

Class 11 · Psychology (037) · Introduction to Psychology · Chapter 5 · CBSE 2026-27

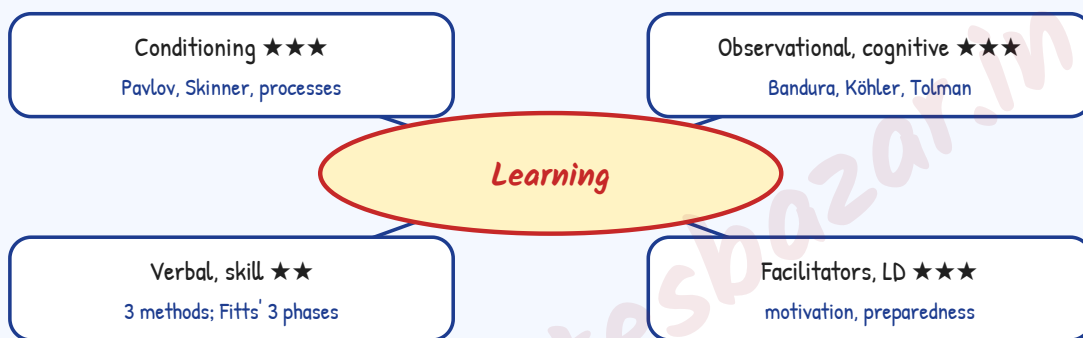
Chapter 5

Learning



Nature and features of learning · learning vs performance · classical conditioning (Pavlov) and its determinants · operant conditioning (Skinner): reinforcement types, number, quality, schedules, delay, punishment · classical vs operant · key processes: reinforcement, extinction, generalisation, discrimination, spontaneous recovery · learned helplessness · observational learning (Bandura) · cognitive learning: insight (Köhler), latent (Tolman) · verbal learning · skill learning (Fitts) · factors facilitating learning · learning disabilities

Chapter map (★ = most important for exams)



Syllabus and weightage

One of the most scoring chapters. Question types: MCQ (1), very short (2), short (3), long (4), very long (6), case-based (identify US, CS, reinforcer). Favourites: features of learning, classical conditioning and its determinants, operant conditioning, positive vs negative reinforcement vs punishment, generalisation vs discrimination, Bobo doll, insight, latent learning, learning disabilities.

★ **Exam tip:** Learning = "any **relatively permanent change** in behaviour or behavioural potential produced by **experience**." Temporary changes from drugs, fatigue or habituation are **not** learning.

5.1 Features of learning ★★★

- (1) Always involves **experience** – events in sequence (hostel bell after sunset → dinner); repeated satisfaction → **habit**; sometimes a single experience (burnt fingers with a matchstick).
- (2) Changes are **relatively permanent** – unlike changes from **fatigue** (stop reading when tired), **habituation** (orienting reflexes to wedding noise weaken and vanish with continuous exposure) or **drugs/alcohol/sedatives** – all temporary.
- (3) Learning involves a **sequence of psychological events**: pre-test → presentation for fixed time → processing → new knowledge acquired (**learning**) → recall later; compare with pre-test.
- (4) Learning is an **inferred process**, different from **performance** (observed behaviour) – reciting a poem is performance from which the teacher infers learning.

Paradigms: simplest is **conditioning** – classical and instrumental/operant; also observational, cognitive, verbal and skill learning.

5.2 Classical conditioning ★★★

- **Ivan P. Pavlov**, studying digestion, saw dogs salivate at the empty food plate. Experiment: harnessed hungry dog, tube from the jaw to a measuring glass; a **bell** sounded, then **meat powder** given; after several trials, the bell alone made the dog salivate.

Stage	Stimulus	Response
Before	Food (US); bell	Salivation (UR); alertness only
During	Bell (CS) + food (US)	Salivation (UR)
After	Bell (CS)	Salivation (CR)

- **S-S learning**: one stimulus (bell) becomes a **signal** for another (food).
- Examples: saliva at the sight of a sweet dish after lunch; a child frightened by a bursting balloon (loud noise = **US**) later fears balloons (**CS**).

Determinants of classical conditioning ★★★

Factor	Effect
1. Time relations (CS-US)	Forward : (a) simultaneous – CS and US together; (b) delayed – CS onset before US, CS ends before US ends; (c) trace – CS begins and ends before US, with a gap. Backward : (d) US before CS. Delayed is most effective ; simultaneous and trace need more trials; backward conditioning is very rare
2. Type of US	Appetitive (eating, drinking, caressing – approach, pleasure): slower , more trials. Aversive (noise, bitter taste, shock, injections – avoidance, escape): established in 1-3 trials depending on intensity
3. Intensity of CS	More intense CS → faster acquisition, fewer trials

Box 5.1 – Classical vs operant:

- (1) Classical: responses are **reflexes** automatically elicited by US – "**respondent conditioning**"; operant: **voluntary** responses (operants) under the organism's control.
- (2) Classical: CS and US well-defined; operant: CS not defined, only inferred.
- (3) Classical: experimenter controls the US, organism **passive**; operant: reinforcer depends on the organism's

response, organism **active**.

(4) Different terms; US in classical = reinforcer in operant. A US both elicits the response and reinforces it.

Activity: showing mango pickle makes classmates salivate — a CR.

5.3 Operant/instrumental conditioning ★★★

- **B.F. Skinner:** **operants** = voluntary responses emitted by organisms that **operate on the environment**.
- **Skinner box:** hungry rat explores, accidentally presses a **lever**, food pellet drops; over trials it presses sooner; conditioning complete when it presses immediately. Lever pressing = operant; food = consequence. Called **instrumental** because the response is instrumental in getting food.
- Examples: child finds the hidden sweets jar; says "please" for favours; learns to operate a radio, camera, TV; humans learn short cuts to goals.
- Behaviour learned, maintained or changed through its **consequences** — **reinforcers**: any stimulus or event that **increases** the probability of a desired response.

Determinant	Effect
Type — positive	Pleasant consequences that strengthen responses — food, water, medals, praise, money, status, information
Type — negative	Unpleasant/painful stimuli; responses that remove, avoid or escape them are strengthened — woollens, heaters for cold; seat belts to avoid injury or fines. Not punishment
Number, amount, quality	More trials, more reinforcer per trial, better quality (raisins, cake vs chickpeas, bread) → faster conditioning
Schedule	Continuous (every response) or intermittent/partial (some responses) — partial gives greater resistance to extinction
Delay	Delayed reinforcement → poorer performance; children prefer a small immediate reward to a big later one

Punishment reduces/suppresses a response, while negative reinforcement **increases** avoidance/escape responses. No punishment suppresses permanently; mild or delayed punishment has no effect; stronger punishment suppresses longer but not permanently; may cause dislike of the punisher.

5.4 Key learning processes ★★★

Process	Meaning
Reinforcement	Administering a reinforcer. Positive reinforcer increases the response preceding its presentation ; negative — preceding its removal . Primary : biologically important (food for hungry). Secondary : acquired through experience (money, praise, grades). Shaping : reinforcing successive approximations to a desired response
Extinction	Disappearance of a learned response when reinforcement is removed (CS without US; lever without pellets). Resistance to extinction rises with reinforced trials up to a point; falls with larger amounts of reinforcement; rises with delayed and partial reinforcement; continuous reinforcement → less resistant
Generalisation	Responding similarly to similar stimuli (salivating to a telephone ring; finding sweets in a new jar; fear of a bearded man in black after fearing a moustached man in black)

Discrimination	Responding differently to different stimuli (no fear of a clean-shaven man in grey); generalisation = failure of discrimination
Spontaneous recovery	Return of an extinguished response after a lapse of time; longer rest → greater recovery

Box 5.2 — Learned helplessness (Seligman and Maier): dogs first got inescapable sound + shock (classical); later, in an operant set-up where they could escape by pushing their heads against the wall, they just suffered the shock. In humans, repeated failure regardless of effort → little persistence, poor performance; underlies many cases of **depression**.

5.5 Observational learning ★★★

- Earlier called **imitation**; studied by **Bandura**; also **social learning** or **modeling** — observing and emulating others when unsure how to behave (fashion models; superiors).
- **Bobo doll study**: children saw a 5-minute film of a boy hitting, throwing, kicking and sitting on a Bobo doll. Version 1 — model **rewarded**; version 2 — **punished**; version 3 — neither. In a playroom with similar toys, children who saw the model **rewarded** were **most aggressive**; those who saw him **punished** were **least**.
- Observers **acquire** knowledge by observation, but **performance** depends on whether the model was rewarded or punished.
- Children enact marriages, birthday parties, thief-and-police; learn dressing, hair style, conduct; acquire **aggression, pro-social behaviour, courtesy, politeness, diligence, indolence**.

5.6 Cognitive learning ★★★

Change in **what the learner knows** rather than what s/he does; focus on underlying cognitive processes, not S-R or S-S links.

Insight learning (Köhler)	Latent learning (Tolman)
Chimpanzees in an enclosure with food out of reach and boxes/poles; after roaming, suddenly stood on a box or used a pole to get the banana	Two groups of rats explored a maze; one found food at the end and quickly learned; the other unrewarded showed no learning — but when later rewarded ran as efficiently
Solution appears suddenly (a flash) after a period of no progress; not trial and error; repeated at once next time; learns a means-end relationship ; generalises to similar problems	Behaviour learned but not shown until reinforcement; rats formed a cognitive map — mental representation of locations and directions

5.7 Verbal learning ★★

- Limited to **humans**; knowledge in words that get associated. Materials: **nonsense syllables** (YOL, RUV), familiar and unfamiliar words, sentences, paragraphs.

Method	Procedure
Paired-associates	Like S-S/S-R; used for foreign-language equivalents. Stimulus (nonsense syllable) – response (English noun) pairs (GEN-LOOT); shown together, then stimulus alone; trials until all responses correct; number of trials to criterion = measure
Serial learning	Reproduce items in the same order; each item cues the next — serial anticipation method ; trials until all correctly anticipated

Free recall	Read list (10+ words) at fixed rate, recall in any order ; order varies across trials; studies organisation in memory; first and last items recalled better than middle
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- **Determinants:** **length** of list; **meaningfulness** — number of associations, familiarity, frequency of use, relations among words, sequential dependence. Longer lists, low-association or unrelated words take longer.
- **Total time principle:** a fixed amount of time is needed for a fixed amount of material, however the trials divide it; more time → stronger learning.
- Free recall is **organisational:** **Bousfield** — 60 words from 4 categories (names, animals, professions, vegetables) in random order were recalled in category groups — **category clustering**; also **subjective organisation**.
- Verbal learning is usually **intentional** but also **incidental** (noticing rhymes, same first letters).

5.8 Skill learning ★★★

- **Skill** = ability to perform a complex task **smoothly and efficiently** (driving, piloting, navigating ships, shorthand, reading, writing); a chain of perceptual-motor responses/S-R associations learned by practice.
- Each phase: performance improves, becomes less effortful, more automatic. A standstill between phases = **performance plateau**.

Fitts' phase	Features
Cognitive	Understand and memorise instructions and how to perform; every cue, demand and outcome kept in consciousness
Associative	Sensory inputs linked with appropriate responses; with practice errors fall, time reduces; errorless performance begins but needs attention
Autonomous	Attentional demands decrease, external interference reduces; automaticity with minimal conscious effort

Practice is the only means — "practice makes a man perfect".

5.9 Factors facilitating learning ★★★

- **Continuous vs partial reinforcement:** continuous gives a high response rate but quick extinction once withheld (reinforcer loses effectiveness). Partial — especially **ratio** schedules — gives very high rates; hard to tell discontinuation from delay, so extinction is slower — the **partial reinforcement effect**.
- **Motivation:** a mental and physiological state arousing action to satisfy needs (survival needs; in humans also growth needs); a **prerequisite** for learning — the child foraging for sweets, the hungry rat; **intrinsic** (enjoyment) and **extrinsic** (means to another goal, marks).
- **Preparedness:** species have **biological constraints**; they easily learn associations they are genetically prepared for (easy for apes/humans, hard or impossible for cats/rats). A **continuum**: prepared — unprepared (learn with difficulty) — contraprepared (cannot learn).

5.10 Learning disabilities ★★★

- Children drop out for sensory impairment, intellectual disability, emotional disturbance, poverty, cultural norms — and **learning disabilities**.
- **Learning disability:** a general term for a heterogeneous group of disorders shown as difficulty in learning, **reading, writing, speaking, reasoning, mathematics**; sources are **inherent in the child**, presumed due to **central nervous system** dysfunction; may co-occur with other handicaps or not. Seen even in children of **average to superior**

intelligence with adequate senses and opportunities; if not remedied, affects self-esteem, vocation, relations, daily life.

Symptoms

1. Difficulties in writing letters/words, reading text, speaking; listening problems without auditory defect; poor learning strategies
2. **Attention disorders** — distractible, hyperactive
3. Poor **space orientation** and **sense of time** — get lost, late or too early, confuse right/left, up/down
4. Poor **motor coordination**, manual dexterity — balance, sharpening pencils, doorknobs, riding a bicycle
5. Fail to understand and follow **oral directions**
6. Misjudge relationships; cannot read **body language**
7. **Perceptual disorders** — visual, auditory, tactual, kinesthetic (call-bell vs telephone) though acuity is fine
8. **Dyslexia** — confuse b/d, p/q, P/Q, was/saw, unclear/nuclear; cannot organise verbal material

Not incurable — **remedial teaching** techniques by educational psychologists help them learn like others.

NCERT review questions, solved ★★★

1. What is learning? Its distinguishing features. 4

Ans. Learning is any relatively permanent change in behaviour or behavioural potential produced by experience. Features: it involves experience (repeated or even single); changes are relatively permanent, unlike those from fatigue, habituation or drugs; it involves a sequence of psychological events (pre-test, presentation, processing, acquisition, recall); and it is an inferred process distinct from performance.

2. How does classical conditioning show learning by association? 4

Ans. In Pavlov's experiment a neutral bell (CS) was repeatedly paired with food (US) that naturally caused salivation (UR); after pairings, the bell alone produced salivation (CR). The dog learned that the bell signals food — an S-S association. Similarly a child who hears a balloon burst learns to fear balloons. Learning depends on CS-US timing (delayed best), type of US (aversive faster) and CS intensity.

3. Define operant conditioning; factors influencing it. 6

Ans. Learning in which voluntary responses (operants) are strengthened or weakened by their consequences (Skinner's rat pressing a lever for food). Factors: **type of reinforcement** — positive (food, praise) and negative (escape/avoidance of unpleasant stimuli), distinct from punishment; **number, amount and quality** of reinforcement; **schedule** — continuous vs partial (partial more resistant to extinction); **delay** of reinforcement (immediate works better); nature of the response; motivation.

4. A good role model is important for a growing child. Which learning supports it? 4

Ans. Observational (social) learning or modeling (Bandura). Children observe and imitate adults' behaviour, dress, manners, aggression or kindness; Bandura's Bobo-doll study showed children copy a model's aggression, especially when the model is rewarded. Since children acquire both good (politeness, diligence) and bad (indolence, aggression) habits this way, a positive, rewarded model shapes desirable behaviour.

5. Procedures for studying verbal learning.

Ans. (1) **Paired-associates**: stimulus-response word pairs; after study, the stimulus is shown and the response recalled; trials to criterion measure learning. (2) **Serial learning**: reproduce a list in order by serial anticipation. (3) **Free recall**: recall a list in any order — reveals organisation (category clustering, subjective organisation) and better recall of first and last items.

6. What is a skill? Stages of skill learning.

Ans. A skill is the ability to perform a complex task smoothly and efficiently, a chain of perceptual-motor responses learned by practice (driving, typing). Fitts' phases: **cognitive** — understanding instructions, conscious attention to every cue; **associative** — linking stimuli with responses, errors and time decrease; **autonomous** — automatic, little attention, resistant to interference. Plateaus may occur between phases.

7. Generalisation vs discrimination.

Ans. Generalisation: giving the learned response to new stimuli similar to the original (fearing any bearded man in black). Discrimination: responding differently to stimuli that differ (no fear of a clean-shaven man in grey). Generalisation is due to similarity, discrimination to difference; generalisation is failure of discrimination.

8. Why is motivation a prerequisite for learning?

Ans. Motivation arouses and energises the organism to act and persist until a need is satisfied; without it there is no activity to be reinforced. The hungry rat explores and learns lever-pressing; a child seeking sweets learns the jar's location; students work harder to learn when motivated intrinsically or extrinsically.

9. What does preparedness for learning mean?

Ans. Species differ in sensory and response capacities and in associative mechanisms; they can easily learn only associations for which they are genetically prepared. It is a continuum — easy (prepared), difficult (unprepared) and impossible (contraprepared) tasks — e.g. some associations easy for humans and apes are impossible for rats or cats.

10. Forms of cognitive learning.

Ans. **Insight learning** (Köhler's chimpanzees): sudden perception of means-end relations solves a problem without trial and error, and transfers to similar problems. **Latent learning** (Tolman's rats): learning occurs without reinforcement but is shown only when reinforcement is given; the learner forms a cognitive map.

11. How can we identify students with learning disabilities?

Ans. Despite average or higher intelligence: difficulty reading, writing, spelling, speaking or doing maths; dyslexia (reversing b/d, was/saw); poor attention and hyperactivity; poor sense of space, direction and time; poor motor coordination; trouble following oral instructions; misreading social cues and body language; perceptual confusions without sensory defects.

Practice: 1. What is habituation? 2. Name the most effective time relation in classical conditioning. 3. What is an operant? 4. Give two secondary reinforcers. 5. What is shaping? 6. What is a cognitive map? 7. What is the total time principle? 8. What is a performance plateau? **Answers:** 1. Weakening of response through continuous exposure to a

stimulus (not learning). 2. Delayed conditioning. 3. A voluntary response that operates on the environment. 4. Money, praise (grades). 5. Reinforcing successive approximations to a desired response. 6. Mental representation of spatial layout. 7. Fixed time is needed for a fixed amount of material. 8. A standstill in performance between phases.

Multiple choice: 20 MCQs

1. Learning is a change that is:
(a) due to drugs (b) temporary (c) relatively permanent, due to experience (d) due to fatigue
2. Getting used to continuous noise is:
(a) habituation (b) learning (c) extinction (d) insight
3. In Pavlov's experiment, the bell after conditioning was the:
(a) US (b) UR (c) CR (d) CS
4. Salivation to food is the:
(a) CR (b) UR (c) operant (d) CS
5. The most effective classical conditioning procedure is:
(a) trace (b) delayed (c) simultaneous (d) backward
6. Aversive conditioning is established in about:
(a) 50 trials (b) never (c) 20 trials (d) 1-3 trials
7. Skinner used:
(a) rats and pigeons (b) chimpanzees (c) dogs and bells (d) children
8. Wearing a seat belt to avoid a fine is an example of:
(a) punishment (b) extinction (c) negative reinforcement (d) positive reinforcement
9. Responses learned under partial reinforcement are:
(a) reflexes (b) quickly extinguished (c) never learned (d) more resistant to extinction
10. Money and grades are:
(a) primary reinforcers (b) secondary reinforcers (c) punishers (d) US
11. Reinforcing successive approximations is:
(a) extinction (b) generalisation (c) shaping (d) recovery
12. Return of an extinguished response after rest is:
(a) spontaneous recovery (b) generalisation (c) shaping (d) discrimination
13. Dogs that stopped trying to escape shock showed:
(a) insight (b) learned helplessness (c) latent learning (d) shaping
14. The Bobo doll study was conducted by:
(a) Skinner (b) Tolman (c) Bandura (d) Köhler
15. Sudden solution by chimpanzees is:
(a) latent learning (b) trial and error (c) conditioning (d) insight learning
16. Tolman's rats formed a:
(a) cognitive map (b) reflex (c) skill (d) habit
17. Learning foreign-language equivalents uses:
(a) paired-associates learning (b) free recall (c) serial learning (d) conditioning
18. Category clustering in free recall was shown by:
(a) Fitts (b) Seligman (c) Pavlov (d) Bousfield
19. In Fitts' model, automaticity appears in the:
(a) cognitive (b) autonomous (c) associative (d) plateau phase
20. Confusing b and d is typical of:
(a) ADHD (b) habituation (c) dyslexia (d) aphasia

1 (c) · 2 (a) · 3 (d) · 4 (b) · 5 (b) · 6 (d) · 7 (a) · 8 (c) · 9 (d) · 10 (b) · 11 (c) · 12 (a) · 13 (b) · 14 (c) · 15 (d) · 16 (a) · 17 (a) · 18 (d) · 19 (b) · 20 (c)

Assertion-Reason (6)

(a) Both A and R true, R explains A. (b) Both true, R does not explain A. (c) A true, R false. (d) A false, R true.

1. A: Learning is an inferred process. R: We observe only performance, from which learning is inferred.
2. A: Delayed conditioning is the most effective. R: Money is a secondary reinforcer.
3. A: Negative reinforcement is the same as punishment. R: Negative reinforcement increases avoidance and escape responses.
4. A: Backward conditioning is the most common form. R: In backward conditioning, the US precedes the CS.
5. A: Children who saw the model rewarded were most aggressive. R: Performance in observational learning depends on consequences to the model.
6. A: Learning-disabled children can improve. R: Remedial teaching methods help them.

Key: 1 (a) · 2 (b) · 3 (d) · 4 (d) · 5 (a) · 6 (a)

- **Last-night summary:** Learning — relatively permanent change by experience; not fatigue, habituation, drugs; inferred vs performance. Classical (Pavlov): US-UR, CS-CR; S-S; determinants — timing (simultaneous, delayed best, trace, backward rare), type of US (aversive fast), CS intensity. Operant (Skinner box): reinforcers — positive, negative (≠ punishment), number, amount, quality, schedule (continuous/partial), delay.
- Processes: reinforcement (primary/secondary, shaping), extinction and resistance, generalisation, discrimination, spontaneous recovery; learned helplessness (Seligman-Maier). Observational (Bandura, Bobo doll; acquisition vs performance). Cognitive: insight (Köhler), latent (Tolman, cognitive map).
- Verbal: paired-associates, serial anticipation, free recall; meaningfulness, total time principle, category clustering (Bousfield), subjective organisation, incidental learning. Skill: Fitts — cognitive, associative, autonomous; plateau. Facilitators: partial reinforcement effect, motivation (intrinsic/extrinsic), preparedness. Learning disabilities: CNS-based; 8 symptoms incl. dyslexia; remedial teaching.