بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِيْمِ

وَنَضَعُ ٱلْمَوَٰزِينَ ٱلْقِسْطَ لِيَوْمِ ٱلْقِيَٰمَةِ فَلَا تُظْلَمُ نَفْسٌ شَيْـًٔا

And We place the scales of justice for the Day of Resurrection so no soul will be treated unjustly *at all*

Blueprinting an Assessment

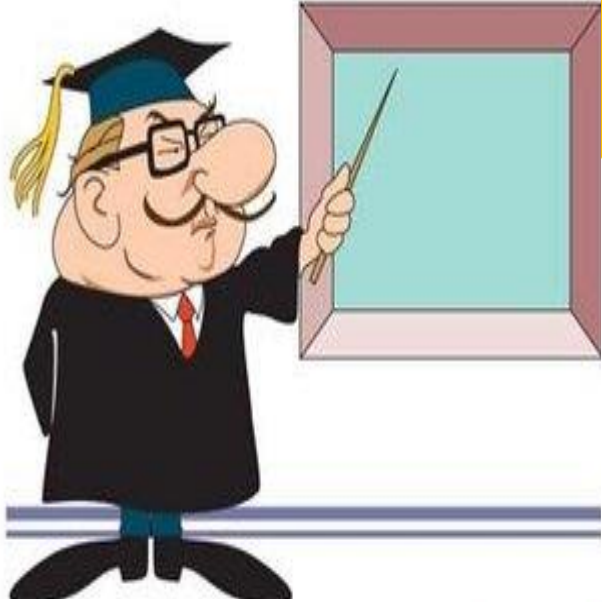## Professor
Dr. *Yousif AbdulRaheem*

FICMS/CM

Family and Community Medicine Department, Al Kindy College of Medicine University of Baghdad
E-mail: yousifabdulraheem@kmc.uobaghdad.edu.iq

By the end of the discussion, we will be able to:

➢ **Define blueprinting in the context of specific assessment needs**

➢ **Design an appropriate blueprint for the purpose of a specific assessment**

➢ **Appreciate the validity and reliability of assessment test.**

Medical Education Unit

UNDERGRADUATE SCIENTIFIC CURRICULUM

COMPETENCY VARIABLES

- ☑ skills
- ☑ knowledge
- ☑ assessment methods
- ☑ evidence
- ☑ context

Competency=Knowledge x Skill x Attitude[KSA]

Competency

Knowledge

Skill

Attitude

Superior Job Performance

➢**How will we know if our students have achieved the desired learning outcomes?**

➢**How will we measure the extent to which they have achieved these learning outcomes?**

Assessment Decision

Student	Competent	Not competent
Pass (promote, Graduate)	**Correct Decision**	**False Positive**
Fail (Remediate, Dismiss)	**False Negative**	**Correct Decision**

q) In educational measurement, **validity** of assessment means:

a) It produces consistent results.

b) It measures what it is supposed to measure.

T

c) It is practical in terms of time and resources.

d) It has positive impact on learning.

e) It has updated practice

Types of validity

❖ **Face validity-**

❖ **Content validity**

❖ **Construct validity**

❖ **Criterion-related validity**

1) Face validity: Test overall appearance
  Ex1: Undergraduate not postgraduate exam
  Ex2: Neuro exam not dermatology exam

2) Content validity: **It is a measure of the degree to which the assessment contains a representative sample of the material taught in the course (according to the weight of each topic)**

➢ **Ex1:** **Does Final exam in medicine for 4th or 5th or 6th year assess the whole or most course topics according to their weight ?**

3) Construct validity: **Seeks agreement between a theoretical concept and a specific measuring procedure.**

➢ **Ex1: A test of intelligence must include measures of multiple intelligences, rather than just logical-mathematical and linguistic ability.**

➢ **Ex1: A test for "disease management" should include measure the diagnosis and treatment?**

4) Criterion-related validity

➢ **Measures how well one measure predicts an outcome for another measure. A test has this type of validity if it is useful for predicting performance or behavior in another situation (past, present, or future).**

➢ **Ex1: If Final year exam test accurately predicts how well the physician will perform on the job, the test is said to have criterion validity.**

Combining parts to make a new whole — **Create**

Judging the value of information or ideas — **Evaluate**

Breaking down information into component parts — **Analyze**

Applying the facts, rules, concepts, and ideas — **Apply**

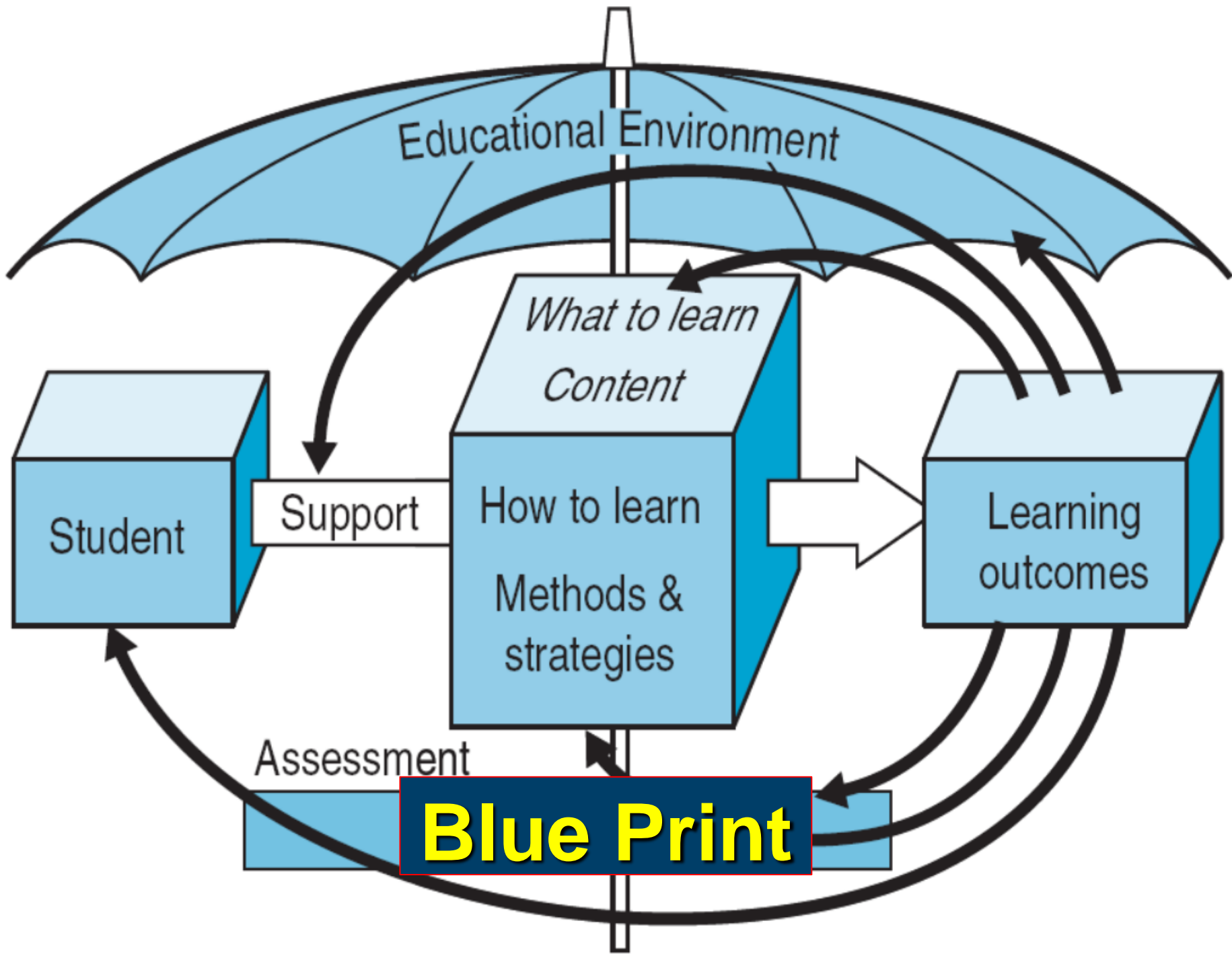Understanding what the facts mean — **Understand**

Recognizing and recalling facts — **Remember**

Bloom's Taxonomy

Q) Which of the following statement best describes the Blueprinting?

a) Identifies the course objective

b) Aligns objectives with assessment **T**

c) Matches training with the competency

d) Identifies the trainee competencies

e) Avoid cheating in examinations

What is a Blue Print?: means 'detailed plan of action'

➢ A map for an assessment that ensures that all aspects of the curriculum and educational domains are covered by valid assessment.

➢ Simply, Blueprint links assessment to learning objectives.

➢ It also indicates the marks (weightage) for each content and test.
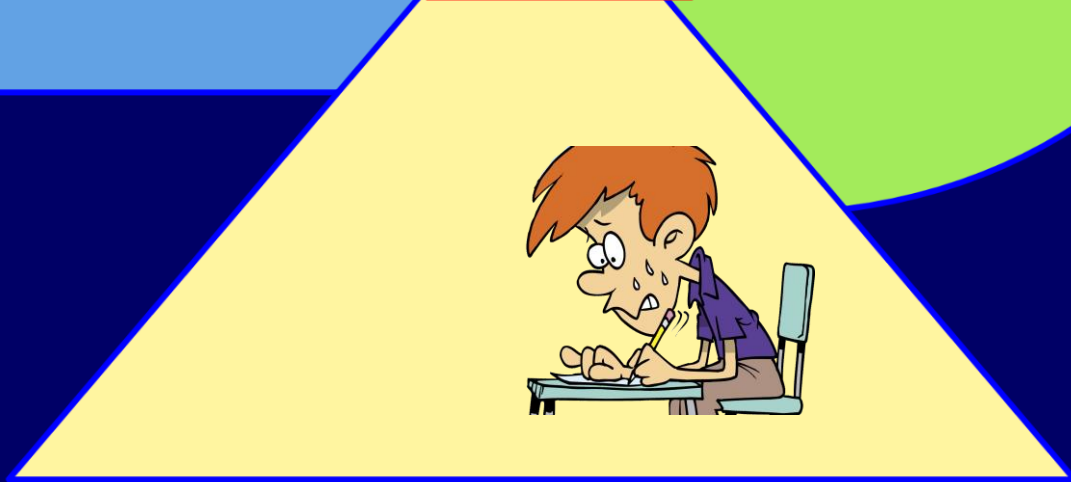
Competencies

Curriculum

Teaching

Assessment

Learning

Educational Alignment

Curriculum with Blueprint:

Competencies
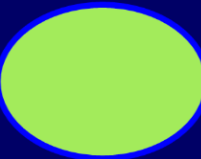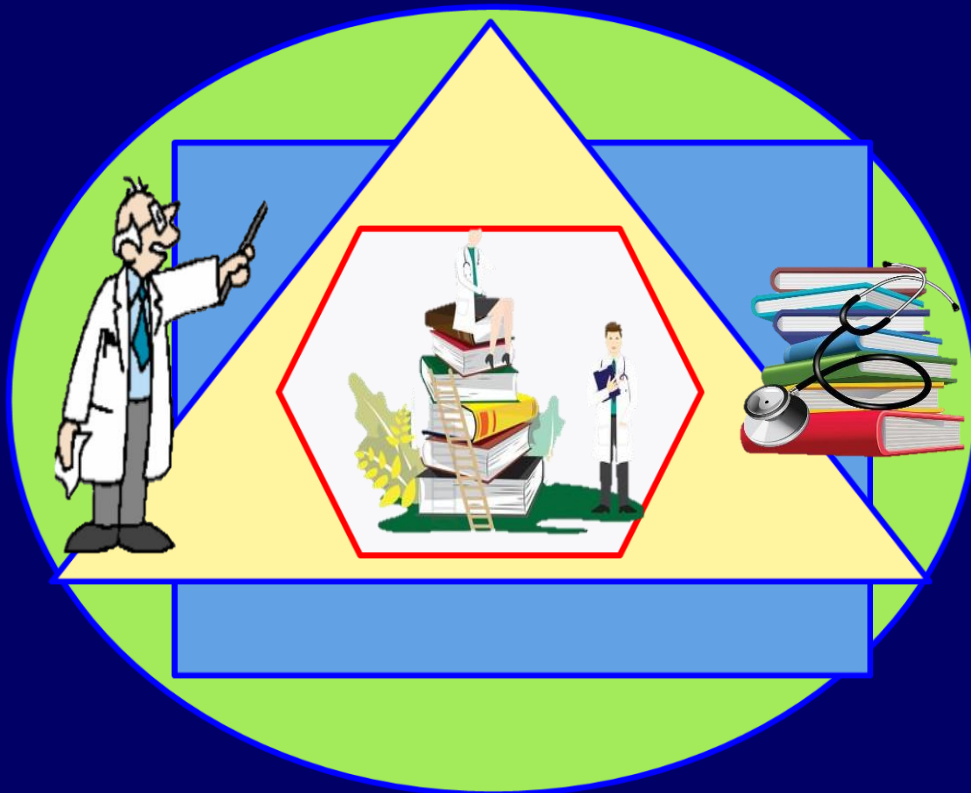
Curriculum

Teaching

Assessment

Learning

Educational Alignment

Preparation of a Blueprint:

1) Define the **scope** of assessment (end semester, final). Whether it is Formative / Summative assessment?

2) Identify the **purpose** of assessment (learning objectives)

3) Recognize the **domains** of learning to be included. What domain is being assessed, knowledge/ skills/ attitude?

4) What is the **Level** of students: Undergraduates /Post- Graduates?

5) What is the time, infrastructure…

6) Decide the methods to be adopted·

7) Decide the weightage to be given to content areas, domains of learning and methods of assessment. Weightage can be decided on the basis of two parameters

✓ i. The perceived impact / importance of a topic in terms of its impact on health.

✓ ii. The frequency of the occurrence of a particular disease or health problem

How do we provide relative weighting of the content?

Importance X Frequency

➢ **Importance/impact**
  1) Non-urgent, little prevention potential
  2) Serious, but not immediately life threatening
  3) Life threatening emergency and/or high potential for prevention impact

➢ **Frequency**
  1) Rarely seen
  2) Relatively common
  3) Very common (prevalent)

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Example of Weighting

Content presentation	Importance	Frequency	I X F	Weight %
Hypertension	3	3	9	0.22
IHD	3	2	6	0.15
Heart failure	1	2	2	0.049
DM	2	3	6	0.15
Meningitis	3	1	3	0.073
Endocartitis	3	1	3	0.073
Osteo arthritis	2	1	2	0.049
Septicemia	3	2	6	0.15
Cellulitis/Skin infct	2	2	4	0.098
HIV	2	1	2	0.049
Total			41	

MEDICAL CONTENT CATEGORY	Target %
Allergy and Immunology	2%
Cardiovascular	15%
Dermatology	3%
Endocrinology, Diabetes, and Metabolism	10%
Gastroenterology	10%
Geriatric Syndromes	3%
Hematology	4%
Infectious Disease	10%
Medical Oncology	6%
Miscellaneous	1%
Nephrology and Urology	6%
Neurology	4%
Obstetrics and Gynecology	3%
Ophthalmology	1%
Otolaryngology and Dental Medicine	1%
Psychiatry	3%
Pulmonary Disease	8%
Rheumatology and Orthopedics	10%
Total	**100%**

➤ **Effective assessment is possible only when the Course objectives, Competencies to be tested & Method of assessment attain the 'Best fit' and clear to the student.**

Blue print makes the assessment valid, clear, explicit and transparent to everyone involved in the process of learning.

Learning Objectives

Department of ………, CVS Module

	Knowledge	Practice	Attitude
Year 1			
Year 2			
Year 3			

Each year has learning objectives

Medicine 4th year

	Knowledge			Practice		Total Wt	
						K	S
	Should	Preferable	Worth	Should	Preferable		
	70-75%	20%	<5%	90%	10%		
Res	Community Based Education			Common Clinical Presentation		10 h	8hr
GIT						20 h	12 hr
Tot al						120	120

Medicine 4th year

	Knowledge		
	Should	Preferable	Worth
	70-75%	20%	<5%
Resp	**Community Based Education** 10 lectures + 2 seminars		**20%**
GIT	15 lectures + 1 seminars		**15%**
Renal	10 lectures + ….		**10%**
Total	60 lectures + seminars		**100%**

Medicine 4th year

	Skills	
	Should	**Preferable**
	90%	**10%**

System	History	Explanation	Exam	Procedure
CVS	Chest pain	Discharge drugs	Cardiac	BP
RS	Haemoptysis	Smoking	Respiratory	Peak flow
GIS	Abdominal pain	Gastroscopy	Abdominal	Rectal Examination
Repro	Absent menses	Abnormal smear	Pelvic	Cervical smear
NS	Headache	Tension headache	Eyes	Ophthalmoscopy
MS	Backache	GALS	Hip	Show manual handling

Medicine 4th year Exam Blueprint

	Knowledge			Practice		
	MCQs	Essay	Other	Short	Long	OSCE
CVS	7	5%	0	5	5	1
Res	4	10%	0	5	0	2
GIT	5	15%	0	0	5	2
Rnal	4	0	2	0	0	1
Total	50%			50%		100%

CVS Module 3rd year Exam Blueprint

Topics	Knowledge			Practice		
	MCQs	Essay	Other	OSBE		
Anat	7	5%	0	5		
Phys	4	10%	0	5		
Bioch	5	15%	0	0		
Micro	4	0	2	0		
Total	50%			50%		100%

TEAM WORK

Department Team Work

Exam Error: Why it happens?

➤ The intended learning outcomes are not stated clearly

➤ The content of what to assess is left to the decision of one or two Examiners.

➤ Exam paper is set by one teacher

➤ Practical Examinations are conducted by some other teacher, without any Co-ordination (most of the times).

➤ The Examiner imparts instruction according to what 'she/he thinks is appropriate or important'.

Planning and designing an exam

- ➤ **Start before the course/Module begins**
- ➤ **Construct a blueprint**
- ➤ **Create questions that match the objectives of the course/ module**
- ➤ **Discuss with colleagues to review questions (team work)**
- ➤ **Remember to weight more important & prevalent topics**
- ➤ **Focus on concepts, not trivia**
- ➤ **Focus on the application of knowledge, not recall**

Final Message

- ✓ **Assessment is integral part of educational process**
- ✓ **Good assessment requires a good learning objectives.**
- ✓ **Blueprint is the key for good and fair assessment**
- ✓ **Encourage team work.**

Thank You

Professor
Yousif AbdulRaheem