

## \* Key terms

- Instructional design
- Instruction
- Design
- Instructional designer
- History of instruction design

## \* Essential terminologies

Education (situations that may help and  
↓ prepare people)

Instruction (encompassing curriculum)  
↓

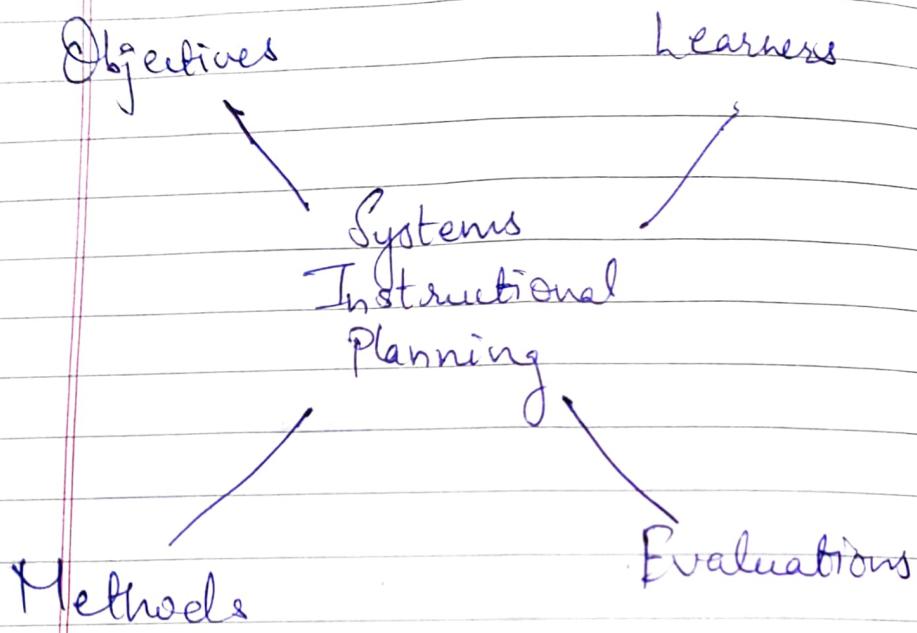
Training (skill specific instructional activity)  
↓

Teaching (physically implementing questions)

## \* Instructional design

- Process
- Discipline
- Science

## \* Systems theory



- 1] Learners:  
→ For whom is the program developed?
- 2] Objectives:  
→ What do you want the learners to learn or demonstrate?
- 3] Methods:  
→ How is the subject content and the skills best learned?
- 4] Evaluation:  
→ How do you determine the extent to which learning is achieved?

## \* ID models.

- Analysis A
- Design D
- Development D
- Implementation I
- Evaluation E

## \* Bloom's taxonomy.

- Cognitive
- Affective
- Psychomotor

## \* Conditions of learning

- Verbal information
- Intellectual skills
- Psychomotor skills
- attitudes
- Cognitive strategies

\* Target audience

\* Process

\* Delivery

Building blocks of  
Training and development

Solving learning and performance problems.

Roles of Instructional Design

As change agent

Communication

\* Instructional designer learning phases:

- ENTRY:
- Instructional designer
- Learning analyst
- Training and development analyst

- MID CAREER

- Instructional design manager
- Project manager
- Learning system co-ordinator
- Learning system consultant

- SENIOR

- Senior instructional design manager
- Training and development and consultant
- Chief learning officer
- Chief employee engagement officer.

## \* Purpose of Instructional System Design (ISD)

• Inputs (learners)

↓  
Means (Theories)

↓  
Results. (Desired outcome)

## \* What is learning?

- persisting change of performance
- knowledge, skills and abilities
- 

## \* Components of learning theory

- The results
- The means
- The inputs

## \* Educational philosophy

- Constructivism
- Rationalism
- Empiricism

## \* Learning theories and Instruction

- Systems
- Cognitivism
- Behaviorism
- Communications

- Instructional methods
- Instructional Conditions
- Instructional outcomes

## \* Major Camps of learning theories

- Behaviorism
- Cognitivism      Cognitive Informating
- Constructivism      Processing (CIP)

### 1) Jean Piaget's perspective (Socio-cultural theory)

- Developmental processes within cognitive stages of development.

- Sensorimotor
- Pre-operational
- Concrete operational
- Formal operational

Assimilation  
Accommodation  
Equilibration

\* Lev Vygotsky - Socio-cultural Theory

• Zones of Proximal development (ZPD)

Higher Developmental level



learners

lower Developmental level

\* Translating learning theories into practical instructional interventions

- How does learning occur?
- Which factors influence learning?
- What is the role of memory?
- How does transfer occur? And what types of learning are best explained by the theory?
- What are the basic assumptions of theories that are relevant to instructional design?
- How should instruction be structured to facilitate learning?

# Instructional theory/Model

Learning theory

Outcome ←  
Ex:  
calculate averages

Required Conditions

Ex:

- Motivated learners
- Recall of component skills

Instructional methods

Ex:

- Stimulate motivation
- Demonstrate rule
- Provides example for practice

\* Purpose of Instructional Design System (IsD)

Input → Means → Results  
(Learners) (Theories) (Desired Outcome)

↓

Instructional System Design

## \* Instructional Theory / Model

↳ Learning theory

to describe how learning occurs across contexts.

• Instructional theory / model

to prescribe how to attain optimal learning outcomes.

→ Bloom's Mastery learning

→ Taxonomy Learning Outcomes.

→ Nine Events of Instruction.

## \* Bloom's Mastery learning

- If the instruction is well-designed, then the learner's performance regardless of their aptitude prior to the learning experience, brings most of the learners to the intended level of performance.
- Most students can master a subject
- Instruction is the means to enable mastery.
- Learner characteristics:  
Cognitive and affective, entry behaviors
- Quality of instruction:  
designed cues, participation (practice), reinforcement and feedback.

## 1] \* Bloom's taxonomy:

(EVR)

- Create • Produce new or original work  
Design, assemble, construct, conjecture, develop, formulate, author, investigate
- Evaluate • Justify a stand or decision  
Appraise, argue, defend, judge, select, support, value, critique, weigh
- Analyze • Draw connections among ideas  
Differentiate, organize, select, compare, contrast, distinguish, examine, experiment, test, question,
- Apply • Use Information in New Situations  
execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch, translate
- Understand • Explain ideas or concepts  
classify, describe, discuss, explain, identify, locate, recognize, report, select,
- Recall • Remember fact and basic concepts  
Define, duplicate, list, memorize

## 2] \* Taxonomy of learning outcomes by Robert Gagné.

- 1) Verbal information (recall, memorisation)
- 2) Intellectual skills (differentiate, categorise)
- 3) Cognitive strategies (evaluate, to judge, to synthesize)
- 4) Attitudes (learning goals and outcomes)
- 5) Motor skills

### 3] Nine Events of Instruction by Robert

- 1) Gain attention
- 2) Inform learners of objectives
- 3) Stimulate recall of prior learning
- 4) Present the content
- 5) Provide learning guidance
- 6) Elicit performance (practice)
- 7) Provide feedback
- 8) Assess performance
- 9) Enhance retention and transfer to the job.

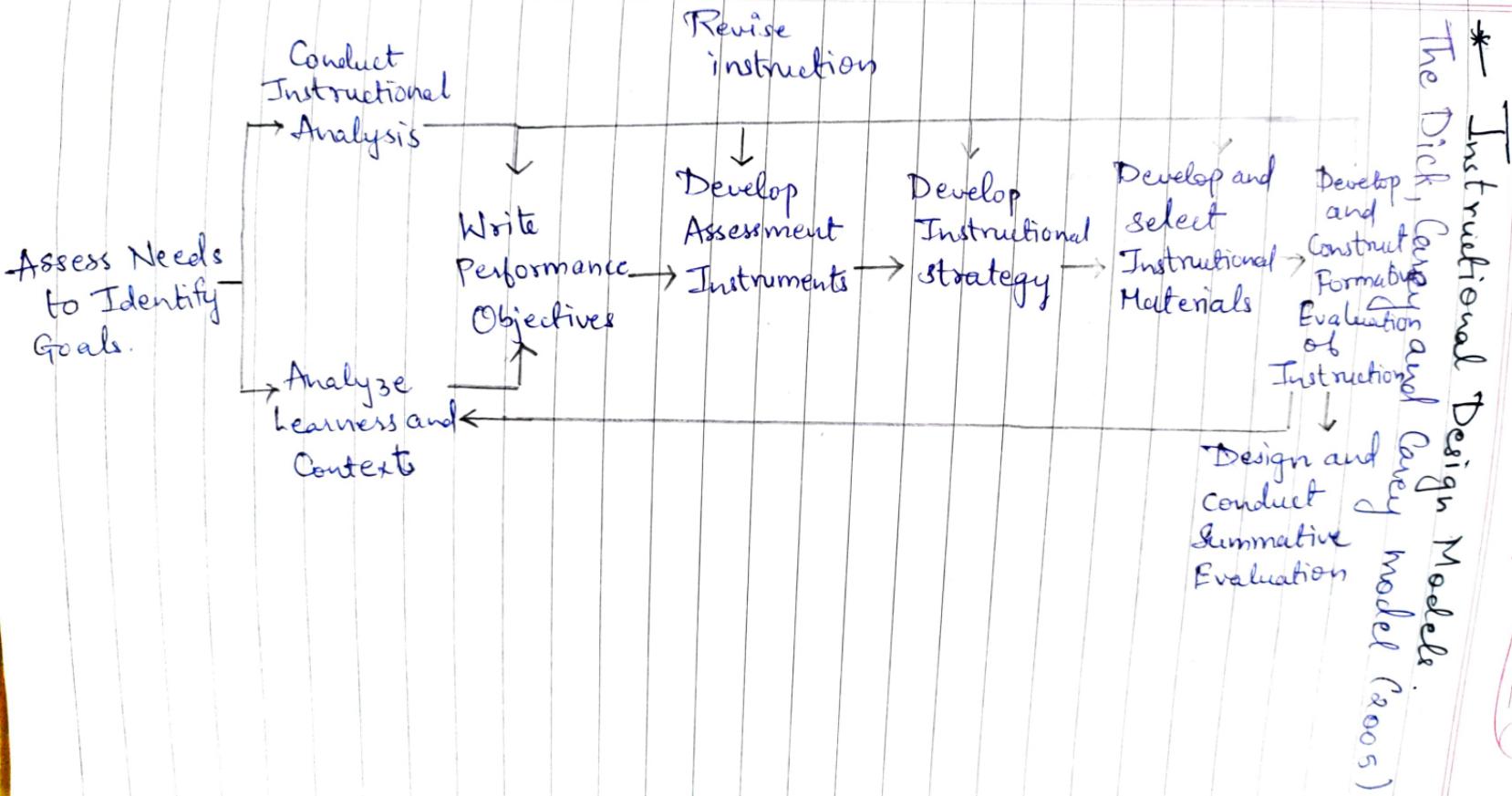
Gagné'

## \* Instructional Design Models

The Dick, Carey model (2005)

Assimilate

Date \_\_\_\_\_  
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## \* The Smith and Ragan Model (1999)

### \* Analysis

- Learning context
- Learners
- Learning Task

Write test items

### \* Strategy

Determine

- Organisational strategies
- Delivery strategies
- Management strategies

• Write and produce instruction

### \* Evaluation

• Conducting Formative Evaluation

→ • Revise instruction ←

# The Morrison, Ross, Kalman, and Kemp Model (2011)

CLASSMATE

Date \_\_\_\_\_

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## Evaluation

Development

Analyze

Planning  
Revision

Instructional  
Problems

Implementation  
Formative Evaluation

learner  
characteristics

Task  
Analysis

Instructional  
objectives

Content  
sequencing

Formative Evaluation

Project Management

Support services  
Confirmative evaluation

Development  
of instruction

Designing of  
the message

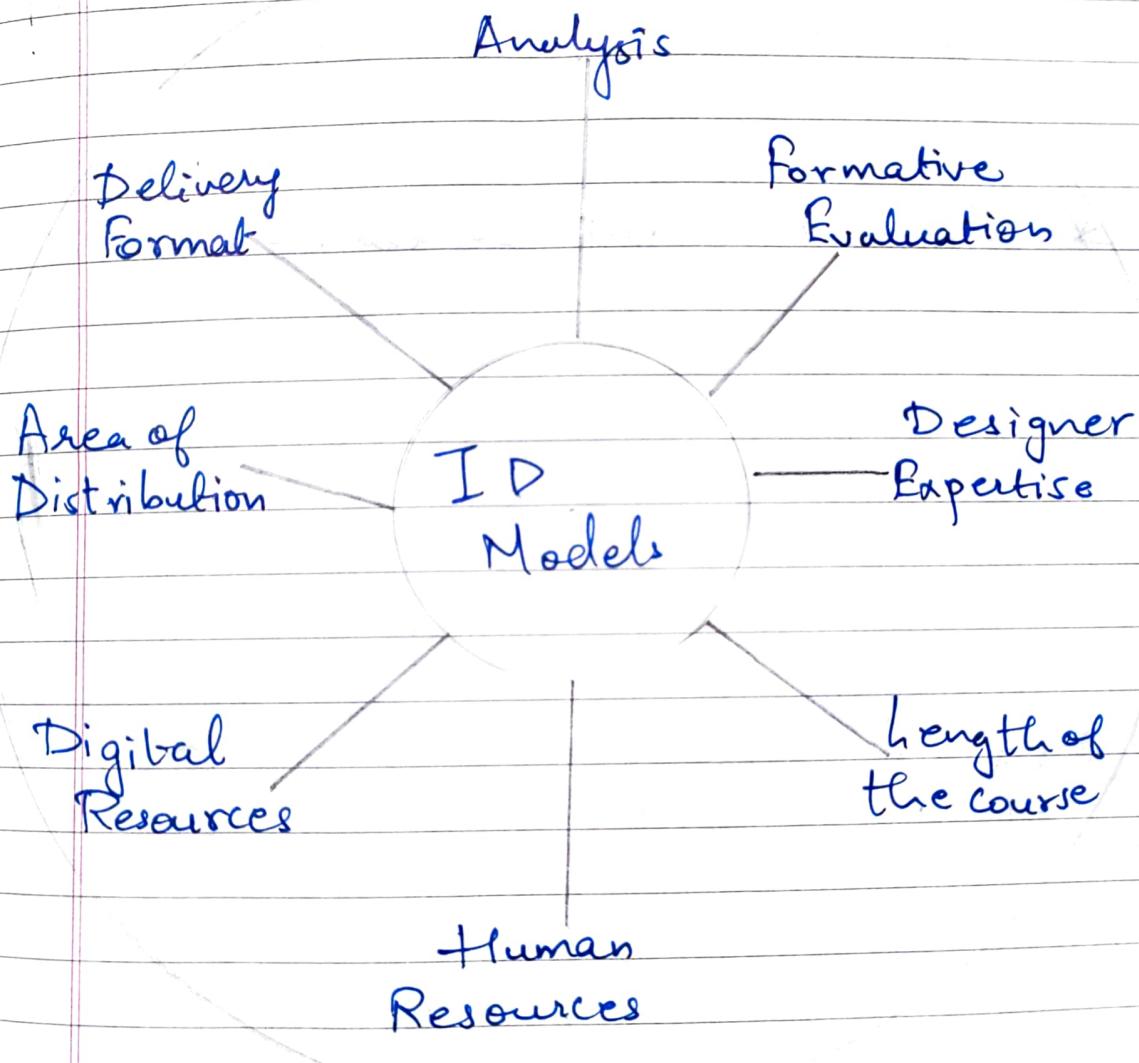
Instructional  
strategies

Design

## \* Rapid Proto-typing

- Assess Needs & Analyze content (Set objective)
- Construct prototype (Design)
- Utilize prototype (Research)
- Install and maintain system.

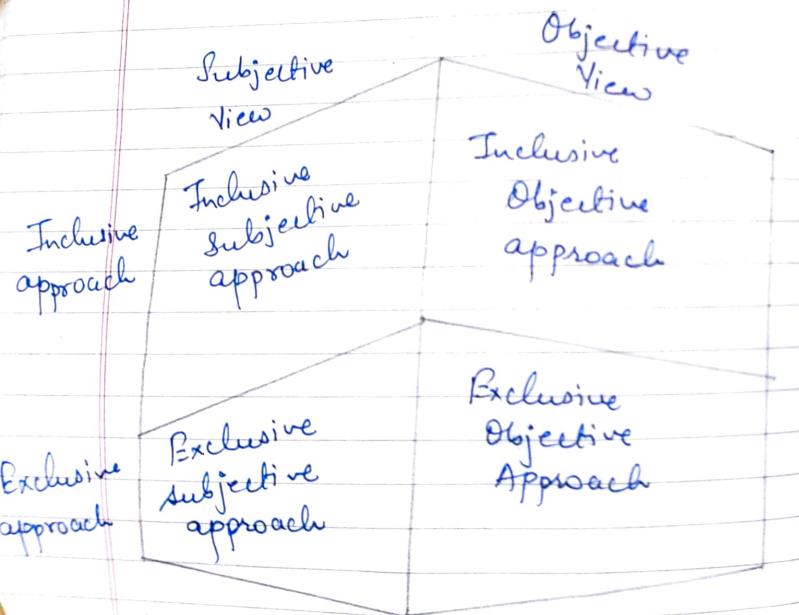
## \* Taxonomy for ID models.



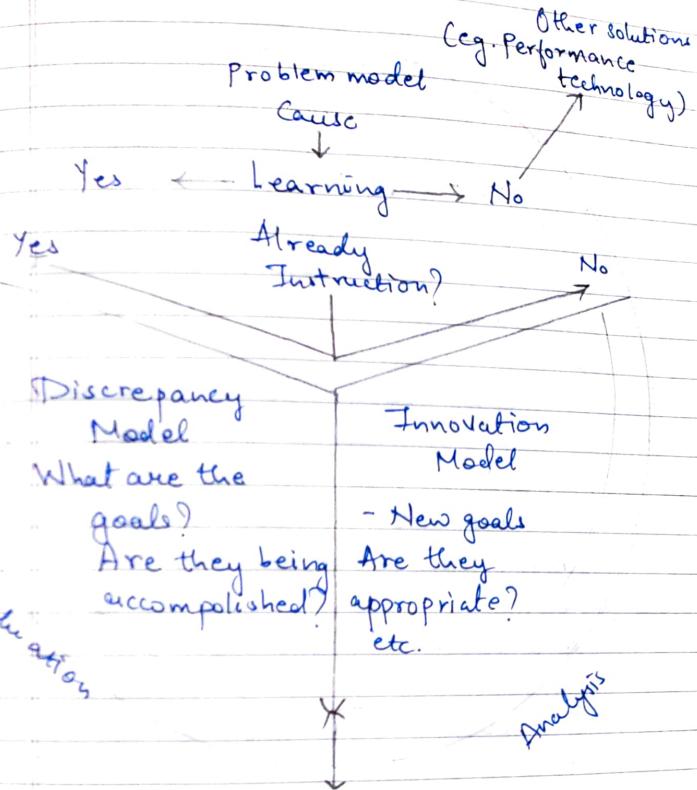
## \* The system of Talent Development

- Inputs / Outputs (People)
- Interacting components (Learning and development)
- Purpose - improve people's activities and processes
- Context - within the organization.

## \* Possible Talent Development approaches



## \* Three Sides of Needs Assessment



## \* Needs Assessment - Phases

- 1) Define - The problem
- 2) Analyze - The causes of the problem
- 3) Select - Solutions to address causes

## \* Important Questions:

- 1) What is not happening that should be happening?
- 2) What leads you to believe your needs will be addressed by training/education?
- 3) What indicators or measure of performance suggest that there is a problem?
- 4) What is causing this problem?
- 5) What solutions are most likely to close gap in results?

## \* Methods:

- Surveys
- Interviews
- Site visits
- Group discussions

- Questionnaires
- Records, reports or other written material

## \* Selection of Learning Goals:

- Will the development of this instruction solve the problem that led to the need for it?
- Are these goals accepted by those who must approve this instructional development effort?
- Are there sufficient people and time to complete the development of instruction for this goal?

## \* Learning Goal Statement

- Learners
- What learners will be able to do
- The performance context
- The tools

## \* Learning Environment Analysis

- Where will the instruction take place?
- What considerations are there affecting instructional delivery in this physical or virtual environment?
- What resources exist?
- Is the learner environment compatible with instructional requirements as well as learner needs?
- Is the learning environment feasible of simulating the performance site?

## \* Course is MOOC environment



Massive Open Online Course.

- 1) Who are the learners?
- 2) Why are they taking this course?
- 3) What is their skill level?
- 4) What can we assume?

# Information About

Will help you

- The goals/expectations/interests of the college and instructors
- The instructor and teaching style
- The learner
- Understand what needs to be highlighted in the course.
- Make decisions about the materials that will be prepared
- Make decisions about pedagogical strategies

# \* Creating a program or certificate

## • Categories of needs

- Reasons for creation
- Norms and regulations
- Environment
- Metrics
  
- Normative Needs?
- Peer institutions?
- Value that will be added?
  
- Comparative needs
- Felt or Expressed needs
  - ↓
  - Reason to do this "now"?
  
- Anticipated needs.
  - Trends or new college goals.
  
- Critical needs
  - New or necessary changes?

## \* Learner population:

- Prior knowledge/experience of the topic area.
- Attitudes towards content and potential delivery system.
- Motivation to learn
- Educational and ability levels
- General learning preferences
- Attitudes towards the organisation giving the instruction.
- Group characteristics.

## \* Areas of learner characteristics

- Cognitive - mental/intellectual capabilities
- Physiological - physical capabilities
- Affective - attitudinal considerations
- Social - important for group work

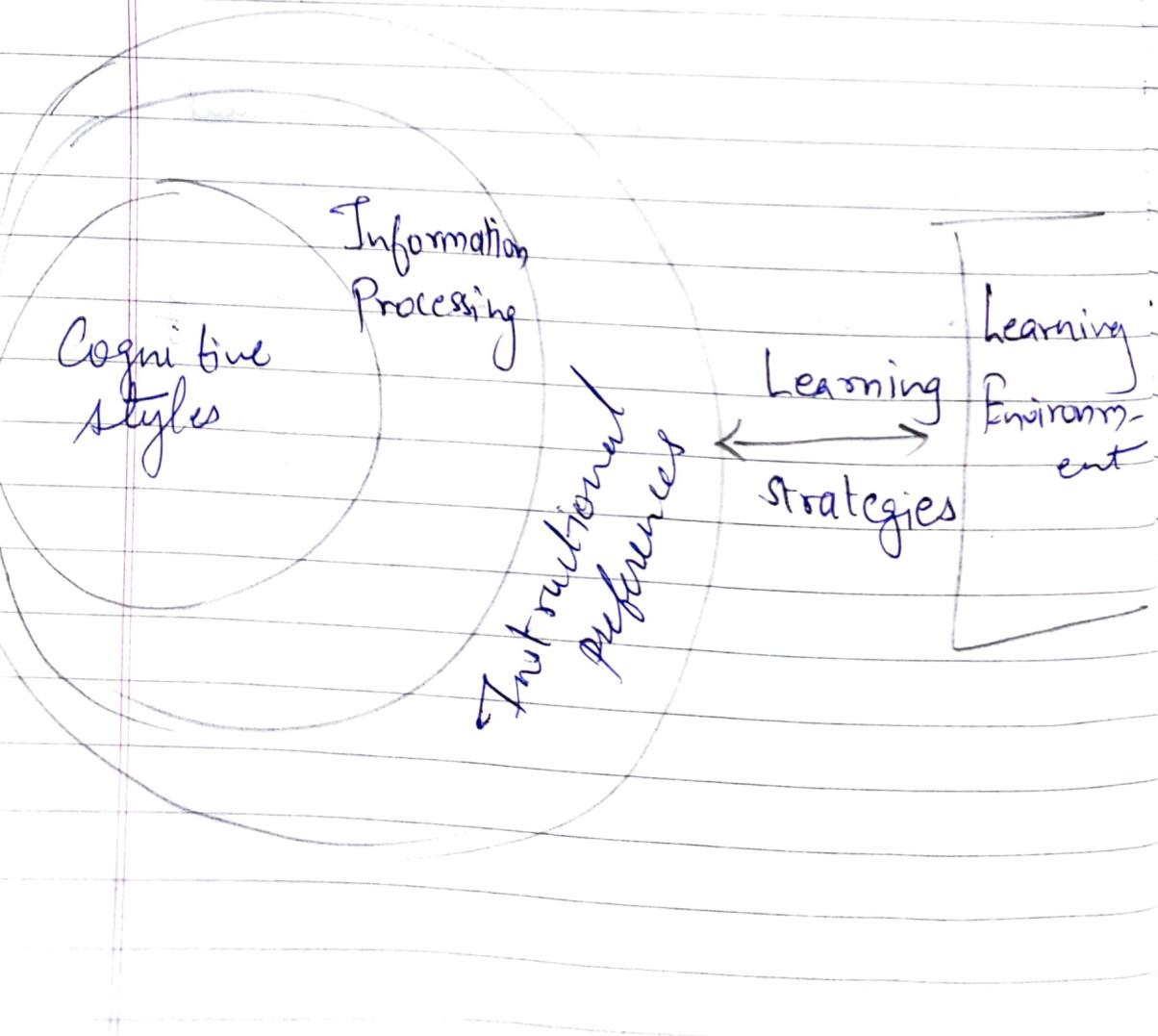
|                         | Similarities / Group<br>(Among Learners)   | Differences / Individual<br>(Among Learners)  |
|-------------------------|--|---|
| Stable<br>(Over time)   | <ul style="list-style-type: none"> <li>• Sensory capacities</li> <li>• Information processing</li> <li>• Conditions of learning</li> </ul>   | <ul style="list-style-type: none"> <li>• Aptitudes</li> <li>• Cognitive styles</li> <li>• Psychological traits</li> <li>• Gender, ethnicity and racial group</li> <li>• Social economic status</li> </ul>                 |
| Changing<br>(Over Time) | <p>Motivational State</p> <ul style="list-style-type: none"> <li>• Development processes</li> <li>• Intellectual</li> <li>• Language</li> <li>• Psychosocial</li> <li>• Moral</li> </ul> | <ul style="list-style-type: none"> <li>• Development state</li> <li>• Intellectual</li> <li>• Other</li> <li>• Prior learning <ul style="list-style-type: none"> <li>◦ General</li> <li>◦ Specific</li> </ul> </li> </ul> |

## \* Cognitive thinking style:

- Abstract
- Concrete
- Random
- Sequential tendencies

## \* Four quadrants

- Concrete - Sequential
- Concrete - Random
- Abstract - Random
- Abstract - Sequential



## \* Task Analysis:

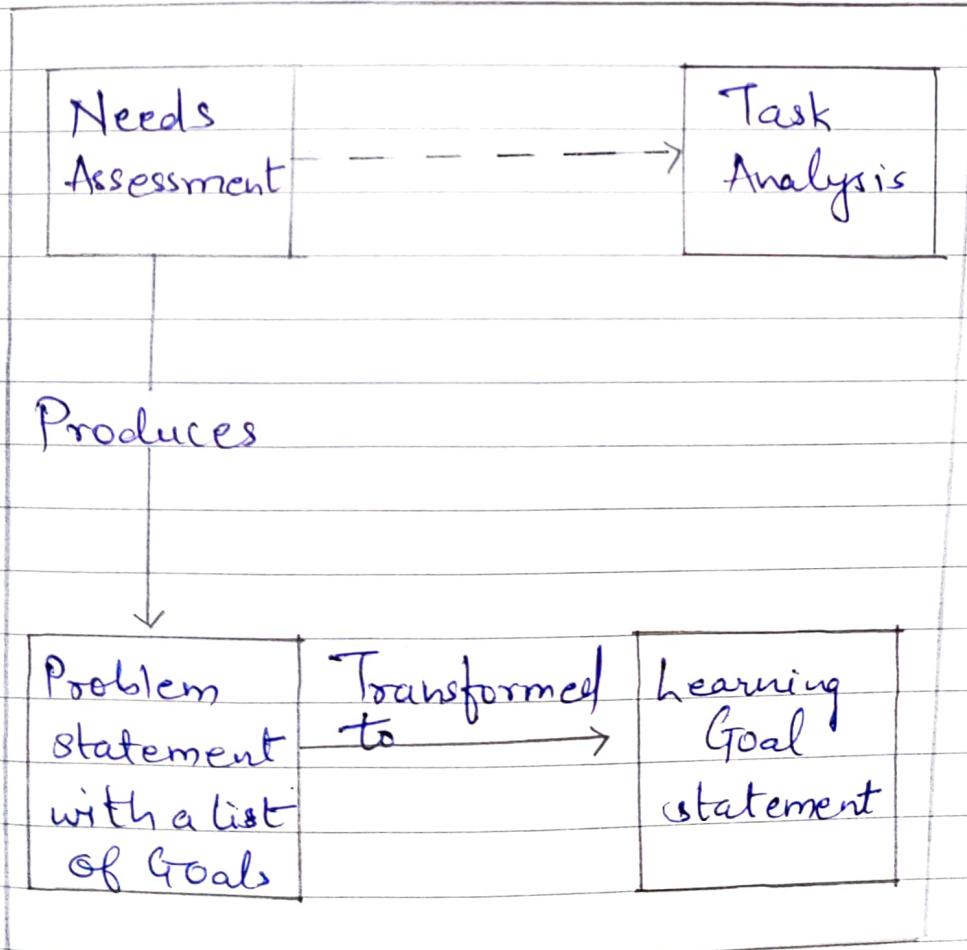
State learning Goals  
↓

Identify learning outcomes  
↓

Analyze information processing steps  
↓

Analyze prerequisite skills  
↓

Write learning Objectives



\* Levels of Complexity in intellectual skills:

Problem - solving involves the formation of Rules and Principles and Concepts (Defined / Concrete) which requires as prerequisites Discriminations.