Workshop on Pedagogy and Integrated Medical and Dental Curriculum:
Blueprinting.

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Learning outcome

On completion of this unit, you should be able to:

- **Develop a test blueprint.**
- **Determine best test format for the achievement of teaching and learning objectives.**

A blue print is a plan of action

Blueprinting:

- **Enables the examiner to determine what cognitive skills should be taught.**

- **Provides the students with information of what skills they need to learn.**

- **Outlines what skills should be tested.**
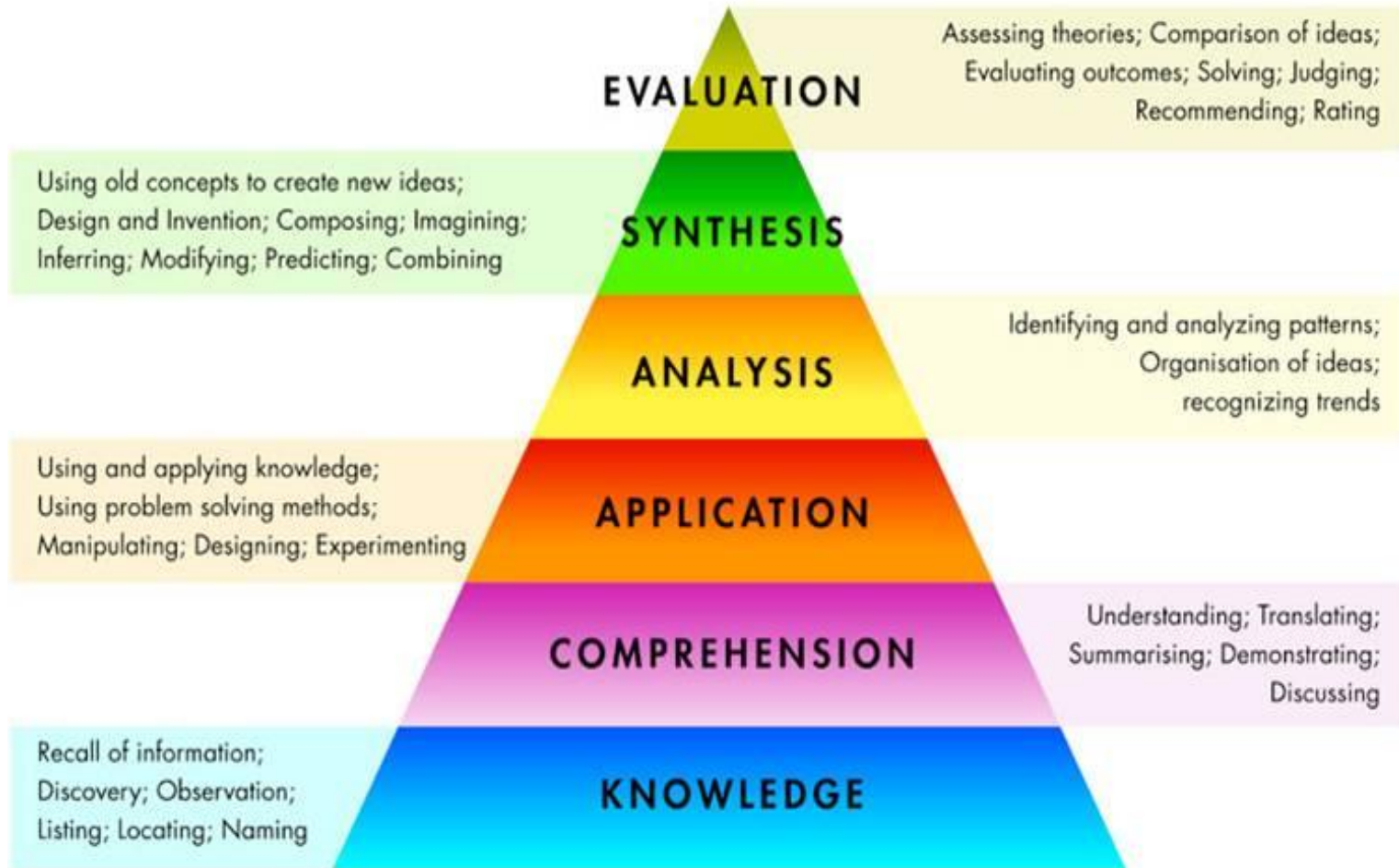
Educational objectives

Bloom's 3 domains

- **cognitive (about knowing)**
- **affective (about attitudes, feelings)**
- **psychomotor (about doing)**

- Geoff Isaacs. Bloom's taxonomy of educational objectives. Teaching and Educational Development Institute. The University of Queensland, Australia. TEDI, 1996. *https://kaneb.nd.edu/assets/137952/bloom.pdf*

Cognitive domain

BLOOMS TAXONOMY

EVALUATION — Assessing theories; Comparison of ideas; Evaluating outcomes; Solving; Judging; Recommending; Rating

SYNTHESIS — Using old concepts to create new ideas; Design and Invention; Composing; Imagining; Inferring; Modifying; Predicting; Combining

ANALYSIS — Identifying and analyzing patterns; Organisation of ideas; recognizing trends

APPLICATION — Using and applying knowledge; Using problem solving methods; Manipulating; Designing; Experimenting

COMPREHENSION — Understanding; Translating; Summarising; Demonstrating; Discussing

KNOWLEDGE — Recall of information; Discovery; Observation; Listing; Locating; Naming

Workshop on Pedagogy

Affective domain

Receiving

Responding

Valuing

Organisation

Characterisation

Psychomotor domain

Reflex

Fundamental movements

Perceptual abilities

Physical abilities

Skilled movements

Non-discursive communication

Blueprinting:

- **Construct a "table of specifications"**

- **List topics on the Y axis**

- **List Cognitive objectives on the X axis**

Blueprinting:
Step I: Construction of "Table of specifications"

Topics	Objectives					
	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation

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Blueprinting:

Step II: Construction of "Table of specifications"

- – **Topics and course objectives are then listed in the relevant columns.**
- – **In the following example (SUR 500) only 3 objectives and 5 topics are listed.**

Blueprinting:

Step II: Construction of "Table of specifications"

- **Test Blueprint for SUR 500: Surgery II**

Topics	Objectives		
	Comprehension	**Application**	**Analysis**
1. Principles of Surgical Research			
2. Management of Wounds			
3. Surgical diseases of the Liver			
4. Congenital heart disease			
5. Evaluation of Patient with Neurological disease.			
Total			

Blueprinting:

Step III: Construction of "Table of specifications"

- – Determination of number of questions to be set.
- – Allocation of questions to topics according to cognitive level to be tested.

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Blueprinting:

Step III: Construction of "Table of specifications"

- – Determination of number of questions to be set.
- – Allocation of questions to topics according to cognitive level to be tested.

Topics	Objectives		
	Comprehension	Application	Analysis
1. Principles of Surgical Research	3	1	0
2. Management of Wounds	6	4	1
3. Surgical diseases of the Liver	6	2	1
4. Congenital heart disease	2	1	1
5. Evaluation of Patient with Neurological disease.	3	2	1
Total	20	8	4

Blueprinting:

- **Construction of "Table of specifications".**
- **Review of Test Blueprint for SUR 500: Surgery II**
  - Cognitive Level Required for the Course
    - 13 questions on *cognitive level of comprehension.*
    - 8 questions on *cognitive level of application.*
    - 4 questions on *cognitive level of analysis.*
  - Knowledge of synthesis or application not required in the example cited!

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Blueprinting:

- **Construction of "Table of specifications".**
- **Review of Test Blueprint for SUR 500: Surgery II**
    - Weight of Topics within the Course
        - 4 questions on *Principles of Surgical Research*
        - 11 questions on *Management of Wounds*
        - 9 questions of *Surgical diseases of the Liver*
        - 4 questions of *Congenital heart disease*
        - 6 questions on *Evaluation of Patient with Neurological disease.*
    - Topics 2 and 3 of major importance!

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Blueprinting:

- **Key Elements in Blue printing:**
  - Determination of relative importance of topics on objective basis.
    - The amount of weighting of a topic should reflect its importance in outline of objectives.
    - Topic weighting in testing reflective of lecture hours during course.
  - The duration of allotted testing time should be proportional to the importance of the topic

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Blueprinting:

– **Key Elements in Blue printing:**

- Application of cognitive objectives to topics should reflect expected objective outcomes

- Assurance of content validity of test.
  - Coordination of test content with course content it profess to assess.

Further reading

- IAR: Assess students > Exam blueprint. http://www.utexas.edu/academic/diia/assessment/iar/students/plan/method/exams-blueprint.php
- Student Evaluation - Test Construction & Item Writing. http://cte.umdnj.edu/student_evaluation/evaluation_constructing.cfm
- Teaching Resources - Tests and Grading. http://tep.uoregon.edu/resources/assessment/testsgrading.html

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Acknowledgement:

The slides in this presentation are based on Prof. Oluwole Adebo's (Department of Surgery) lecture on Blueprinting delivered to M.Sc. Biomedical Education of University of Ibadan, Nigeria, under the Edulink sponsored programme