Lecture – 2 - Learning

Learning : -is a relatively permanent change in behavior in behavior that occurs as a result of experience . There are two basic kinds of learning ; Nonassociative learning and associative learning .

Nonassociative learning : involves learning about a single stimulus , and it includes habituation and sensitization .

Habituation is a type of nonassociative learning that is characterized by a decreased behavior to an innocuous stimulus e.g, ,the sound of a horn might startle you when you first hear it ;But if the horn toots repeatedly in short time , the amount that you startle to each sound progressively decreases .

Sensitization : - is a type of nonassociative learning whereby there is an increase in a behavioral response to an intense stimulus , it typically occurs when noxious or fearful stimuli are presented to an organism , Both habitation and sensitization are relatively short- lived . minutes to hours .

Associative learning : - is much more complicated than nonassociative learning , it involves learning relationship among events , it includes classical conditioning , instrumental conditioning and complex learning .

1- **In classical conditioning** :- is a learning process in which a previously neutral stimulus become associated with another stimulus through repeated pairing with that that stimulus ,so an organism learns that one event follows another ,e.g. a baby learns that the sight of a breast will be followed by the taste of milk

Unconditioned stimulus (ucs) :- A stimulus that automatically elicits a response ,typically via a reflex , without prior conditioning .
Unconditioned response : The response originally given to the unconditioned stimulus , used as a basis for establishing a conditioned response to a previously neutral stimulus . **Conditioned stimulus (CS)** : - A previously neutral stimulus that comes to elicit a conditioned response through association with an unconditioned stimulus . **Conditioned response (CR)** : - a learned or acquired response to stimulus that did not evoke the response originally , a conditioned stimulus . Acquisition and

extinction in learning ,**Acquisition** is learning the association between the two stimuli ,by repeated pairings of the CS (eg. Light) and UCS (food) strengthen the association between the two . **Extinction**:- represents learning that the CS no longer predicts the UCS. So in **classical conditioning** , a conditioned stimulus (CS)that consistently precedes an unconditioned stimulus (UCS)comes to serve as a signal for the UCS and will elicit a conditioned response (CR) that often resembles the unconditioned response . or classical conditioning to occur , the CS must be a reliable predictor of the UCS , that is , there must be high probability that the UCS will occur when the CS has been presented than when it has not .

The ability of stimuli to become associated in classical conditioning experiment is constrained by biology and evolution.

2- Instrumental (operant) **conditioning** : - in which certain responses are learned because they operate on or affect the environment , so operant conditioning amounts to learning that particular behavior leads to attaining a particular goal .

The law of effect by Thorndike he argued that in instrumental learning , the law of effect selects from a set of random responses only one that are followed by positive consequences .the process is similar to evolution in which genes that promote survival or fitness are selected across generations .

Instrumental conditioning increases the likelihood of a response with reinforcer**.**

Reinforcement :-refers to the process whereby the delivery of an appetitive stimulus or the removal of an aversive stimulus increases the probability of a behavior .

positive reinforcement :- describes a behavior that produces an appetitive stimulus .and negative reinforcement occurs when behavior prevents an aversive stimulus .

Punishment : - is the process by which delivery of an aversive stimulus or the removal of an appetitive stimulus decreases the probability of a behavior.

Types of reinforcement and punishment : -

Positive reinforcement: -delivery of a pleasant or appetitive stimulus that follows a behavioral response . The effect is increases the likelihood of the behavioral response. e.g. if studying is followed by a high grade on exame. The incidence of studying before examination is high .

Negative reinforcement in which the removal of an unpleasant or aversive

stimulus after a behavior this will increase the likelihood of the behavioral response e.g. if leaving your dorm room remove you from a noisy roommate , then the time you spend away from your will increase .

Punishment through which presentation of an unpleasant or aversive stimulus after a behavioral response , the effect will be decrease the likelihood of behavioral response .e.g.if your professor embarrasses you for asking a question in class , then the likelihood you will ask question will decrease .

Omission training :- in which the removal of a pleasant or appetitive stimulus after a behavioral response , the effect will be decrease the likelihood of the behavioral response . e.g. if your wife withhold affection whenever you watch TV, the time you spend in front of the TV will decrease .

Shaping : - is reinforcing only variation in response that deviate in the direction desired by the examiner .

Aversive conditioning : - There are different kinds of aversive conditioning , depending on whether the aversive event is used to weaken an existent response or learn a new response .

1- punishment : - in punishment training , a response is followed by an aversive stimulus or event , which results in the response being weakened or suppressed on subsequent occasions .

2 – Escape learning ;- aversive events can also be used in the learning of new responses , organism can learn to make a response to terminate an ongoing aversive event ,as a child learns to turns off a faucet to stop hot water flowing into bathtub .

3 – Avoidance learning :- organism can also learn to make a response to prevent an aversive event from even starting , as we learn to stop at red light to prevent accidents .

3 -Complex learning : - the crux of learning and of intelligence in general lies in an organism 's ability to mentally represent aspects of the world and then operate on these mental representations rather than the world itself , it might be a map of one's environment or an abstract concept like notion of the cause .

4 - Observational Learning or Social learning

- learning by watching others - **observational learning**, or **social learning** - is efficient and adaptive
- 1- children are particularly influenced by the adults and peers who act as **models** for appropriate behavior in various situations (c.f. Albert Bandura's experiment with nursery school children who witnessed varying levels of aggression towards a doll, and modified their subsequent behavior accordingly)
- children who saw adults rewarded for aggression showed the most aggressive acts in play; they had received **vicarious conditioning**, a kind of observational learning in which one is influenced by seeing or hearing about the consequences of others' behavior
- 5 functions in observational learning:
    1. attention to relevant aspects of model's behavior
    2. visual image of model
    3. remembering/ rehearsal of behaviour

4. refinement by reproduction of learned behaviour
5. anticipation of consequences

- optimum conditions:
  1. subject sees the behaviour being reinforced
  2. *perceived similarity* – subject believes they can emit the response necessary to obtain reinforcement

2 - Active Learning

- these methods take various forms and encourage people to think deeply about and apply new information instead of just memorizing isolated facts
- e.g. small-group problem-solving tasks, discussion of mini-essays, and MCQs that give students feedback on the previous 15 minutes of teaching

3 - Skill Learning

- observational learning, **practice** (the repeated performance of a skill), and **corrective feedback** play important roles in the learning of skills
- practice should continue past the point of correct performance until it is automatic