

Introduction to Cognitive Science

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What is cognitive science?

- several answers: cognitive processes, etc.
- Sir asked to include "brain" → an answer summarized as "brain systems giving rise to behaviour"

⇒ ((Slide)) . What is the process by which you know what you know.

- the science of mind and intelligence.
- mid 1950s: AI, cog psychologists, linguists team up.

Approaches taken:

Top down approach: - how mental processes ... leads to thinking.
initially.

- try to empirically study intelligent behaviour.

Bottom up approach: - Experimentation based on brain imaging.

from the 80s

Empirical

(EEG/ERP, PET, fMRI, MEG)

→ invasive

OR

Computational

- Connectionist Computational Paradigm

Currently: Both Top-down and Bottom-up

Block diagram of Human Info Processing System ((Slides))

> feedback-response loop (may include motor)

+ Sir's additions of: Consciousness, awareness, etc (the clouds)

Features of Cognitive Science as studying mind and behaviour

- mental states
- mental states linked to behaviour
- normal states of mind
- abnormal states of mind

Features of Cognitive Science as a science.

- theories, hypothesis have to be tested. By experimentation.

Experiment: Seemingly crooked lines

- example of: — — approach.

Experiment: Face Perception

- give famous sculptures / paintings and track eye movements to see how they scan a picture, uniformly or at specific features.
- result: people did not scan images uniformly.
- mostly bottom-up processing.

- If a question is directed, it becomes top-bottom. like "what is their age".

o Course no longer involves experimental design.

o Why study cognitive science?

- Answers: clinical processes, better AI, etc. ((helps us design artificial systems))

- Intellectual Value

- Practical Value:

- Education

- AI

- Medical apps.

- Educational Value

- Entertainment Value.

+ some Examples (slides)

Course Logistics

• Team taught: Bapi Raju, Vinoo, Priyanka, Kavita.

Quiz:

20%

Assignments:

20%

Group Project

30%

Term Paper

25%

Other (class participation)

5%