

Psychology of Learning

EDTE 202

Session 3

29th September 2021

Dr. John Sedofia



UNIVERSITY OF GHANA

Warm Up

1. A stimulus that originally elicits no response is...
2. After repeated pairings of a gift with good grades, a father found that his ward will do well even if a gift is not presented. Doing well is a(n): (a) US (b) UR (c) CS (d) CR
3. Teacher Mansa wields a cane whenever she is teaching mathematics. Her pupils become terrified as soon as they see her with the cane. For the pupils, the cane is a(n): (a) US (b) UR (c) CS (d) CR
4. Explain extinction.



Answers

1. Neutral stimulus
2. Conditioned response (CR)
3. Conditioned stimulus (CS)
4. Extinction is the fading or disappearance of the CR when the UCS is no longer presented.



Lesson 3

Trial and Error Learning (Edward Lee Thorndike)



Learning Outcomes

By the end of the lesson, you will be able to:

- state at least two of Thorndike's laws of learning,
- explain at least two of Thorndike's laws of learning,
- examine the educational implications of Thorndike's laws of learning,
- examine the limitations of the trial and error learning theory



What is Trial and Error Learning?

Activity 1: Individual

In one sentence explain what you understand by TRIAL and ERROR learning.



Trial and Error Learning

- A kind of learning in which one response after another is tried (e.g, trials) and rejected as ineffective (e.g, errors), until eventually a successful response is made.
- A kind of learning where an organism/learner attempts to learn/solve a problem by trying alternative possibilities until a correct solution is achieved.

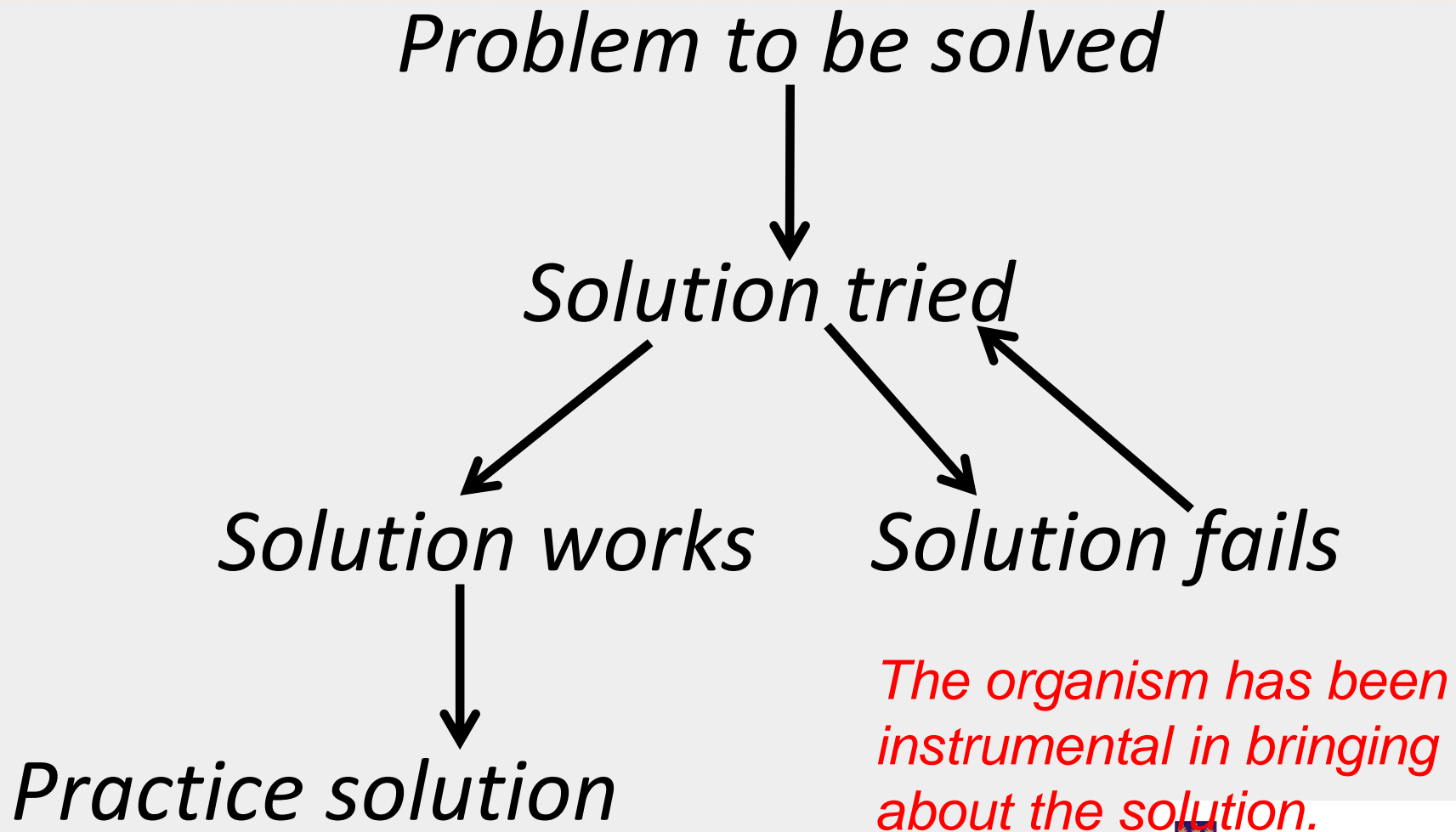


Trial and Error Learning

- The learner slowly eliminates responses that do not achieve the desired outcome, and continues to respond in different ways until they determine the response that leads to the desired result.
- Learning involves the establishment of proper connections or relations between **stimulus and response**. So the theory is also known as **connectionism** or **the bond theory of learning**



What is Trial and Error Learning?



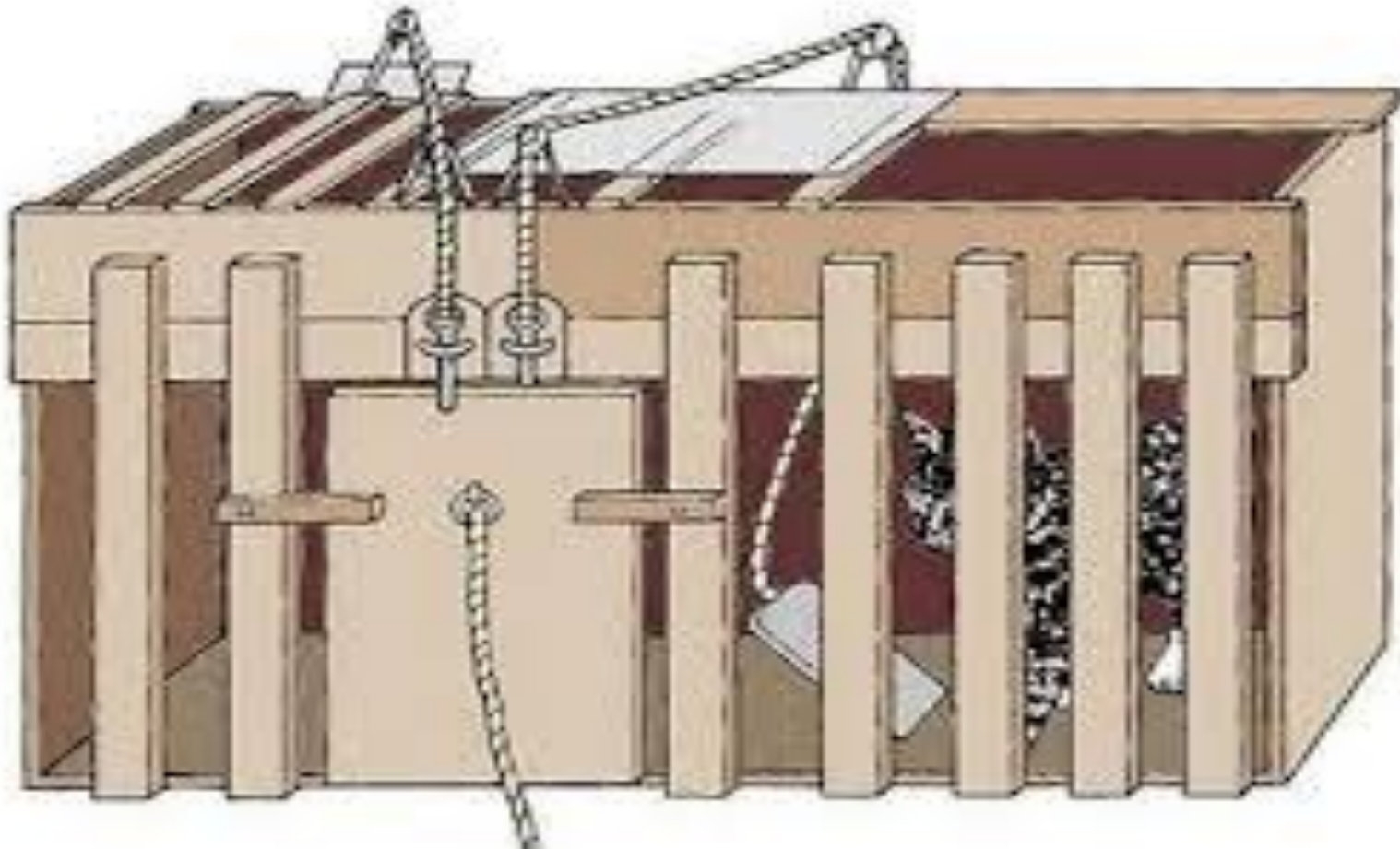
Edward Lee Thorndike (1874-1949)

Thorndike

- Interested in studying animal intelligence
- He found that animal intelligence is based on the ability to form connections
- Set up puzzle-box experiments to investigate instrumental conditioning



Thorndike's Puzzle Box



Thorndike's Puzzle-Box Experiment

- When the cat was put back in the box, it went through a series of incorrect responses before pushing the lever
- The cat became progressively quicker at escaping (had fewer incorrect behaviours)
- Through a process of **trial and error** the cat learned that pushing the lever opened the door.



Critical Thinking

- a. Why do you think the cat had to be **starved**?
- b. Why was the cat given food any time it depressed the lever?
 - Discuss the above with a partner (write in the chat box).
 - Pairs will called at random to share their answers.



Factors in Trial & Error Learning

- **Motivation**
 - There is the need for a desire to attain some goal
- **Exploration**
 - There is the need for an increase in activity – either purposeful or random
- **Rewards**
 - There should be a reward for the correct behaviour
- **Incorrect or correct responses**
 - There should be a combination of incorrect and correct responses or else it is not “trial and error” learning



Thorndike's Laws of Learning

1. The law of effect
2. The law of exercise
 - The law of use
 - The law of disuse
3. The law of readiness



Thorndike's Laws of Learning:

The Law of Effect

- Behaviours followed by positive outcomes are strengthened whilst behaviours followed by negative outcomes are weakened.
- That is, learning takes place properly when it results in satisfaction and the learner derives pleasure out of it.



Thorndike's Laws of Learning:

The Law of Exercise

Thorndike argued that practice makes man perfect.

- That is, the more we practice a certain behaviour, the more the behaviour will be strengthened.
- Those things that are often repeated are the best learned.



Thorndike's Laws of Learning

The Law of Exercise Cont'd.

- i. **The Law of Use:** The bond between stimulus and response is strengthened when there is **repetition and practice** (the more often an association is used the stronger it becomes).

- ii. **The Law of Disuse:** The strength of the connection between S-R weakens when there is **no practice** (the longer an association is **unused** the weaker it becomes) .



Thorndike's Laws of Learning:

The Law of Readiness

- It refers to the preparedness and desire of an organism to carry out an action.
- Thorndike argued that proper mind set is the key to mastering that concept.
- The more the individual is ready to respond to a stimulus, the stronger will be the bond between them.



Activity 2

- **Write and share two educational implications for each of Thorndike's laws of learning.**
- **Compare your answer with the following...**



Educational Implications:

Law of Readiness

- The learner should be physically, emotionally and mentally well for effective learning to take place.
- Necessary background should be provided
- A clear objective and good reasoning for learning should be provided to help the learner to be ready for the task.



Educational Implications:

Law of Effect

- Give children problem-solving tasks that they can solve by trial-and-error, and reward success.
- Encourage children who cannot find a solution to try another way (**Law of multiple response**).
- The feelings of the learner is very important and should be taking into consideration
- Motivation, both intrinsic and extrinsic are needed
- Encourage healthy competition among students
- There is need for pleasant learning experiences



Educational Implications:

Law of Exercise

- Repetition and drills are needed for mastering any learnt material.
- There should not be a long gap between one practice and the next (**why?**)
- Frequent tests or exercises should be taken to make the learner practice and use the concept learnt.



Limitations of Trial & Error Learning

Activity3: Pair Work

In pairs, write in the Zoom chat box **TWO** limitations of Trial and Error Learning



Limitations of Trial and Error Learning

- Some researchers have argued that repeated trials are of no avail if the tendency to learn is not there. Again, if the tendency is there, even one trial may be fruitful.
- The animals used were guided by perceptual attention and feelings of pleasure and pain. Yet Thorndike seems to attach no importance to these higher mental processes in learning.



Limitations of Trial and Error Learning Cont'd.

- Thorndike presupposes that learning consists only in the association of several separate movements. But learning is a whole process related to whole situations.
- Thorndike's approach restricted psychology by limiting behavior solely to the peripheral events of stimulus and response elements.



Summary

Trial & Error learning - Thorndike

- Describes an organism's attempts to learn/solve a problem by trying **alternative** possibilities until a correct solution or desirable outcome is achieved

Usually involves

1. A number of **attempts** & a number of **errors**
- Before correct behaviour is learnt
2. **Motivation** (to achieve a goal)
3. **Exploration** – either random or purposeful
4. **Reward** – the correct response is rewarded –
 - which will lead to **repeat** performance of the correct response, strengthening the **association** between the behaviour & its outcome
 - Once learnt behaviour will usually be performed quickly and with fewer **errors**



Lesson Evaluation

1. State two of Thorndike's laws of learning.
2. Explain two of Thorndike's laws of learning.
3. Examine two educational implications of Thorndike's laws of learning.
4. Examine two limitations of trial and error learning.

