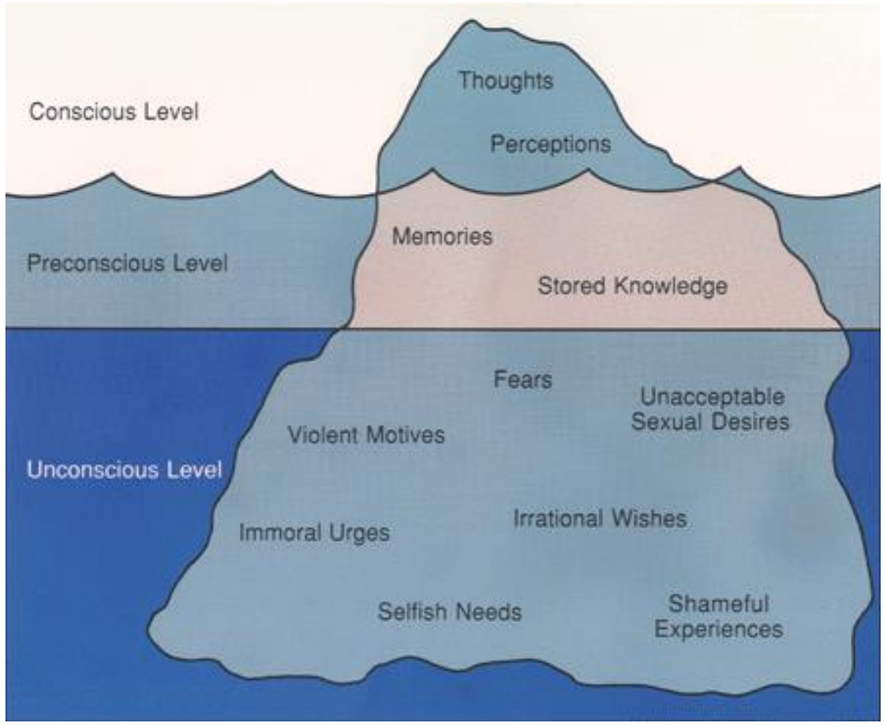
- As events are experienced, they either excite or inhibit cortical activity.
  - Pattern excitation or inhibition called “cortical mosaic”
  - Areas that are active together form temporary connections and “fire” when the others “fire”
  - Dynamic stereotype is a stable cortical mosaic
    - Hard to change, resistance to new conditions



Irradiation and concentration

- Sensory information is projected onto an area of the brain causing excitation.
  - Some excitation spills over to neighboring brain areas – irradiation of excitation.
    - Generalization
  - Similarly, sensory information is projected onto an area of the brain and is inhibited or discriminated.
  - Some inhibition or discrimination spills over to neighboring brain areas.
    - Concentration





Practical exercise #3

Refer to your *Participant Guide* page 23.

- Let’s break into small groups (3-4 participants per group)
- Read and answer each question together with all participant’s sharing
- Choose someone to report out to the class

60 minutes total time:

- 25 minutes for small groups to discuss
- 30 minutes for group report outs (5 minutes per group)

Edwin Guthrie
(1866-1959)

Train Systems

Enabling learning objectives (ELOs)

At the completion of this lesson, participants will be able to:

- Apply Guthrie's One Law of Learning.
- Explain Guthrie's idea of learning and practice.
- Apply Guthrie's Regency Principle.
- Apply Guthrie's methods for breaking habits.
- Explain Guthrie's idea of training transfer.

Background

Guthrie practiced a theoretical approach to psychology versus an experimental research approach. He is best known for his theory that all learning was based on a stimulus-response association. He:

- Believed all scientific theories can and should be explained using plain, simple words
  - No math
  - No technical jargon
- Placed great emphasis on practical application of his ideas
  - Only one experiment

Edwin Guthrie
(1866-1959)

One law of learning (also known as law of contiguity)

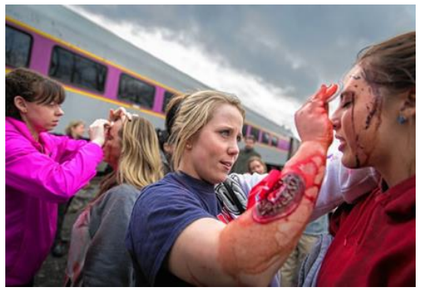
- If you do something in a given situation, you'll likely do the same thing the next time you encounter that same situation. However, it's situational – sometimes conflicting or incompatible tendencies exist.

Example

A student making a good grade on a test after trying a new study technique makes an association between the stimulus of studying and the response of getting a good grade.

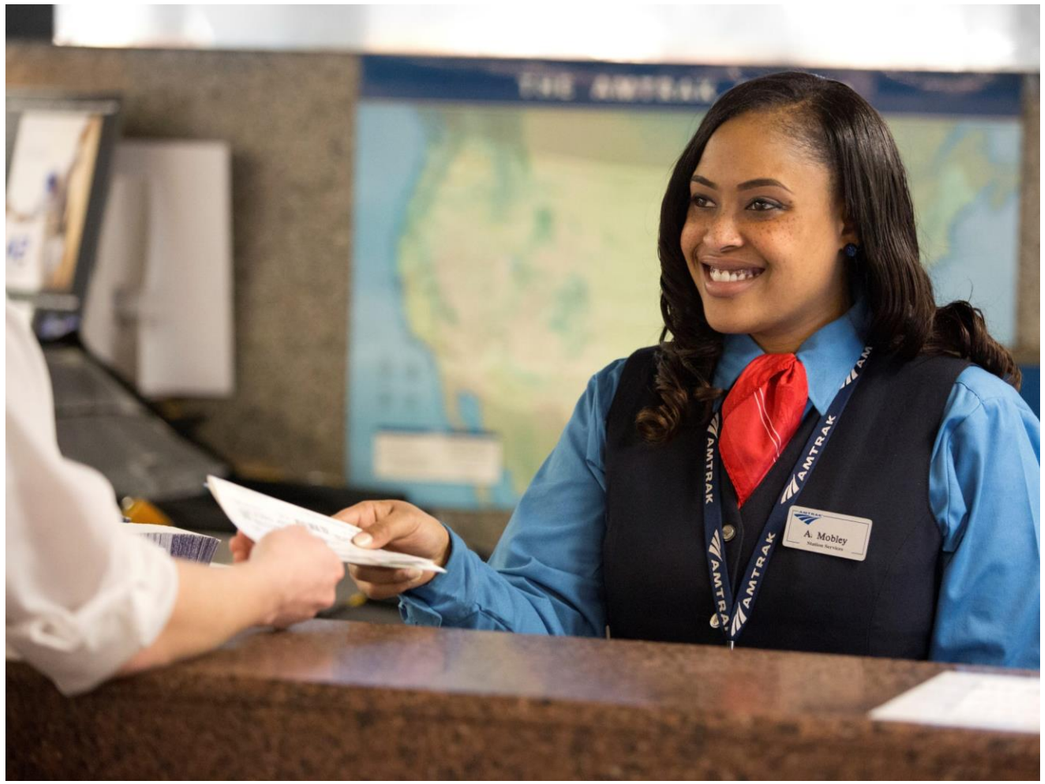
One-trial learning

- Learning is complete after only one paring between the stimuli and the response.



Regency principle

- In a particular circumstance, whatever we did last (that was successful), we will tend to do again if encountering the same circumstances.



Learning and practice

- Movements – simple muscle contractions (learned all or none)
- Acts – made up of a large number of movements
  - Must be available in differing environmental conditions
  - Requires practice
  - Aren’t learned in one trial
- Skill – a large collection of acts/habits that achieve a certain result in many and varied circumstances
  - Lots and lots of practice with many repetitions

Forgetting

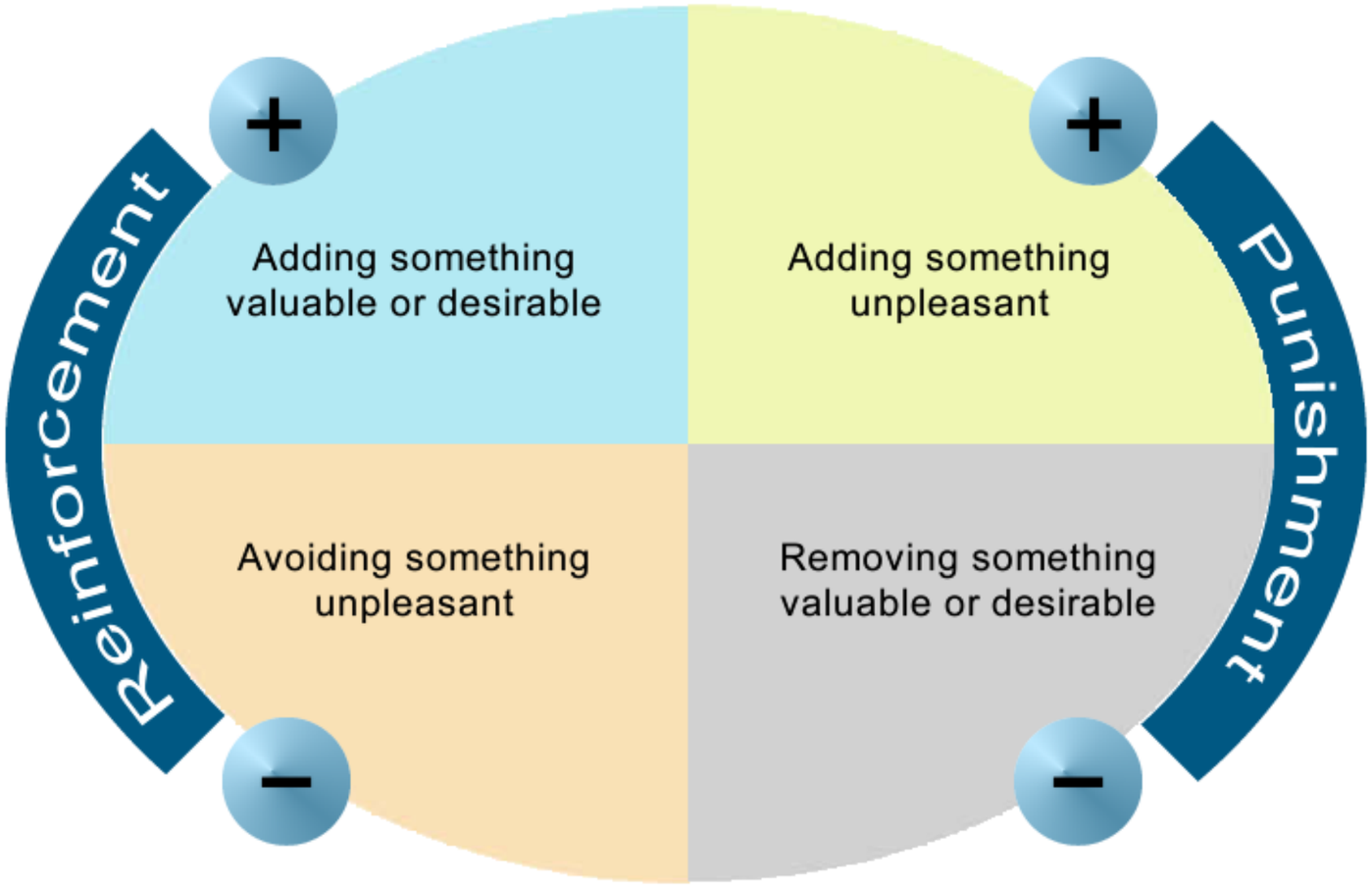
- Occurs when an alternative response to a stimuli is learned rather than the original response.
- All forgetting is due to interference.

Breaking habits

- Threshold method
  - Find the cues that initiate the bad habit and practice another response in the presence of these cues.
- Fatigue method
  - Do the act/habit until exhausted by it.
- Incompatible response method
  - Present the stimuli that causes the undesired response and a strong stimulus that causes a response incompatible with the undesired response.

Punishment

- Only effective when it results in a new response to the same stimuli.



Transfer of training

- Practice the exact behaviors in the exact conditions that are going to be demonstrated.

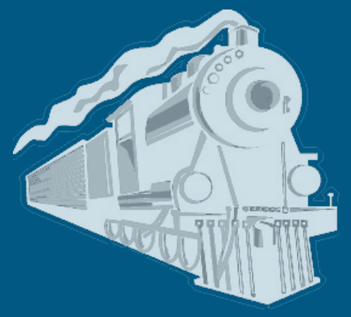
Practical exercise #4

Refer to your *Participant Guide* page 29.

- Let’s break into small groups (3-4 participants per group)
- Read the scenario
- Answer the questions together with all participant’s sharing
- Choose someone to report out to the class

60 minutes total time:

- 25 minutes for small groups to discuss
- 30 minutes for group report outs (5 minutes per group)



Train Systems