OUTCOME BASED EDUCATION

[Course Outcome Statements Course Learning outcomes]

COURSE OUTCOMES (COs)

COs are the statements of **knowledge/ skills/ abilities** that students are expected to **know, understand and perform** as a result from their learning experiences in each course. In order to graduate from a programme, students must pass a significant number of required courses (subjects) with at least a minimal proficiency level (often in the form of marks or grades), as set forth by the affiliating university.

Course Outcomes (COs) are the **measurable parameters** which evaluate the student performance for each course that the student undertakes in every semester.

Course Outcomes (COs):

- Program Specific Outcomes are statements that describe what the **graduates of a specific program should be able to do**.
- PSOs characterize the **specificity of the core courses** of a program.
- The POs are important **as a guideline** when developing or revising the course outcomes.

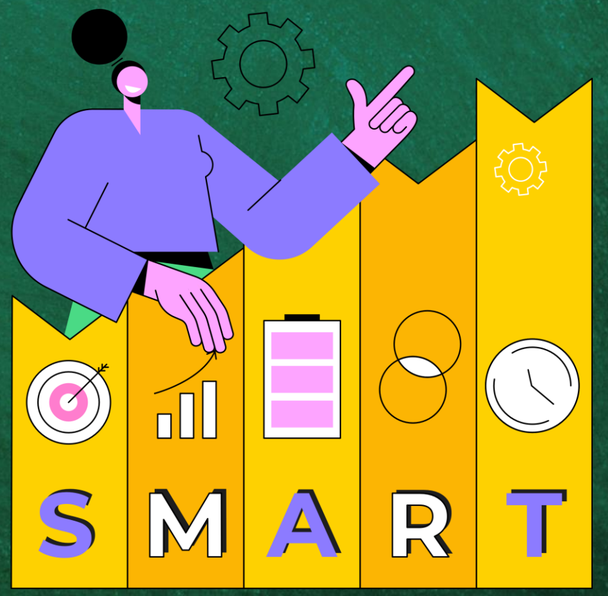
GUIDELINE FOR COs

- COs should aim to develop **higher order skills** in each Domain of Learning.
- Typically 4-6 COs are identified per Course.
- The CO statements are defined by considering the course content **covered in each module of a cour**se. On average, a typical CO is expected to take between 7-10 lessons in a 40 lesson course.
- Attainment of each CO should lead to **attainment of one or more POs**.

DEFINING COs:

COs can be defined and verified by using SMART principle

Specific	• Description of precise behaviour and situation • Concrete, focused and detailed
Measurable	• The performance of the objective must be observed and measured.
Achievable	• The objective must be achieved by using reasonable amount of effort.
Realistic	• They must be appropriate for the student and the situation.
Time-bound	• Must be clearly stated with a time limit for accomplishing objective.



TYPES OF COURSE LEARNING OUTCOMES

- **Cognitive Outcomes:** “What will the students know after completing a course?”

- **Behavioral Outcomes:** “What will the students be able to do after completing a course?”

- **Affective Outcomes:** “What will the students care about or think after completing this course?”

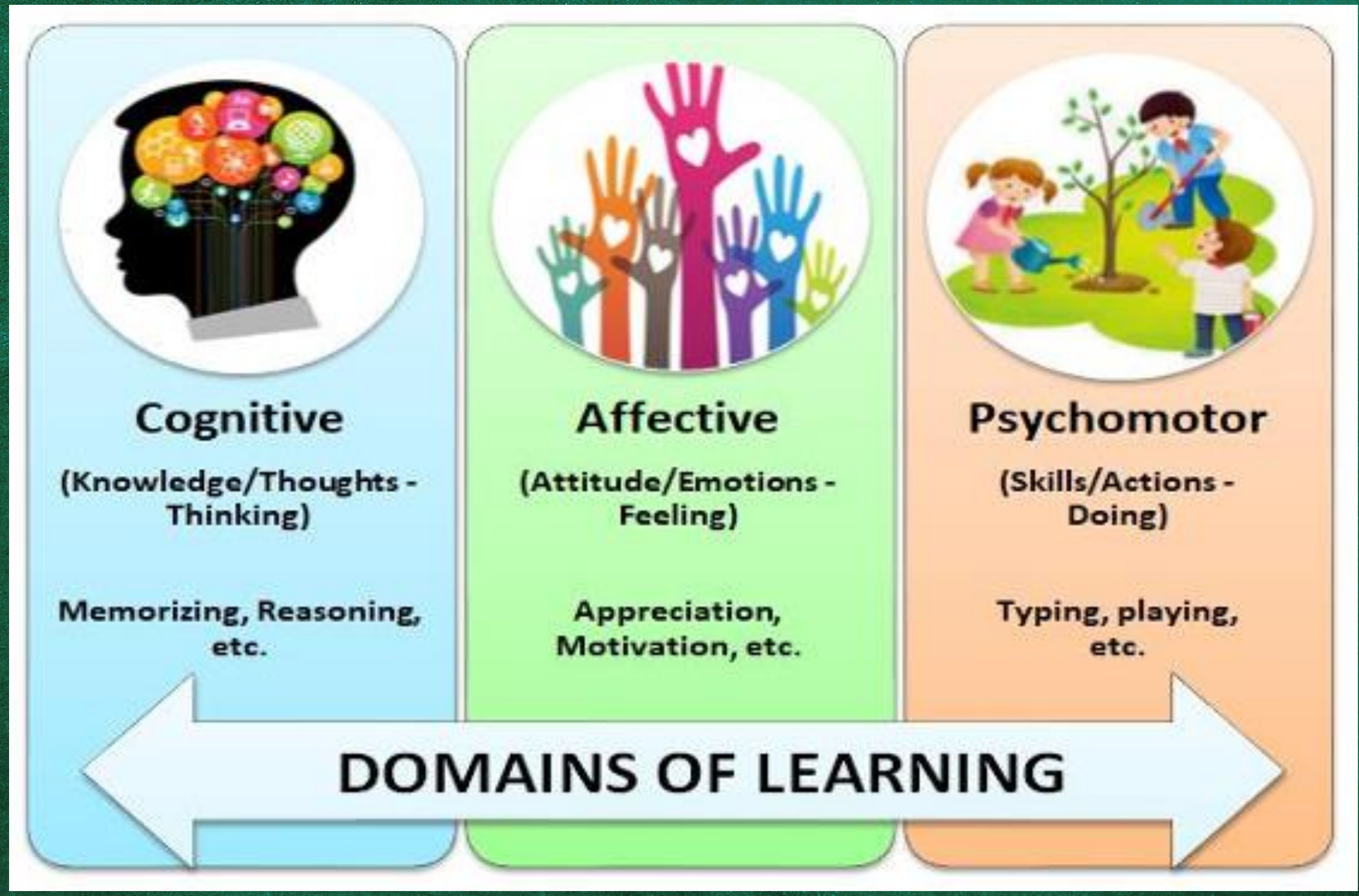
PARTS OF COURSE LEARNING OUTCOMES

1. Action verb
2. Subject content
3. Level of achievement
4. Condition of performance (if applicable)

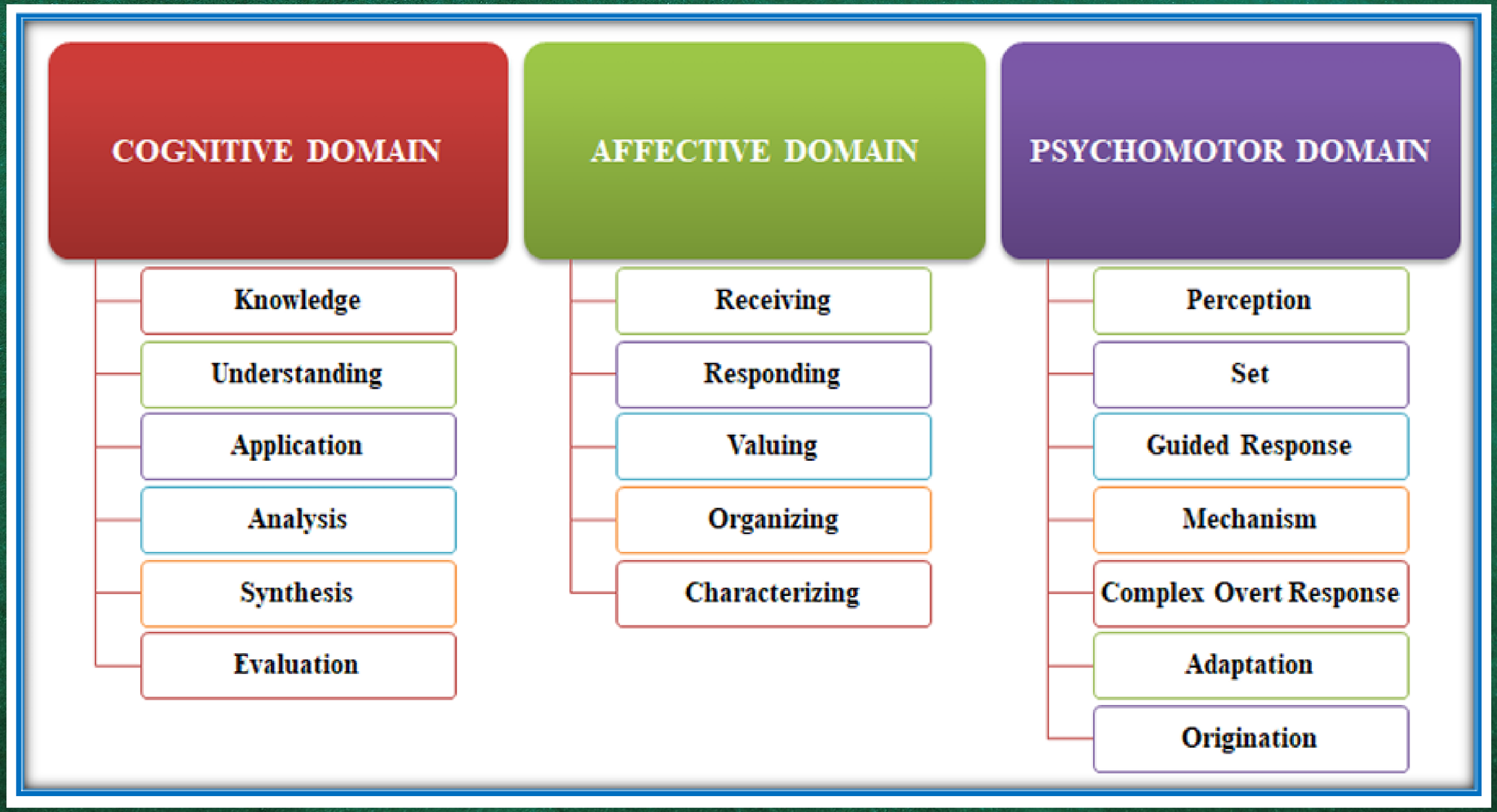
STEPS OF COURSE LEARNING OUTCOMES

- Select an **action verb** using Bloom's Taxonomy identifying the specific student knowledge, skill or disposition to be demonstrated.
- Clearly identify the **subject content** focusing on specific knowledge, skill or disposition that the students are expected to be able to demonstrate.
- Decide if the CO requires either a **level of achievement** or a **condition of performanc**e. A level of achievement identifies how proficient students need to be in a task. A condition of performance identifies if students are performing this particular outcome in a specific context only and hence may not be needed for every CO.
- Be certain to pair each CO with one or more learning activities that will allow the students to achieve this outcome and permit faculty to measure this achievement.

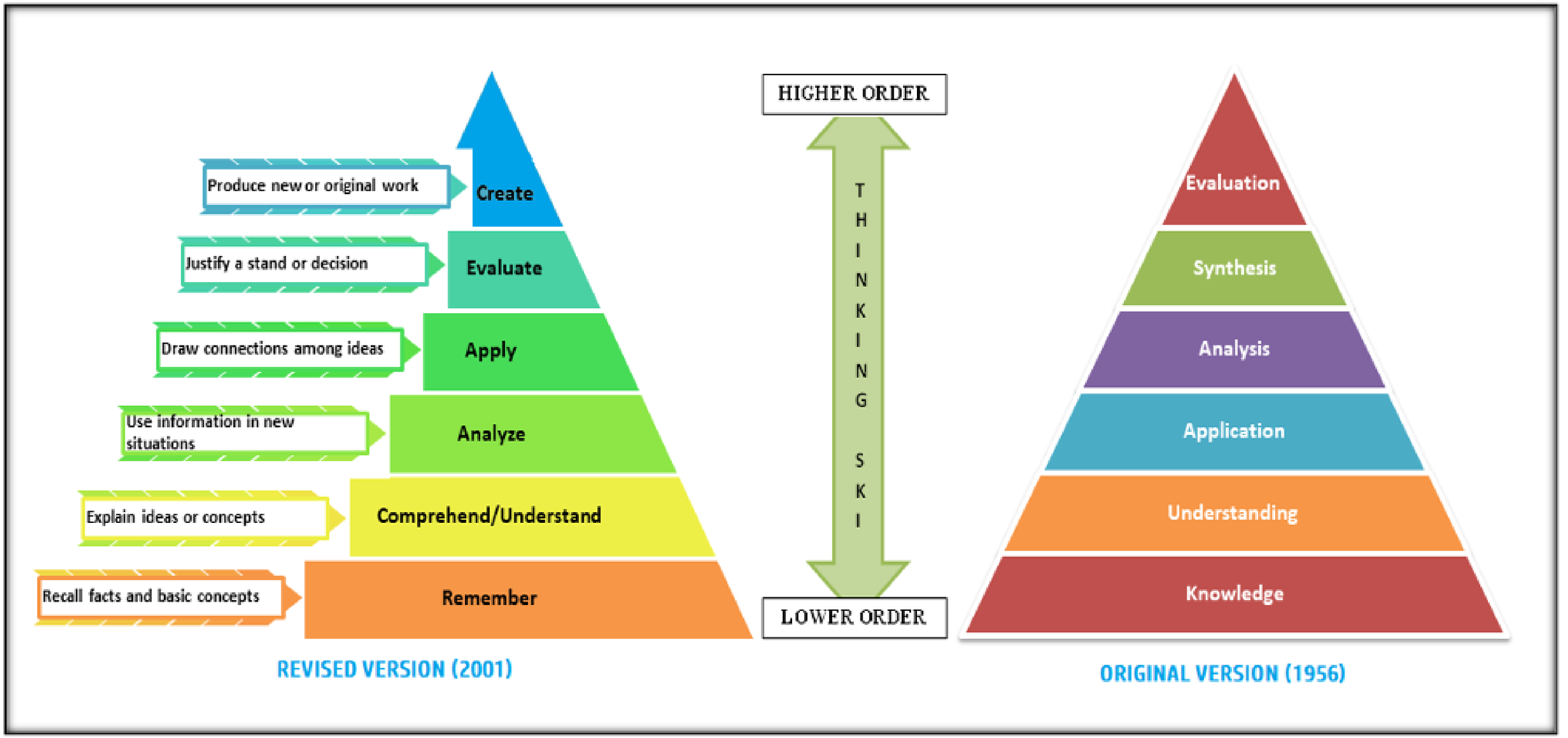
BLOOM'S TAXONOMY OF EDUCATIONAL OBJECTIVES



THREE LEARNING DOMAINS OF BLOOM'S TAXONOMY



COGNITIVE DOMAIN OF BLOOM'S TAXONOMY



ACTION VERBS FOR COGNITIVE DOMAIN

	LOWER ORDER			HIGHER ORDER		
Levels	**Remember**	**Comprehend**	**Apply**	**Analyze**	**Evaluate**	**Create**
Overview	Recalling basic facts and concepts	Explaining ideas or concepts	Using information in new situations	Drawing connections among ideas	Justifying a stand or decision	Produce new or original work
Action Verbs	• Define • Identify • Label • List • Name • Recall • State • Choose • Enumerate • Find • Group • Match • Reproduce • Sort • Recognize	• Describe • Discuss • Explain • Locate • Paraphrase • Give Example • Translate • Annotate • Classify • Convert • Exemplify • Generalize • Infer • Map • Organize • Relate • Select • Show • Summarize • Translate	• Apply • Carry out • Demonstrate • Illustrate • Prepare • Solve • Use • Adapt • Advise • Build • Change • Choose • Compute • Customize • Dramatize • Employ • Implement • Manipulate • Modify/Alter • Investigate	• Analyze • Categorize • Compare • Contrast • Differentiate • Discriminate • Outline • Detect • Diagnose • Diagram • Dissect • Distinguish • Examine • Separate • Simplify • Survey • Test for • Trace • Correlate	• Assess • Conclude • Evaluate • Interpret • Justify • Measure • Support • Appraise • Argue • Critique • Debate • Decide • Deduce • Defend • Determine • Disprove • Estimate • Forecast • Judge	• Combine • Construct • Design • Develop • Generate • Plan • Propose • Create/Compile • Compose • Discover • Expand • Formulate • Improve • Invent • Integrate • Manage • Prepare • Produce • Synthesize

ACTION VERBS FOR AFFECTIVE DOMAIN

	LOWER ORDER		HIGHER ORDER		
Levels	**Receiving**	**Responding**	**Valuing**	**Organization**	**Internalizing**
Overview	Selective attention to stimuli	Responding to stimuli	Attaching value or worth to something	Conceptualizing the value and resolving the conflict between it and other values	Integrating the value into a value system that controls behavior
Action Verbs	• Accept • Acknowledge • Be aware • Listen • Notice • Pay attention • Tolerate	• Agree to • Answer freely • Assist • Care for • Communicate • Comply • Confirm • Consent • Contribute • Cooperate • Follow • Obey • Participate willingly • Read voluntarily • Respond • Visit • Volunteer	• Adopt • Assume responsibility • Behave according to • Choose • Commit • Desire • Exhibit loyalty • Express • Initiate • Prefer • Seek • Show concern • Use resources to	• Adapt • Adjust • Arrange • Balance • Classify • Conceptualize • Formulate • Group • Organize • Rank • Theorize	• Act upon • Advocate • Defend • Exemplify • Influence • Justify behavior • Maintain • Serve • Support

ACTION VERBS FOR PSYCHOMOTOR DOMAIN

	LOWER ORDER		HIGHER ORDER				
Levels	**Perception**	**Set**	**Guided Response**	**Mechanism**	**Complete Overt Response**	**Adaption**	**Origination**
Overview	Senses cues that guide motor activity	Mental, emotional and physical readiness to act	Imitation and practice of skills often in discrete steps	Performing acts with increasing efficiency, confidence and proficiency	Automatic performance	Adapting skill sets to meet a problem situation	Creating new patterns for specific situations.
Action Verbs	• Detect • Hear • Listen • Observe • Perceive • Recognize • See • Sense • Smell • Taste • View • Watch	• Achieve a posture • Assume a body stance • Establish a body position • Place hands, arms, etc. • Position the body • Sit • Stand • Station	• Copy • Duplicate • Imitate • Manipulate with guidance • Operate under supervision • Practice • Repeat • try	• Complete with confidence • Conduct • Demonstrate • Execute • Improve efficiency • Increase speed • Make • Pace • Produce • Show dexterity	• Act habitually • Advance with assurance • Control • Direct • Excel • Guide • Maintain efficiency • Manage • Master • Organize • Perfect • Perform automatically • Proceed	• Adapt • Reorganize • Alter • Revise • Change • Modify	• Design • Originate • Combine • Compose • Construct

METHODS OF ASSESSMENT OF LEARNING OUTCOMES:

- Continuous Internal Assessment (CIA)
- Alternate Assessment Tools (AAT)
- Semester End Examination (SEE)
- Laboratory and Project work
- Course exit survey
- Programme exit survey
- Alumni survey
- Employer survey
- Course expert committee
- Programme Assessment and Quality Improvement Committee (PAQIC)
- Department Advisory Board (DAB)
- Faculty meetings
- Professional societies

ASSESSMENT TOOLS OF LEARNING OUTCOMES

Direct Assessment Tools	Indirect Assessment Tools
• Class Test • Internal Assessment • Assignments • Practical Examination • Mock Test • Seminar/Presentations • Mini Project • Revision Examinations • Semester End Examinations	• Student Feedback Survey • Alumni Feedback Survey • Teachers Feedback Survey • Employer Feedback Survey

EXAMPLE STATEMENTS of COs (M.Ed. Programme) :

On successful completion of the course, the students will be able to:

CO1: Identify the research problems independently.

CO2: Select prompt research method for research process.

CO3: Train to collect appropriate reviews for selected problems.

CO4: Acquire the ability to select samples from research population area.

CO5: Practice proper sampling techniques.

CO6: Able to choose variables according objectives of the study.

CO7: Prepare and standardize tools for research.

CO8: Use SPSS package for data analysis.

CO9: Write research proposal for the projects.

CO-PO AND CO-PSO MAPPING

All the courses together must cover all the POs (and PSOs).

For a course,

- **the COs are mapped to the POs through the CO-PO matrix**
- **the PSOs are mapped through the CO-PSO matrix**

CO-PSO MATRIX

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	2	3	3	3	2	2	1	3	1	3
CO2	3	3	3	3	2	1	1	3	1	3
CO3	2	2	3	3	2	2	1	3	1	3
CO4	3	3	3	2	2	2	1	3	1	3
CO5	2	3	2	3	3	3	2	3	1	3
CO6	2	2	3	3	3	3	1	2	1	3
CO7	3	3	3	3	2	1	1	3	1	3
CO8	2	3	2	3	2	2	1	3	1	3
CO9	2	3	3	3	2	2	1	3	1	3

- **“1” – Slight (Low) Correlation**
- **“2” – Moderate (Medium) Correlation**
- **“3” – Substantial (Strong) Correlation**
- **“-” -- Indicates there is no correlation.**

CO-PO MATRIX

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	3	3	3	2	2	1	3	1	3
CO2	2	3	3	3	2	1	1	3	1	3
CO3	2	3	3	3	2	2	1	3	1	3
CO4	3	3	3	3	2	2	1	3	1	3
CO5	3	3	3	3	3	3	2	3	1	3
CO6	2	3	3	3	3	3	1	3	1	3
CO7	2	3	3	3	2	1	1	3	1	3
CO8	2	3	3	3	2	2	1	3	1	3
CO9	3	3	3	3	2	2	1	3	1	3

- **“1” – Slight (Low) Correlation**
- **“2” – Moderate (Medium) Correlation**
- **“3” – Substantial (Strong) Correlation**
- **“-” -- Indicates there is no correlation.**

Procedure followed while assigning the values by mapping COs to Pos.

- Select action verbs for a CO from different Bloom's levels based on the importance ofthe particular CO for the given course.
- Stick on to single action verbs while composing COs and use for multiple action verbsif the need arises.
- Values to CO-PO (technical Pos in particular) matrix are assigned by
  - ❖ Judging the importance of the particular CO in relation to the Pos. If the CO matches strongly with a particular PO criterion then 3 is assigned, if it matches moderately then 2 is assigned or less than 1 is assigned else marked with " – " symbol.
  - ❖ If an action verb used in a CO is repeated at multiple Bloom's levels, then reconsider which Bloom's level is the best fit for that action verb.

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