SLO based Assessment & Examination

Educational assessment is a centerpiece of the teaching and learning experiences. It is a triangulated process that enables assessors to measure the effectiveness of the teaching by linking student performance to learning objectives. As a result, teachers become able to institutionalize effective teaching choices and reflect to readjust / reinvent their pedagogy. Without obtaining and analyzing evidence of student learning, teachers can never know whether their teaching, the curricula and the teaching methodologies are developing desired knowledge, skills, and attitudes or not.

Assessment Framework

An assessment framework comprises of taxonomy of desired learning outcomes, taxonomy levels, content details, types of items, weightage of items and prompts, proportionate of cognitive level and difficulty level of items.

Revised Bloom's Taxonomy

The taxonomy of educational objectives is a framework for classifying statements of what we expect or intend students to learn as a result of instruction.
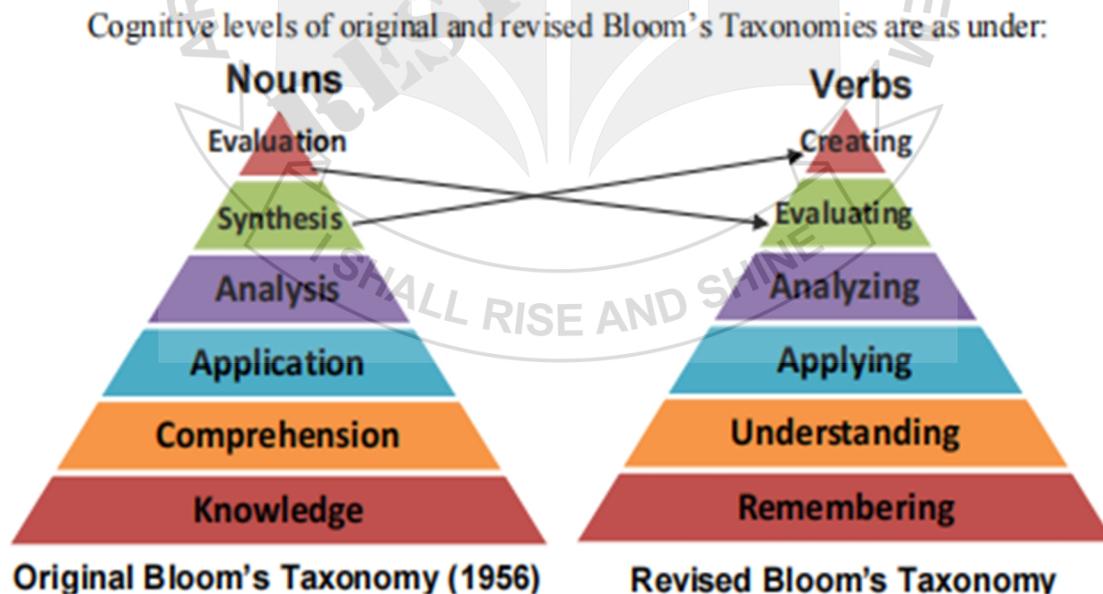

Figure 1-2 Original and Revised Bloom's Taxonomy [2]

Six cognitive levels, their definitions, sub categories and some action verbs with respect to the assessment (Formative as well as Summative) are given below:

Major Category	Sub Category	Action Verbs
Remembering: Retrieving relevant knowledge from long-term memory.	· Recognizing · Recalling	Cite, define, group, list, match, memorize, quote, record, repeat, reproduce, select, state, underline, etc
Understanding: Determining the meaning of instructional messages, including oral, written and graphic communication.	· Interpreting · Exemplifying · Classifying · Summarizing · Inferring · Comparing · Explaining	Associate, classify, describe in own words, discuss, explain, give example, identify, interpret, locate, observe, paraphrase, recognize, report, reorganize, research, restate, review, select, summarize, translate, etc.
Applying: Carrying out or using a procedure in a given situation.	· Executing · Implementing	Adapt, apply in familiar context, apply in unfamiliar context, collect, change, choose, demonstrate, dramatize, exhibit, employ, illustrate, manipulate, operate, solve, schedule, sketch, etc
Analyzing: Breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose.	· Differentiating · Organizing · Attributing	Arrange, calculate, categorize, compare, contrast, criticize, differentiate, dissect, discriminate, distinguish, examine, experiment, group, investigate, inspect, make a diagram, order, organize, questions, research, revise, separate, survey, test, etc
Evaluating: Making judgments based on criteria and standards.	· Checking · Critiquing	appraise, argue, check, critique, criticize, defend, determine, debate, discriminate, evaluate, experiment, hypothesis, judge, make a monitor, predict, probe, rate, rank, reject, revise, select, support, score, test, value, validate, etc.
Creating: Putting elements together to form a novel, coherent whole or make an original product.	· Generating · Planning · Producing	act, assemble, blend, construct, compile, create, develop, devise, design, formulate, forecast, imagine, improvise, invent, make, organize, originate, plan, predict, setup, write, etc

Structure of the Cognitive Process Dimension of the Revised Taxonomy

Alignment of Assessment with Curricula (SLO) and Cognitive Domain

Assessment items are developed in accordance with the cognitive level and content/concept as given in the students' learning outcomes (SLO) of respective subjects and grades. Every subject has specific SLOs which can be assessed through different types of assessment items.

Some SLOs will be better assessed through Objective Questions while others through Subjective Questions.

Equitable representation of Contents/SLOs

In order to cover the contents (chapters/units) listed in the curricula, the spread of the assessments (tests/question paper) should be such that proportional representation of each unit is ensured.

Guidelines for SLO based Exam/ Test/ Question Development

There are various techniques to measure students' learning including oral & paper-pencil test. The test comprises of content domain and cognitive levels that represent the desired curriculum. This test is meant to give a measure of students' learning thus its credibility have to be ensured.

Following are key guidelines which must be kept in mind while developing/ setting questions during formative & summative assessment:

1. Curriculum be divided into content strands/standards.

2. Number of questions in each strand be included in assessment (objective and subjective) for equitable representation of SLO units. Be clear about the requirement of the SLO.

3. Question should be relevant, clear & concise. A good question is framed in a clear, easily understandable language, without any vagueness

4. A question without a definite purpose has no value. The purpose helps evaluate the question against some set benchmarks/LOs. Ask a question that can seek both innate and specific knowledge.

5. Set a question that can guide the learners towards understanding the concept in the picture. But at the same time, it shouldn't lead them to specific answers.

6. Ask a good question that requires learners to think through and recall the concepts taught. Do not patronize students by asking the obvious

Percentage Allocation of levels of Cognitive domains (K, U, A)

Assessments (Formative & Summative) may be developed keeping in view cognitive levels as per curriculum requirements.

Following proportion of Cognitive Levels may be adopted:

	Cognitive Level	Percentage
1	Knowledge (Remembering) :	20%
2	Understanding	40%
3	Applying (Analyze + Evaluate + Create) :	40%
	Total	**100 %**

* With ± 5% variation in each level

Example of SLO Based Assessment:

SLO #24 (Physics X):

State the rules for obtaining images formed by concave mirror, image formation by concave mirror, image formation by convex mirror, spherical mirror formula, and uses of spherical mirror.

MCQ: Which of the following are commonly used in vehicles to observe rear view?

A. Concave mirror   B. Convex mirror

C. Concave lens   D. Convex lens

Restricted Response Question (RRQ)

Restricted Response Questions (RRQs) are short answer questions that measure knowledge, understanding and application-level cognitive skills. Restricted-response questions are assessment items that ask students to apply knowledge, skills, and critical thinking abilities to real-world, standards-driven performance tasks. These should be simple, requiring students to answer within designated space on E-sheet.

For example:

SLO: Outline the basic reactions of Solvay process (Chemistry)

Question: What is slaked lime? How is it produced during Solvay process? (1+2 marks)

Example of SLO Based RRQ (English):

SLO: **Skim** text to have general idea of the text. infer theme/ main idea.

Question: **Write a summary** of the given stanzas.

I saw pale kings and princes too,

Pale warriors, death-pale were they all;

They cried— "La Belle Dame sans Merci Thee hath in thrall!"

I saw their starved lips in the gloom, With horrid warning gapèd wide,

And I awoke and found me here, On the cold hill's side.

And this is why I sojourn here, Alone and palely loitering,

Though the sedge is withered from the lake, And no birds sing

Example of SLO Based Extended Response Questions- ERQ (Urdu):

حاصلاتِ تعلم:
کسی بھی موضوع پر اپنے وسیع تر مطالعے کی روشنی میں ترتیب، استدلال، عمدہ مثالوں کے ساتھ منظر نگاری، مکالمہ نگاری، کردار نگاری، کہانی انشائیہ یا مضمون وغیرہ کی صورت میں تحریر پیش کرسکے۔
سوال: دیے گئے عنوان پر ۲۵۰ الفاظ پر مشتمل مضمون تحریر کیجیے۔
''امن: معاشی ترقی کا ضامن''
عالمی معاشی منظر نامے اور امن عامہ کی صورت حال کا بھرپور تقابلی جائزہ سود مند ہوگا۔