



Essays, MCQ, EMQ

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Objectives

- Discuss criteria for assessment of students
- Emphasize the link between curriculum and assessment
- Introduce different levels of assessment

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Principles of assessment

- Feasibility
- Validity
- Reliability

Validity

- Construct validity
- Content validity
- Face validity
- Predictive validity

Validity

- **Construct validity**

- **Is the extent to which a test measures the trait that it claims to measure**

Validity

- **Content validity**

- Is the extent to which the domain that is being measured is measured by the assessment tool
- For example, while trying to assess technical skills we may actually be testing knowledge

Validity

- **Face validity**

- **Is the extent to which the examination resembles real life situations**
- **The extent to which the exam measures skills that are important to measure**

Validity

- Predictive validity
 - Is the ability of the examination to predict future performance

Reliability

- **Intra-rater reliability**
 - Is a measure of a test to generate similar results when applied at two different points by the same examiner
- **Inter-rater reliability**
 - Measures the extent of agreement between two or more observers
- **Test-retest reliability**

Time to perform assessment

Introduction and
Demonstration

Students' Practice
with Feedback

Assessment of
Students'
Competency

Real or *simulated* environment

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Assessment matrix

The background features a light yellow-to-white gradient with a thin grid of light yellow lines. A green curved border is at the top right, and a blue curved border is at the bottom left. Several realistic water droplets are scattered across the grid.

Task/objective	Essay	MCQ	Practical/ clinical
Objective 1		◇	
Objective 2	◇		
Objective 3		◇	
Objective 4			◇
Objective 5			◇

How to use the matrix

- Create it based on your curriculum
- The method of assessment chosen should be linked to
 - The nature of the objective
 - The feasibility of the method
- Create it in advance to guide the question building areas
- Stick to it once created

**What about objectives that do not
deserve assessment (not important?)**

What about objectives that do not deserve assessment (not important?)

- **Remove them from your curriculum and allow more space for the more important objectives**

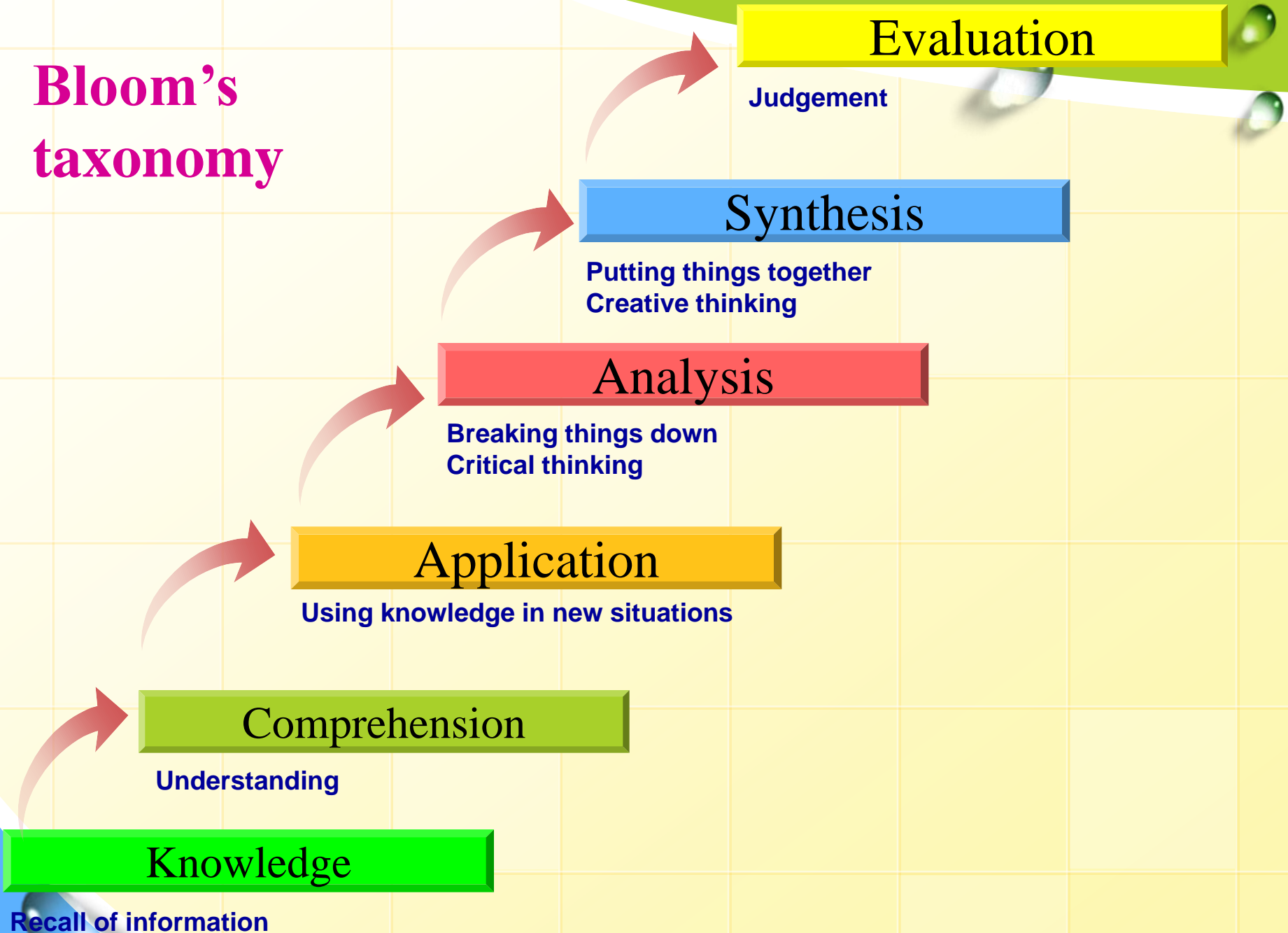
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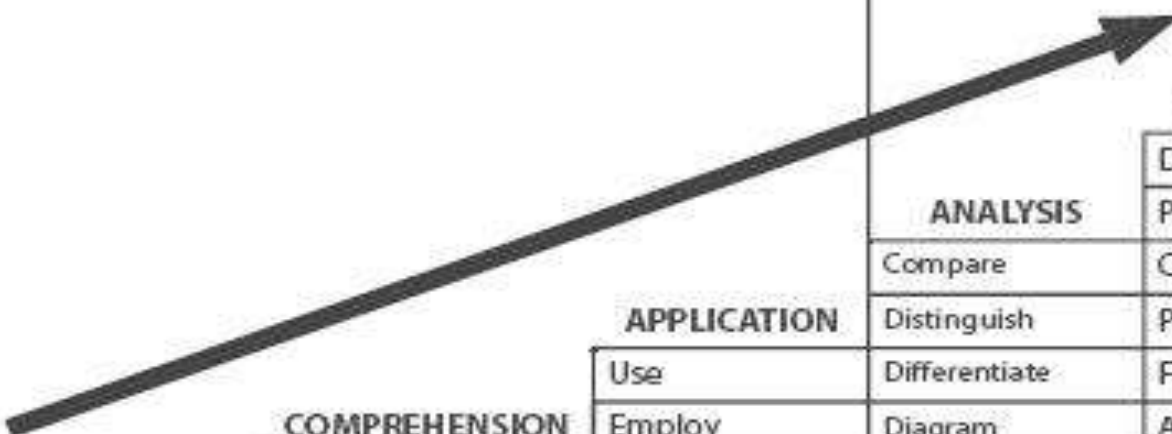
Bloom's taxonomy



Bloom's verbs



**VERBS THAT DEMONSTRATE
CRITICAL THINKING
(MJC Courses 100-299)**



				EVALUATION	
				SYNTHESIS	Judge
				Design	Estimate
			ANALYSIS	Plan	Evaluate
			Compare	Compose	Revise
		APPLICATION	Distinguish	Propose	Score
		Use	Differentiate	Formulate	Select
	COMPREHENSION	Employ	Diagram	Arrange	Rate
KNOWLEDGE	Express	Interpret	Analyze	Assemble	Choose
Define	Restate	Dramatize	Categorize	Collect	Measure
Repeat	Translate	Sketch	Appraise	Construct	Compare
Name	Identify	Practice	Experiment	Create	Value
Recall	Explain	Illustrate	Test	Setup	Assess
List	Recognize	Operate	Contrast	Organize	
Relate	Discuss	Demonstrate	Inspect	Prepare	
Record	Describe	Apply	Debate	Manage	
Underline	Tell	Schedule	Inventory		
	Locate	Shop	Question		
	Report		Examine		
	Review		Criticize		
			Relate		
			Solve		
			Calculate		

Examples from our assessment papers

- to be discussed

Methods of assessment used in Mansoura

- Short essays
- MCQ
- Assessment of skills (practical or clinical)
- Oral exams

Short essay questions

- What is it?
- Criteria
- Example
- Limitations

Definition of short essay questions

- "A test item which requires a response composed by the examinee, usually in the form of one or more sentences, of a nature that no single response or pattern of responses can be listed as correct, and the accuracy and quality of which can be judged subjectively only by one skilled or informed in the subject."

John M. Stalnaker 1951

Criteria

1. Requires examinees to *compose* rather than select their response (unlike MCQ)
2. Elicits student responses that must consist of more than one sentence (unlike fill the space)
3. Allows different or original responses or pattern of responses.

Criteria (cont)

4. Requires subjective judgment by a competent specialist to judge the accuracy and quality of responses (unlike MCQ that can be marked by the machine)
5. Stimulate students thinking of content to use in responding to the essay question

Example A

List the steps of management of appendicular mass

Example A

List the steps of management of appendicular mass in the right order

Example A

- A 24 years old presents with recurrent attack of right iliac fossa pain for the last 6 months. Now presenting with acute abdominal pain, fever, dehydration and poor general condition. His total leucocytic count is 24000 and CRP is 96. Abdominal USS reveals right iliac fossa appendicular mass.

Explain options available for management, and construct a management plan.

Limitation of essay questions

1. Assess a limited sample of the range of content
2. Are difficult and time consuming to grade
3. Not easy to construct

Example B

- Aly was born at 35 weeks of gestation. He was delivered by an emergency caesarian section for weak fetal movement. His mum had gestational diabetes and was maintained on insulin injections. Two hours after delivery, he was noted to be grunting. His respiratory rate was 65 per minute, heart rate 170 per minute, had intercostals recession and working ala nasi. An ejection systolic murmur grade 3/6 maximum at the left sternal edge was also heard. Right lobe of liver edge was palpable 2 cm below the right costal margin. Random blood sugar was 30 mg/dL. Aly was admitted to NICU for management.

1. List three likely causes for the breathing difficulty of this child. Discuss how to differentiate between them. (10 marks)
2. Enumerate and explain two possible causes for the abnormal blood sugar level. Explain how to treat. (10 marks)
3. List 4 common complications that may occur to this child (not described in the scenario). (10 marks)

Essay, Model answer

- Two and half marks for any of the following
 - Apnea
 - Hypothermia
 - Hypocalcemia
 - Feeding difficulties
 - NEC
 - Jaundice
 - Polycythemia
 - Infection
 - Pulmonary hemorrhage
 - Neurological complications

OR any reasonable answer related to complications of prematurity or maternal diabetes



Questions on Essays?

MCQ



Facts about MCQ

- Difficult to write!!!
- If written properly...
 - High validity
 - High reliabilitybut only if test is at least 60-80 questions long
- Easy to rate!
- Costly: ~500 USD per question

MCQ

- Compose of
 - Stem
 - Distractors

Stem

- Acute intermittent porphyria is the result of a defect in the biosynthetic pathway for which of the following

Distractors

- A. collagen
- B. corticosteroid
- C. fatty acid
- D. glucose
- E. heme
- F. thyroxine (T4)

Rules for MCQ

- One point per question
- One single best answer (no A and B)
- Avoid queuing effects
- Avoid hints
- Do review before administering
- Do proper test analysis afterwards

Rules for the stem

- Covers one focused problem
- Linguistically sound and easy to understand
- Avoid negative statements
 - **whice of the followinng is not**
- A clever student should be able to answer the question without reading distractors

Rules for the stem

- **Incorrect:**

- One of the following is an autosomal recessive disorder
- If the student covers distractors, he can't answer, then question is incorrectly written

- **Correct**

- Thalassemia is inherited by which of the following mode of inheritance

Rules for distractors

- All should be homogenous (diagnoses, investigations, etc.)
- Do not include antonyms in the list of distractors
 - at least one of them is incorrect
- Do not include synonyms in the list of distractors
 - definitely both are incorrect
- Avoid "all of the above".
 - If 2 of the list are correct then the answer is "all of the above"

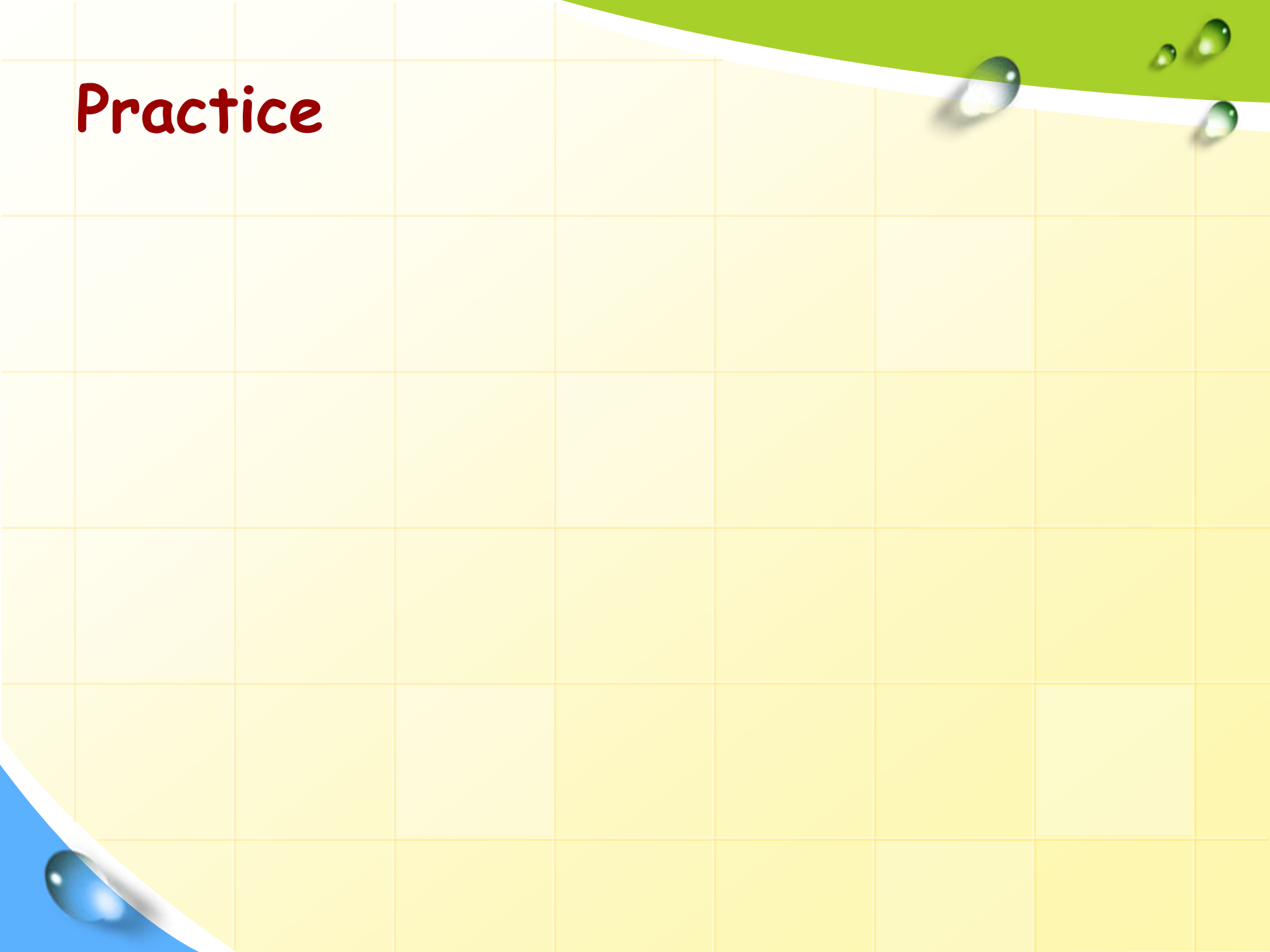
Rules for distractors

- Avoid none of the above
- Avoid grammatical clues
 - **Example:**
 - Stem: Is
 - The distractor in plural will always be wrong
- Avoid unequal length and complexity of the distractors
 - **Students will have a clue to the correct answer being the complex one**
- Arrange alphabetically if possible

Limitations of MCQ

- Undue emphasis on recall and
- Stimulate students to learn in a recall mode.

Practice



Questions on MCQs?

Extended Matching Question (EMQ)

- Well-constructed extended matching sets include four elements:
 - 1) a theme
 - 2) an option list,
 - 3) a lead-in statement
 - 4) two or more item stems

Example

Theme: Modes of inheritance

- A- Autosomal dominance
- B- Autosomal recessive
- C- X-linked dominance
- D- X-linked recessive
- E- Y linked

For each of the following scenarios, select the most likely mode of inheritance from the list above

- 1- A diseased boy. Parents are 1st cousins and both are free. He has a brother and a sister. The sister is affected.
- 2- A diseased girl. Both her father and grand-mother (paternal) have the same disorder.
- 3- A diseased boy. Both parents are free. His sisters are free. He one affected brother and one free brother. His maternal uncle is affected

Example

Theme: Modes of inheritance

Theme

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Example

Theme: Modes of inheritance

- A- Autosomal dominance
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Theme

Options

For each of the following scenarios, select the most likely mode of inheritance from the list above

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Example

Theme: Modes of inheritance

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Theme

Options

Lead-in

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Example

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Theme

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Items

Theme

- The theme is the topic addressed by a set of items.
- Themes may be
 - anatomic sites
 - cell types
 - clinical signs
 - laboratory data
 - functions, etc.

Option List

- List of response choices that apply to the items in the set.
- Relatively long option lists allow the inclusion of all relevant options
- Low-ability examinees benefit from a restricted number of options
- Options should be listed in alphabetical order to minimize cuing, unless another logical ordering is possible.

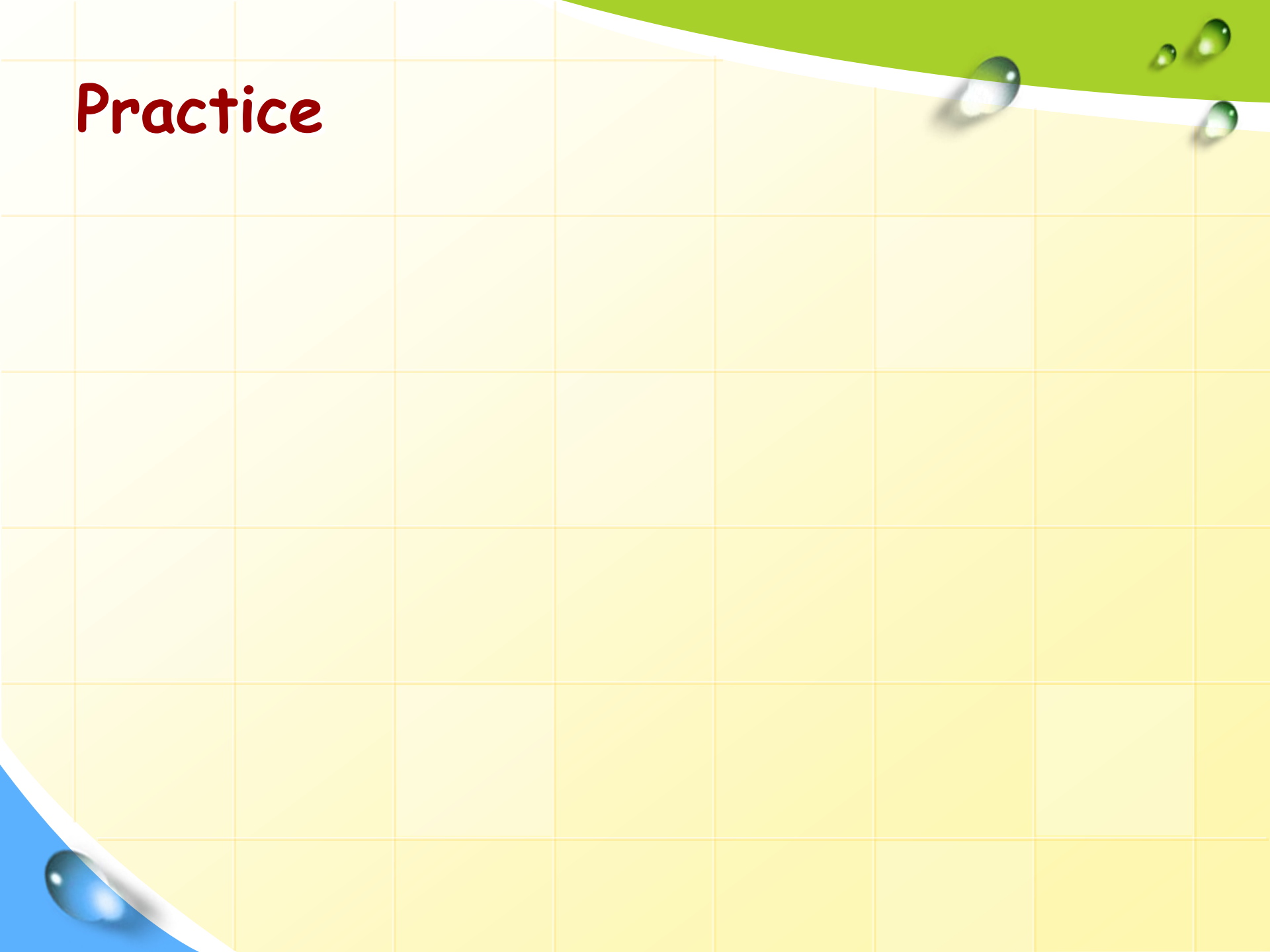
Lead-in Statement

- A single lead-in statement is used for all items in a set. It provides directions for the set and indicates the relationship between the stems and the options.

Item Stems

- A useful form of item stem is the description of a patient in a clinical situation.
- Items can range from complete patient descriptions to brief presentations.

Practice





Questions on EMQs?

Summary

- Criteria for assessment
- Bloom's taxonomy
- Matrix
 - Method of assessment
 - Essays
 - MCQ
 - EMQ

Summary

- **Criteria for assessment**
- **Bloom's taxonomy**
- **Matrix**
 - **Method of assessment**
 - Essays
 - MCQ
 - Skills assessment

A close-up photograph of a hand holding a bright yellow flower. The hand is positioned in the lower right, with fingers gently gripping the stem. The flower has several petals and a green stem. The background is a soft, out-of-focus light color, possibly a wall or a window. The overall mood is warm and appreciative.

Thank You