

ETHOLOGY

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INTRODUCTION TO ETHOLOGY:

- Definition, History and Scope of Ethology
- Animal behaviour : Innate and Learned behaviour
- Types of learning: Habituation, Imprinting and Types of imprinting - Filial and sexual, Classical conditioning
- Instrumental learning and insight learning.

ASPECTS OF ANIMAL BEHAVIOUR:

- Communication in bees and ants
- Mimicry and colourations
- Displacement activities, Ritualization
- Migration in fish, schooling behaviour
- Habitat selection, territorial behaviour.

SOCIAL BEHAVIOUR:

- Social behaviour in primates-Hanuman langur
- Elements of socio-biology: Altruism and Kinship

DEFINITION AND HISTORY

- A branch that deals with study of animal behaviour is ethology.
- Study began in the later part of 19th century.
- Pioneer was Charles Darwin explained instinct in his theory.
- Douglas Spalding (1873)....imprinting in domestic chick
- Edward Thorndike (1911)...learning behaviour
- Ivan P. Pavlov (1927)....learning behaviour.
- Konard Lorenz (1903-89),...imprinting;
- Niko Tinbergen (1907-88), 'The study of instinct'; and
- Karl Von Frisch (1886-1982) communication of honey bees.
- Wolfgang Kohler and Jane Goodallhighlighted insight learning and cognition.

SCOPE OF ETHOLOGY

- It is a mixture of psychology, ecology, physiology, sociology etc.
- To explain various aspects of animal behaviour. Such as reproductive behaviour, foraging, interactions amongst the animals of same species and other species, social behaviour, evolutionary process, communication, adaptive values and so on.

ANIMAL BEHAVIOUR :

Innate and Learned behaviour

- Innate behaviour is present in animal inherently i.e. by birth. It is genetically determined.
- Learned behaviour is acquired by animal through experience.

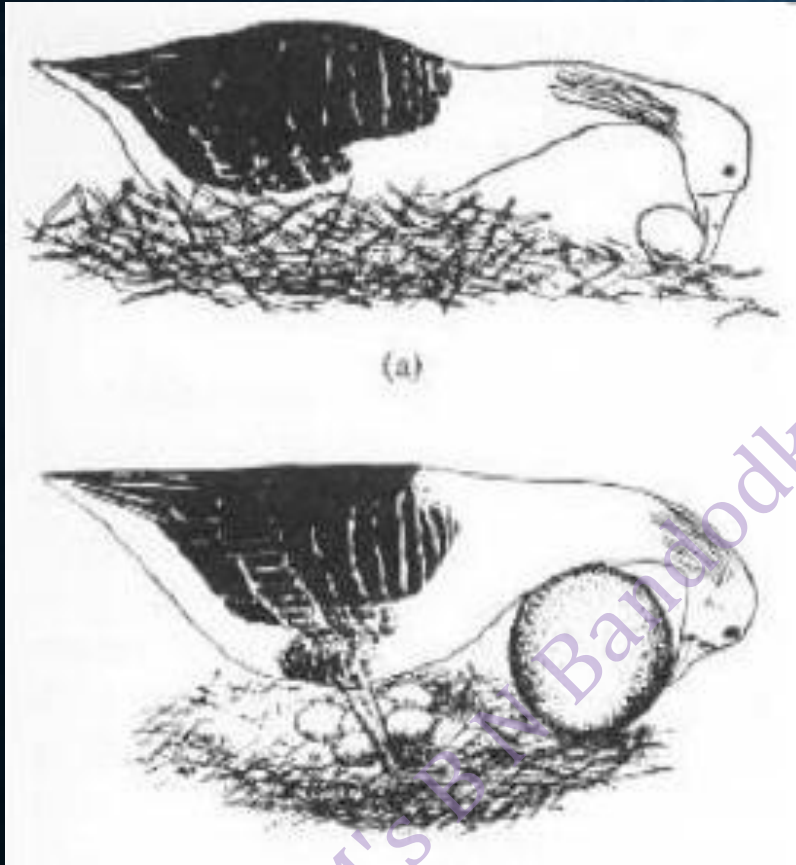
INNATE BEHAVIOUR

- Sign stimulus
- **IRM** (Innate releasing mechanism)
- **FAP** (Fixed action pattern)

SIGN STUMULUS → IRM → FAP



FAP IN DUCK



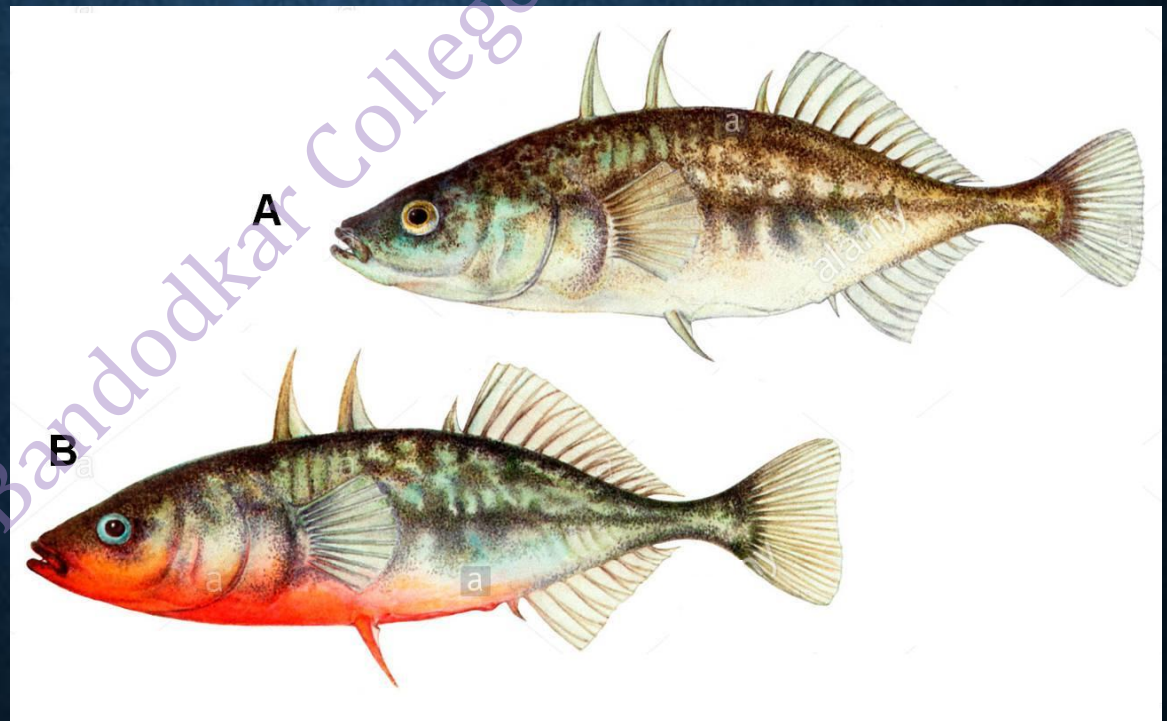
Egg-rolling pattern of greylag goose (a) Retrieval of a normal egg; (b) attempt to retrieve a large egg or "supernormal stimulus."

FIXED ACTION PATTERN


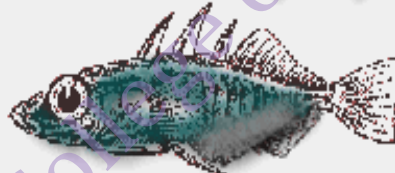


- Three spined stickleback

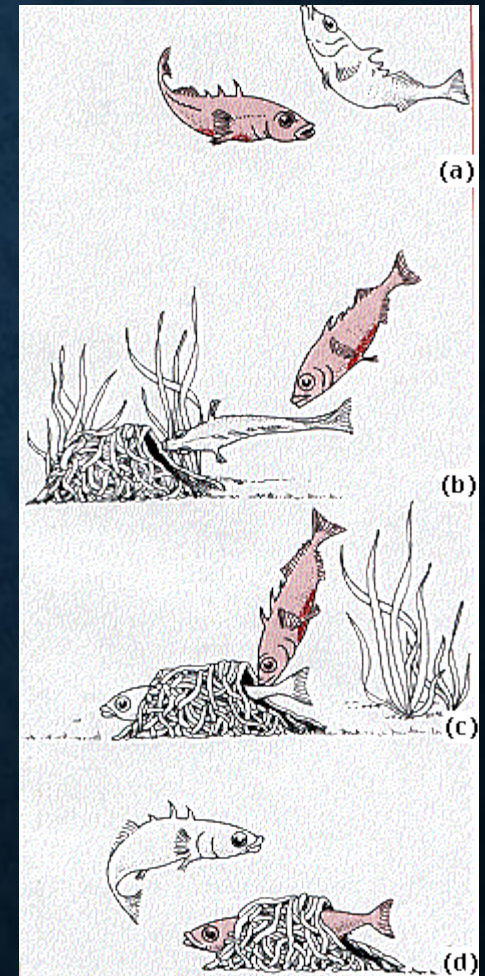
A. Female

B. Male



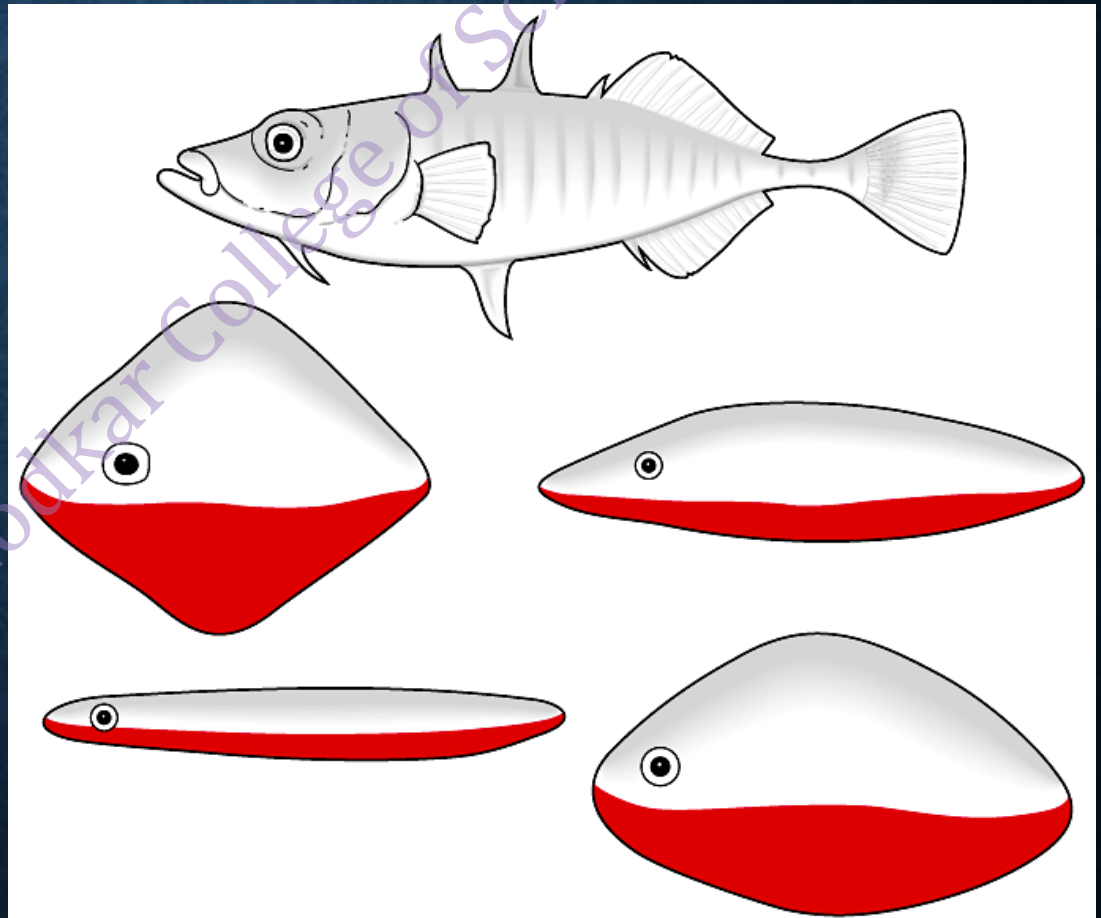
REACTION OF MALE TOWARDS DIFFERENT SIGNALS

Actual colour & shape	Male stickleback: red belly, bluish-white back	Female stickleback: greyish-green body, swollen silvery belly
Model characteristics	 Red belly	 Swollen belly
Reaction of males to model	 Attack	 Court



TINBERGEN'S EXPERIMENT

Tinbergen showed that the belly shape or size does not matter to initiate FAP (Attack by male counterpart) but the cue of red coloured belly of male. The FAP occurred even with the images of various shapes with red colour.



TAILOR BIRD



Sewing of leaf together to make nest is FAP in tailor bird during breeding season.



HERRING GULL



Red spot on the lower side of parent's beak initiate the pecking action of chick which ultimately makes parent to regurgitated food.



LEARNING

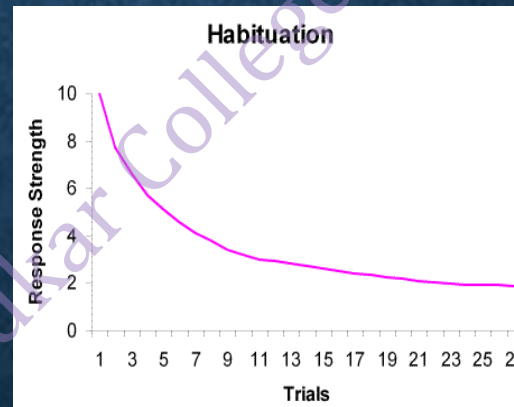
Certain behavioral patterns can be modified through experience called as learning.

Types of learning:

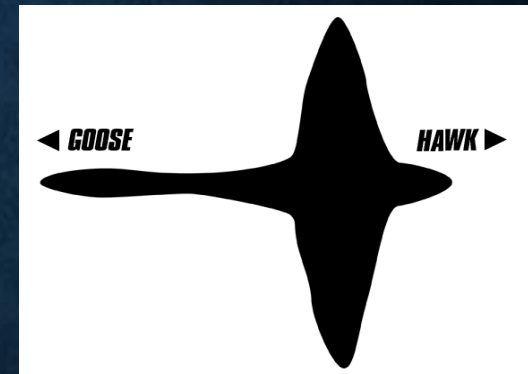
- Habituation,
- Imprinting and Types of imprinting - Filial and sexual,
- Classical conditioning

HABITUATION

In this process there is a gradual fall in the behavioral response of the individual on exposure to repetitive stimuli that neither render reward or punishment.



Reduction in response with the increased number of trials of a stimulus.



Goose-Hawk silhouette model to exhibit the impact of more frequent stimulus of goose causing habituation

IMPRINTING

- Imprinting is a type of learning in animals exposed to particular stimuli during the critical or sensitive period in their life. The stimulus may be visual, olfactory or auditory.
- Takes place during a **sensitive period** or critical period.
- **Filial** imprinting: In young-ones (Shrews, Geese, Salmon fish)
- **Sexual** imprinting during maturity (Golden eagle)

OLFACTORY IMPRINTING



- Sheep mother imprinting of you ones



- Shrews young ones follow caretaker mother for certain day if they first introduced by her.

FILIAL IMPRINTING



KONRAD LORENZ STUDIED IMPRINTING

- Konard Lorenz demonstrated that the duck chicks start following him when he produced himself to the chicks as mother. The chicks imprinted his figure as mother and started following him. This was true until the chicks grew to sub-mature stage. They even responded to his voice and were attracted to him from distance.

SEXUAL IMPRINTING

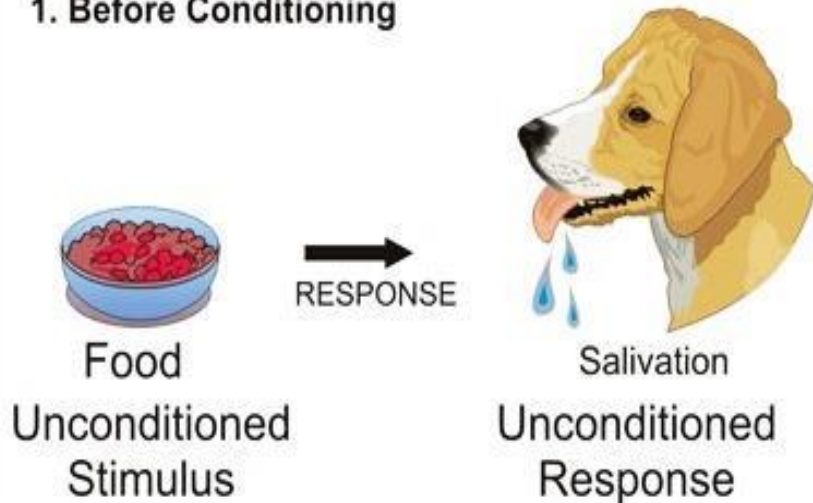
- Immeleemann (1972) studied on Zebra finch and Bengalese finch



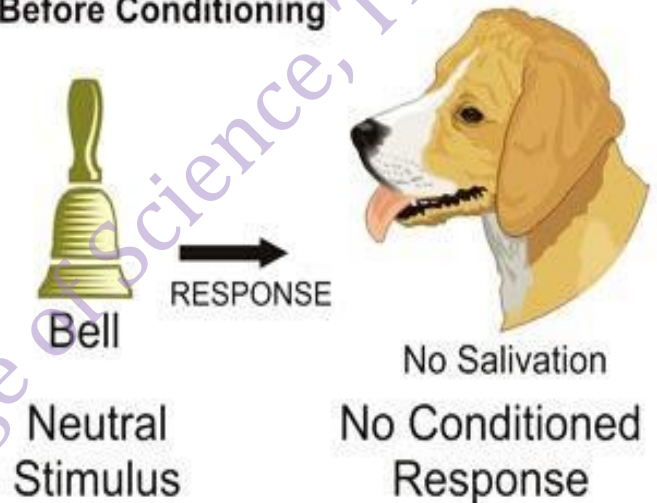
CLASSICAL CONDITIONING

- Classical conditioning is a Conditioned behaviors is the result of associative learning. In 1902, the Russian physiologist, **Ivan Pavlov**, began his famous experiments on conditioning. Pavlov repeatedly presented a dog with food following the ringing of a bell.
- When the bell sounded without the presentation of food, the dog would still respond to the bell as if it were food.

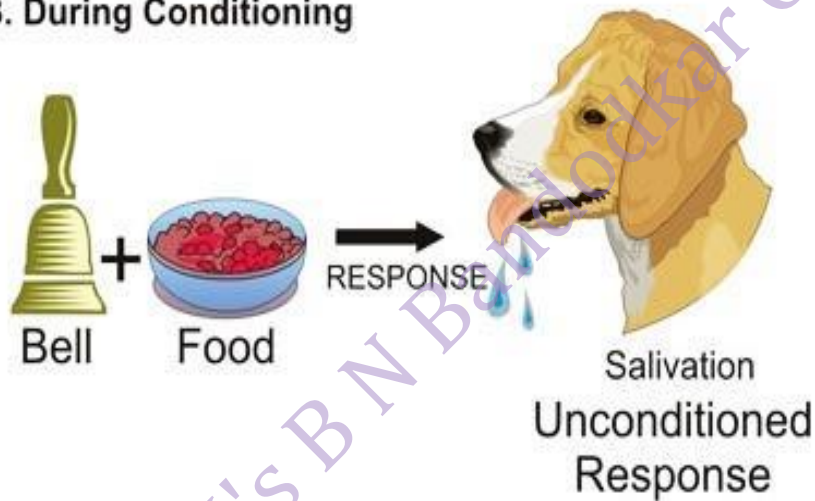
1. Before Conditioning



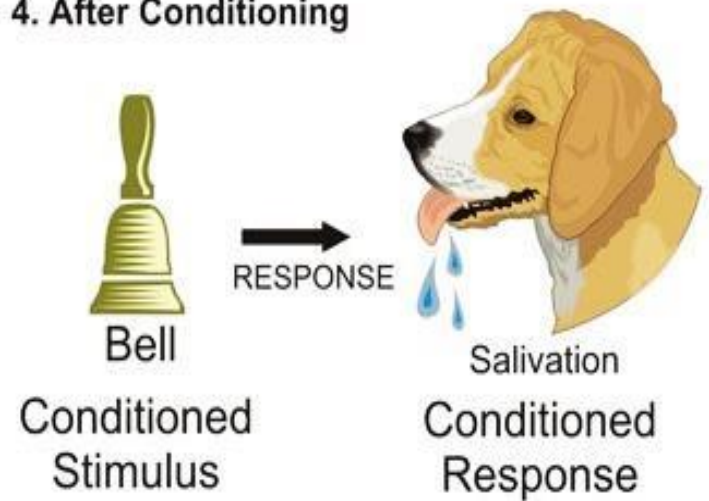
2. Before Conditioning



3. During Conditioning

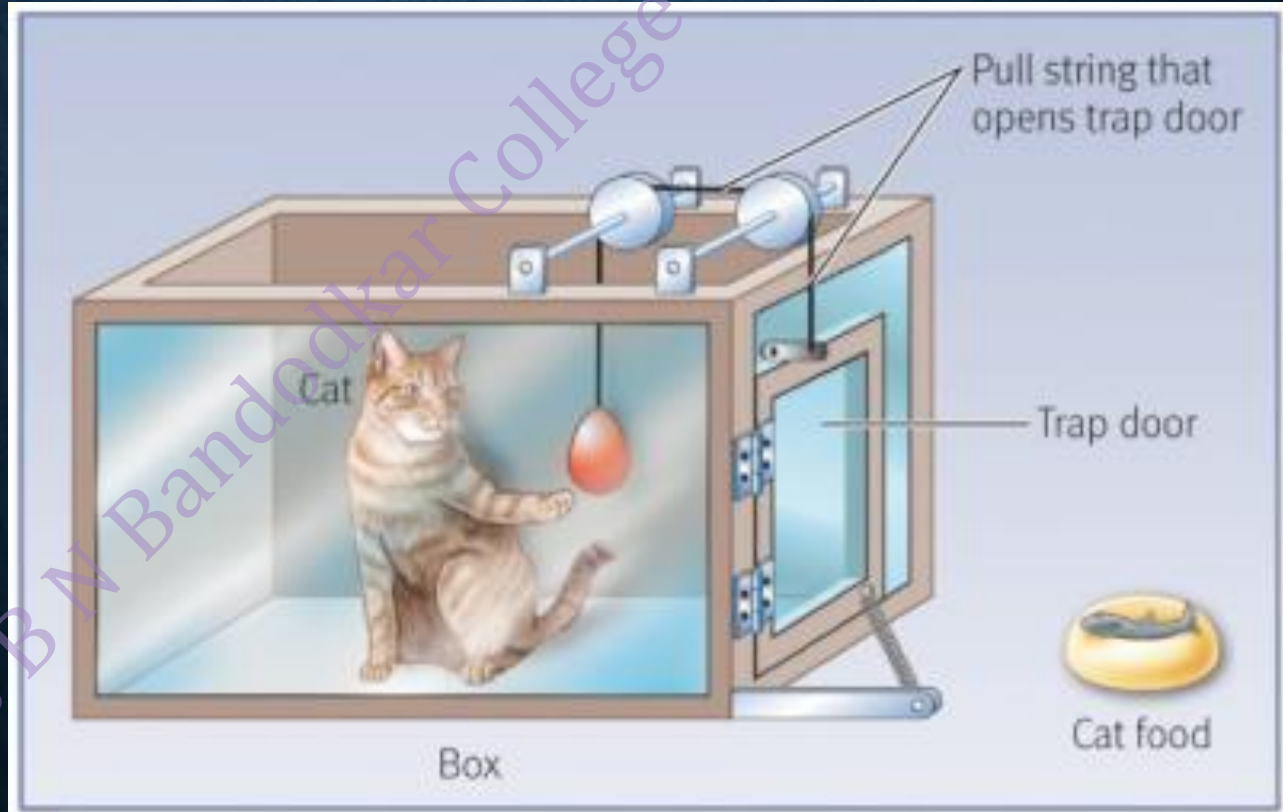


4. After Conditioning



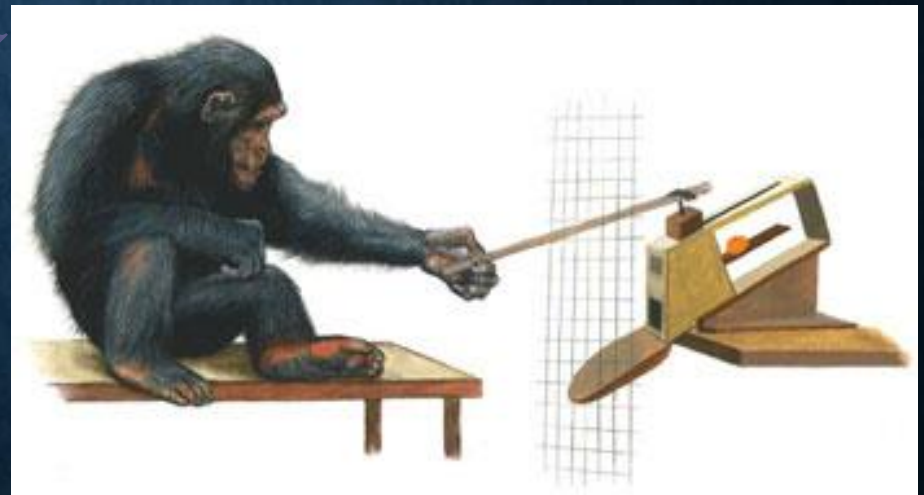
INSTRUMENTAL LEARNING

- Thorndike (1898) used puzzle box to demonstrate instrumental learning.



INSIGHT LEARNING

- It is solving problem suddenly without taking any trial and error approach.
- Wolfgang Kolher (1927) experimented on chimpanzees.



INSIGHT LEARNING

Learning how to solve a problem or do something by applying what you already know, without a period of trial and error



THANK YOU



PLEASE STUDY AT HOME!

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