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Review Article

Question Paper Design in Line with Outcome-Based Education Policy

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ABSTRACT

Outcome-Based Education (OBE) is an educational framework that focuses on achieving specific, measurable outcomes in terms of student learning and performance. Unlike traditional education models that emphasize content delivery and time-based progression, OBE starts with the end goals-what students should know, are able to do and be able to demonstrate after they complete a program. These outcomes are clearly defined and serve as the foundation for curriculum design, teaching methods and assessment strategies. A question paper is an essential tool in the educational assessment process, designed to evaluate students' understanding, knowledge and skills in a specific subject area. The structure and content of a question paper are usually aligned with the learning objectives and outcomes of the course, ensuring that the assessment is both comprehensive and fair. A well-designed question paper not only measures students' mastery of the subject matter but also provides valuable feedback to educators about the effectiveness of their teaching methods. In this publication we have provided detailed process for preparing the structured question paper. The proposed publication concludes that framing a question paper in line with OBE requires careful alignment with these predefined outcomes. The process of creating test questions should be addressed systematically. It involves aligning questions with specific learning outcomes, ensuring a variety of question types and difficulty levels and providing clear instructions and fair marks allocation. This approach helps in accurately assessing students' achievement of learning outcomes and supports a more targeted and effective teaching-learning process.

Keywords: Assessment, Learning Outcomes, Outcome Based Education, Question Paper Teaching-Learning.

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INTRODUCTION

Teachers and students in the traditional educational system put a lot of effort into learning the curriculum for each subject. To perform well on the test has been the primary goal of the course and curriculum. This strategy left the pupils lacking the necessary skills and knowledge by the conclusion of the semester. Additionally, this worsened the nation's unemployment issue because many students lacked the necessary skills to meet the hiring needs of the businesses. Unemployment among students was caused by disconnect between the curriculum and business requirements. The traditional teaching method, or transmission of knowledge from the teacher to the student, is frequently characterized as teacher-centered, formal, curriculum-centered and lecture-based. Traditional learning imparts knowledge, skills, or both to the student but does not tie them to a particular context; as a result, the learning occurs in a vacuum and cannot be described as outcomes-based learning. It is a component of the learning process' input.[1,2] Deficiencies of Traditional Education system are listed as below:[3,4]

The curriculum process was rigorously regimented and no stakeholders were involved in the decision-making.

It placed a strong focus on academic education at the expense of skill development.

The curriculum was rigid and prescribed.

It was norm-referenced, which led to increased rivalry because learner achievement was compared to that of other learners.

There is disconnecting between formal education and career training.

Symbolic or numerical assessments of learner achievement were frequently not accurate representations of the student's real performance.

Differentiation was emphasized by offering a wide range of disciplines.

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A teacher-centered strategy was used in the classroom as opposed to a learner-centered one.

The curriculum was subject-based, with the teacher giving instructions and the student memorization.

Lack of group learning and collaboration; improper alignment of goals, activities and assessments.

Not enough focus is placed on the soft skills necessary for employment, such as interpersonal, analytical and working attitudes.

There are three phases to the deliberate process of teaching: pre-active, interactive and post-active. The planning phase is called pre-active, the execution phase is called interactive and the evaluation phase is called post-active. Learning is the cornerstone of a person's development and for it to be successful, education is necessary. On the other hand, teaching without learning is ineffective. Consequently, both instructors and students value the teaching-learning process. Learning and teaching are interrelated. The methods of assessment and evaluation are incorporated into the education during both the interactive and post-active stages. Learning about the most recent developments in the field of education helps effective teachers develop their abilities continuously.[5-7]

The main goals of the current review are to emphasize the significance of Outcome-Based Education (OBE), the function and qualities of effective questions, the contribution of the Blooms taxonomy to question framing and the procedure for developing questions in line with OBE. In order to collect the information on various aspects of designing question paper in line with OBE, we have referred articles searching via Google scholar. After collecting the articles information was gathered, reviewed and implemented for designing the question paper.

Outcomes Based Education

It is an in-depth process for organizing and maintaining a curriculum that is focused on and distinguished by the productive learning demonstrations expected of each learner. The phrase unambiguously means that an educational system should be designed with "what is essential for all learners to be able to do successfully at the end of their learning experiences" at the center of all planning and implementation. OBE ultimately requires having a clear grasp of what it's important for learners to be able to accomplish, developing learning plans, putting them into action and regularly assessing the learner to ensure that learning has, in fact, occurred. The outcomes-based approach to education demands both the establishment of conditions and opportunities inside the system to enable and encourage learners to accomplish these aims. A specified set of outcomes organized within the system's subjects must be produced.[8-10]

OBE framework

There has been a paradigm change from the conventional educational system to the OBE system, where there is a stronger emphasis on Programme and course achievements (Figure 1). The OBE framework is also recognized for the proper operation of the educational system. It ensures that curriculum, instructional techniques and assessment tools are all improved regularly through an evaluation process. OBE is a student-centered learning paradigm that aids teachers in preparing lessons and assessments while keeping in mind Programme outcomes. It is a system where all educational components and facets are concentrated on the course's objectives. OBE is now considered the norm at higher education institutions. It begins with a clear understanding of the goals for the Programme and then plans the curriculum, instruction and evaluation to ensure that learning occurs.[11,12]

A systematic and ongoing process of gathering, analyzing and acting on data pertaining to the objectives and results is assessment. It provides solutions to queries like: What are we attempting to do? How are we doing with it? How can we make our efforts better? The articulation of outcomes serves as the starting point for assessment and two approaches are employed for assessment, per OBE. There are two methods: (1) Direct and (2) Indirect. Indirect assessment is a component of Programme outcome and is purely survey-oriented, so the calculations are based on data and surveys collected from the current graduating students, stakeholders, alumni, survey from placement officers, etc. Direct assessment includes internal exams, university exams and internal assessment metrics such as quiz, seminar, presentation, mini project, assignment, etc., whereas indirect assessment is a part of Programme outcome and is purely survey-oriented. An essential component of the OBE is the question paper. Therefore, the purpose of this article is to provide an overview and instructions on how to set the question paper in accordance with OBE.[13-15]

Question paper framing in accordance to Outcome Based Education

The most popular assessment tool is the question paper, which can be used for internal exams, end-of-semester exams and final assessments including completing evaluations at the end of a unit, semester, or year. Before a teacher decides to introduce a new topic, it could also be utilized for diagnostic purposes to understand the prior learning of a pupil. It is crucial in determining how well a Programme is working in institutions of higher learning and research. To measure the results of an intervention, it might be used as a pre- or post-test. Question papers are a crucial instrument for: a) Recognizing students who have learning difficulties, advanced learners, rankers and gold medalists. b) Determine the students' misconceptions, track their learning gaps and levels, certify them and c) choose them for upcoming academic initiatives or financial aid. A complete

understanding of the subject being tested, a basic understanding of the principles of creating good items/questions and knowledge of the steps to take in order to create a balanced question paper that corresponds to students' ability levels are all necessary for designing a good question paper.[16-18]

Characteristics of good question paper

The caliber of the question paper determines the standard of any examination. If a question paper possesses the following crucial qualities, it is considered to be good:

Validity: The idea of validity, which is frequently rephrased as "truthfulness" or "accuracy," is concerned with the degree to which your questionnaire measures what it purports to measure.

Reliability: is a measure of how consistently and steadily an evaluation technique provides outcomes.

Objectivity: The ability of a test to be objective is crucial. It has an impact on the reliability and validity of test results. "The degree to which the instrument is free from personal error (personal bias), that is, subjectivity on the part of the scorer," is how objective testing is defined.

Usability: The test must be useful in terms of time, money and administration. You may call this usability.

Clarity: The questions and the test should be easy to understand and read by everyone.

Understandability: All questions should be clear and explicit.

Relevance: Although the question may have come from the curriculum, is it still pertinent given the exam's broader context? Does it assess the pupils' knowledge, abilities, or memory?

Purpose: An exam paper must be impartial and free of bias. A community, group, culture, or ethnicity should not be singled out or disparaged in the questions. For the learner to know how much to answer, the scope of the questions must also be specified.

Exam purpose or intent: What does the test have to measure? Do you wish to evaluate the pupil's memory? Are you interested in evaluating their independence?

Thought Stimulation: The questions need to pique students' interest and get them to reflect. They should encourage the student to weigh all of their options and express their ideas rather than assuming or encouraging bias.

Avoid unclear instructions for students on how to respond to the questions, difficult reading vocabulary and sentence structure, too-easy or too-difficult questions, ambiguous statements in the questions, inappropriate questions for measuring a specific outcome, insufficient time allotted to solve the questions, a question paper that is too short, questions that are not arranged in order of difficulty and answers that follow a predictable pattern when creating the question paper. Using Bloom's taxonomy framework, questions should be well-balanced and test many cognitive abilities without favoring either a difficult or simple paper perception. It is significant to note that because each course

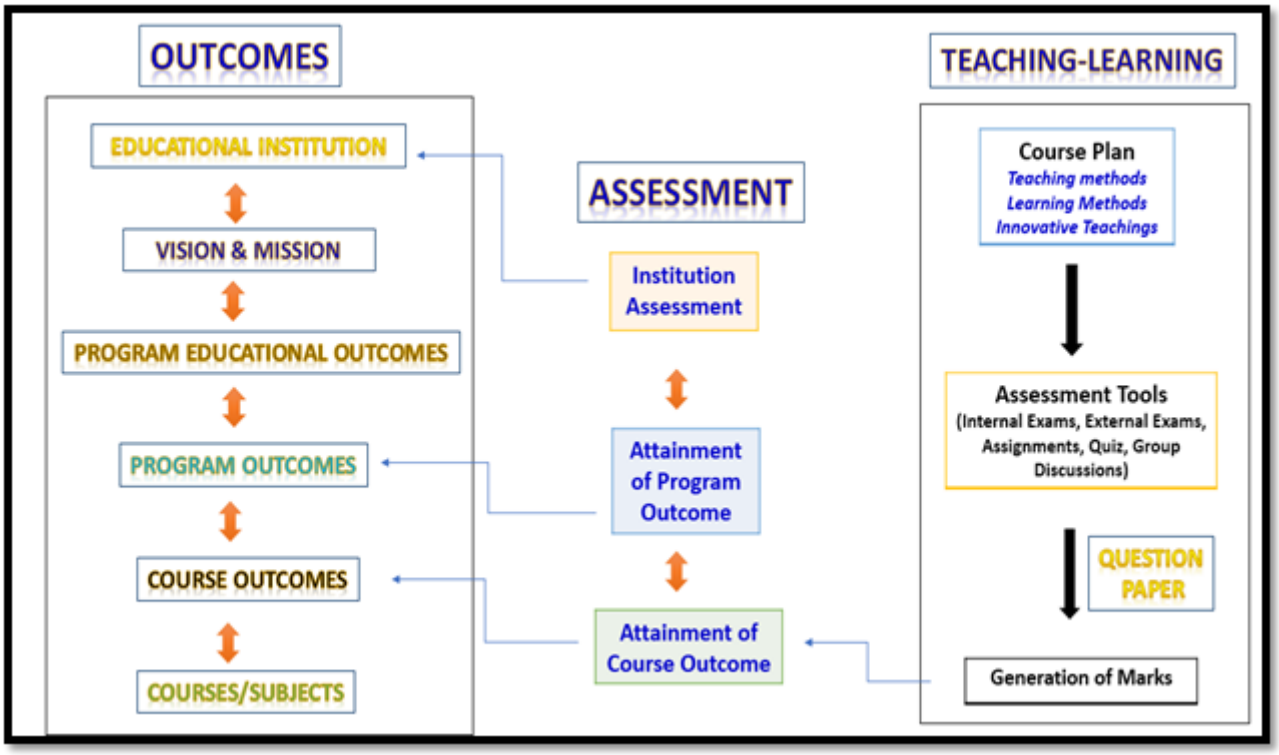

Figure 1: OBE Framework.

has a unique nature; different cognitive levels may have varying weights in different question papers.[19,20]

Bloom's Taxonomy

A collection of three hierarchical models known as Bloom's taxonomy is used to categorise educational learning objectives into levels of complexity and specificity. Benjamin Bloom created Bloom's Taxonomy of Educational Objectives in 1956 and educators have largely adopted it for curriculum design and assessment. Cognitive, Affective and Behavioral domains are used to try and categorize learning and each domain's level of performance is then defined. Thinking about facts, terminology, concepts, ideas, relationships, patterns, conclusions, etc. is part of the cognitive domain of learning. The way we deal with things emotionally, such as feelings, values, admiration, excitement, motivations and attitudes, is referred to as the "affective domain." Physical movement, coordination and utilization of the motor-skill regions are all included in the psychomotor domain. These abilities must be developed through practise and are evaluated based on their executional speed, accuracy, distance, procedures, or techniques. Bloom's taxonomy was updated in 2001 by Anderson and Krathwohl to better suit modern needs.[21-25]

Significance of Blooms Taxonomy

The following are some of the key significances of the Bloom's taxonomy in the educational system:[26-30]

The Blooms taxonomy can be used to create lesson plans, question banks, test questions and blueprints.

It aids in the creation of reliable assessment activities and procedures.

It aids in the creation of course learning objectives.

It can be designed to target higher-level skills that go beyond recall and comprehension and call for application, analysis, evaluation, or development.

It gives teachers a shared vocabulary to talk about and trade learning and evaluation strategies.

It is helpful for efficient curriculum development and delivery.

It can be used to rank skills from easiest to hardest.

It aids in coordinating subject-specific objectives with assessment methodologies and standards.

It is crucial in incorporating critical thinking abilities into exam questions and course objectives.

It describes many categories of cognitive abilities and levels of thinking.

It is crucial to consider validity, reliability and specificity when designing a good test.

It encourages us to consider the kinds of questions that might appear on test questions.

It's possible that the students will describe the question paper as difficult or simple. In this instance, the use of Bloom's taxonomy helps the staff balance the question paper.

Question papers are useful in identifying students with varying levels of understanding.

Cognitive domain levels and action verbs for assessment

The 6 subdomains make up the Cognitive Domain, according to Bloom's Taxonomy. Table 1 includes a list of the sub domains, descriptors and levels of accomplishment. When creating evaluation questions, action verb selection is a crucial factor to take into account. These verbs assist us in identifying and categorizing observable knowledge, skills and talents as well as in framing exam or assignment questions that are appropriate for the level we are aiming to evaluate. Table 2 lists the many levels of the cognitive domain, the skills that must be exhibited and the action verbs that must be used when posing questions and examples of questions that can be constructed at various levels using such action verbs.

Process of developing a question paper

The process of creating a high-quality question paper is time-consuming and involves several stages. There are various steps involved, including as Step 1: Create a course plan. Step 2: Create an evaluation framework or blueprint, Step 3: Create a question bank. Step 4: Choosing high-quality items and questions that are in line with the course's objectives and bloom levels Step 5: Validation and completion of the question/item.[31-40]

Step-1: Development of course plan

Assessments and learning activities must to be in line with one or more course outcomes. Students can demonstrate their learning through assessments; if not, the assessment needs to be revised. A

Table 1: Cognitive Domain Levels.

Levels	Descriptor	Level of attainment
1	Remembering	Presenting the knowledge that have already learned from memory.
2	Understanding	Explaining concepts or ideas.
3	Applying	Putting the knowledge to use in a familiar circumstance.
4	Analyzing	Information segmentation to examine connections and understandings.
5	Evaluating	Providing reasons for a choice or course of action.
6	Creating	Creating new concepts, items, or perspectives on things.

KLE COLLEGE OF PHARMACY, BELAGAVI
INTERNAL ASSESSMENT EXAMINATION
B. PHARM IV SEMESTER
Pharmaceutical Organic Chemistry-III
Max. Marks: 30

Q. No.	Questions	MARKS	CO	BL
	LONG ESSAY QUESTIONS (Answer Any One)			
1	Discuss the methods used for resolution of racemic mixture	10	2	2
2	Outline the classification of heterocyclic compounds with structures.	10	3	2
	SHORT ESSAY QUESTIONS (Answer Any Two)			
3	List out nomenclature rules for geometrical isomers.	05	1	1
4	Pyridine undergoes nucleophilic substitution reaction. Justify with suitable reaction.	05	3	3
5	Explain the reaction and mechanism involved in Birch reduction.	05	5	2
	SHORT ANSWERS (Answer All)			
6	List out any four examples of chiral compounds.	02	1	1
7	Define stereoselective and stereospecific reactions.	02	2	1
8	Outline any one synthesis and uses of Pyrazole.	02	4	2
9	Explain synthetic importance of metal hydrides.	02	5	2
10	Why Pyridine is more basic than Pyrrole.	2	3	3

COURSE OUTCOMES (COs)	
CO1	Explain the nomenclature and classification based on spatial arrangement of organic molecules.
CO2	Discuss the racemic modification and stereo chemical reactions of organic compounds.
CO3	Discuss the nomenclature, classification and reactivity of selected heterocyclic compounds.
CO4	Outline the preparation and medicinal uses of selected heterocyclic compounds.
CO5	Explain the reagents and named reactions of synthetic importance.

BLOOMS TAXONOMY LEARNING LEVEL (BL)

L1: Remember	L2: Understand	L3: Apply	L4: Analyze	L5: Evaluate	L6: Create

PROGRAM OUTCOMES (POs)

1	Pharmacy Knowledge	5	Leadership skills	9	The Pharmacist and Society
2	Planning Abilities	6	Professional Identity	10	Environment and Sustainability
3	Problem Analysis	7	Pharmaceutical Ethics	11	Life-long Learning
4	Modern Tool usage	8	Communication		

Figure 2: Sample Question Paper in Accordance to OBE.

learning activity may illustrate more than one learning outcome, whereas a learning outcome may be portrayed in more than one learning activity. Different levels of learning may also be reflected in an evaluation or learning activity. Incorporate this alignment into the lesson/course plan. Add the COs and their importance to the Blueprint that is created during the writing retreat. Table 3 is an example of a common course plan design.

Step-2: Design of assessment framework and blue printing

Creating an assessment framework involves several steps to ensure that the assessments are aligned with learning objectives and effectively measure student learning. We need to choose appropriate assessment methods that align with the learning objectives. These can include the formative assessments like

Table 2: Learning Levels, Skill Demonstrated, Action verbs and Sample Questions.

Level I	**Remember**
Skills Demonstrated	Sample Questions
The ability to remember specifics like customs, terminology, jargon, technical terms, classifications, categories and standards. The ability to remember steps and techniques; The ability to recall abstract ideas, guiding principles and specialized theories.	List out anticancer drugs. Name cardiovascular disorders. Define Heterocyclic compounds. Tabulate the daily requirement of vitamins. Who is father of Pharmacy Education? List of drugs containing Pyridine nucleus. Define heterocyclic compounds. Identify drug containing Quinoline. Label different part of respiratory system. Tabulate the acceptable ranges of validation parameters as per ICH guidelines. List out chemical constituents of Tulasi. Tell the uses of Turmeric.
Action Verbs	
List, define, recall, cite, demonstrate, label, tabulate, name, who, what, when and where etc.	
Level II	**Understanding**
Skills Demonstrated	Sample Questions
Information comprehension. Put your information in a fresh context. Analyze, contrast and interpret facts. Infer causes, arrange them into groups and predict their effects.	Describe the stages of drug discovery and drug design. Explain the mechanism of action of Sulphonamides. Paraphrase the given content. Summarize the advantages and disadvantages of microwave extraction. Differentiate Local and General anesthetics. Explain cannizarro reaction.
Action Verbs	
Describe, elucidate, restate, associate, contrast, summarise, distinguish, interpret and discuss etc.	
Level III	Apply
Skills Demonstrated	Sample Questions
Use knowledge, utilize strategies, notions, rules and theories in fresh contexts and solve difficulties by utilizing the necessary information or abilities and showing proper application of a method or procedure.	Calculate the molecular weight of given compound. Predict the drug likeness score of Dapsone by Molsoft. Apply the principals of organic chemistry in synthesis of drugs. Examine the amount of drug in given sample solution. Determine the quality of given oil sample by IP method.
Action Verbs	
Calculate, Foresee, Apply, Solve, Describe, Use, Show, Experiment, Examine and Modify etc.	
Level IV	**Analyze**
Skills Demonstrated	Sample Questions
Make a difficult issue into manageable chunks, Determine the connections and interactions among the various components of a complex problem and determine the information that is lacking, occasionally duplicated and, if any, conflicting.	Classify the drugs used in hypertension. Classify anti-hypertensive drugs used during pregnancy. Outline computer aided drug design approach in field of medicine research. Illustrate the synthesis of Isoniazid. Diagram the blood circulatory system. Select the Sulphonamides for malarial treatment. Categorize the drugs containing Benzodiazepine nucleus belongs to sedative and hypnotics.
Action Verbs	
Sort, summaries, decompose, categories, analyse, diagram, illustrate, infer and select, among other verbs.	
Level V	Evaluate
Skills Demonstrated	Sample Questions
Make decisions based on reasoned arguments, evaluate the worth of theories and presentations, evaluate the value of the evidence, acknowledge subjectivity and utilize specific criteria for judgments.	Assess the quality of given oil samples based on analytical procedures. Rank the following compounds on the basis of increasing order of basicity. Recommend the pharmacotherapy for diabetes patient. Choose the correct route of administration for following drugs in different disease conditions. Measure the blood pressure of selected patients.
Action Verbs	
Measure, Test, Rank, Grade, Defend, Recommend and Persuade, among other verbs.	
Level VI	Create
Skills Demonstrated	Sample Questions

Level I	Remember
Utilize previous concepts to generate fresh ones, join elements to form (new) wholes, extrapolate from facts already known, connect information from many fields and make predictions and deductions.	Design and synthesis of novel Pyrazole derivatives for anti-cancer effect. Formulate and evaluate sustained release dosage form for given drug. Develop new analytical method for quantification of Metformin HCl in pharmaceutical tablet dosage form.
Action Verbs	
Create, Compose, Generate, Derive, Modify, Integrate, Judge, Support, Conclude, Argue, Justify, Compare, Summarize, Design, Evaluate, Formulate, Evaluate and Choose etc.	Evaluate the anticancer effect of plant extracts by *in vivo* methodology. Design the new analytical method for quantifying the Quercetin in marketed capsules.

quizzes, assignments, in-class activities and peer reviews, summative assessments like exams, final projects and presentations, diagnostic assessments like pre-tests to gauge prior knowledge, norm-referenced assessments or standardized tests and criterion-referenced assessments. The test blueprint, maps out the structure and content of the assessments. It ensures that all learning objectives are adequately covered. Following steps may be used to prepare the blue print like a. List Learning Objectives: Create a table with all the learning objectives. b. Identify Content Areas: Break down each learning objective into specific content areas or topics. c. Determine Weighting: Assign a weight to each content area based on its importance and the amount of time spent on it in the course. d. Select Question Types: Decide on the types of questions for each content area (e.g., multiple-choice, short answer, essays). e. Allocate Questions: Distribute the questions across the content areas according to their weightings.

Step-3: Design and development of question bank

Creating a question bank is an essential part of assessment planning. It helps in organizing and categorizing questions systematically to ensure comprehensive coverage of the syllabus and alignment with learning objectives. Following steps can be followed for preparing a question bank such as 1. Define Purpose and Scope: Determine the purpose of the question bank. Is it for formative assessments, summative assessments, or both? Define the scope in terms of topics, subtopics and the level of difficulty. 2. Categorize Learning Objectives: Start with a comprehensive list of learning objectives and group these objectives by topics and subtopics. 3. Identify Question Types: Decide on a variety of question types such as multiple-choice, true/false, short answer, essay, matching and fill-in-the-blank and ensure the question types align with the learning objectives. 4. Determine Difficulty Levels: Classify questions into different difficulty levels (easy, moderate and difficult) and ensure a balanced distribution of questions across these levels to cater to diverse student capabilities. 5. Develop Questions: Write clear, concise and unambiguous questions and develop a variety of questions for each topic and difficulty level. Use Bloom's Taxonomy to create questions that cover different cognitive levels (knowledge, comprehension, application, analysis, synthesis, evaluation). 6. Review and Refine: Have other educators review the questions for clarity, accuracy and alignment with learning objectives. Test the questions on a small group of students to identify any issues. 7. Organize and Store: Use a digital database or software to organize and store the questions. This allows for easy retrieval and management. Tag questions by topic, subtopic, difficulty level and type. 8. Update Regularly: Incorporate feedback from students and educators to improve the questions and regularly update the question bank to reflect changes in the curriculum or learning objectives.

Table 3: Design of Course Plan.

CO's	Learning Activities	Assessment	IA – I	IA – II	Continuous Mode	Final Exam
CO-1	Lecture, PowerPoint.	Written Exam	50%		50%	20%
CO-2	Lecture, open-source tools exploration.	Written Exam	25%			20%
CO-3	Lecture, self-study.	Written, Seminar	25%			20%
CO-4	Lecture, application exploration.	Written Exam, Assignment		30%	50%	10%
CO-5	Lecture, flip class.	Written Exam, Group activity		30%		10%
CO-6	Lecture, Group discussion.	Written Exam, Presentations		40%		20%

Table 4: Checklist of Item and Validation Parameters.

Sl. No.	Parameters	Description
1	Simple, clear and unambiguous language	The language used in the test items must be understandable to the participating teachers. Technical terms and vocabulary must be utilized appropriately for the subject and the directions provided in the question must be explicit and unmistakable. There shouldn't be any grammatical or spelling faults. There shouldn't be any linguistic sensitivities or biases that favor or disfavor any caste, class, gender, religion, geography, or ethnic group.
2	Familiar Context	The "real-world/classroom scenarios" that teachers may commonly experience should be the background of the questions.
3	Factually accurate and Relevant Graphics	Graphs and diagrams need to be precise. Graphs and diagrams need to be accurately and completely labelled. Any images or illustrations that are included in an article must be essential to understanding the subject or problem at hand. They must also be properly described and cited within the item. The facts should be correct when answering inquiries on policies, programmes, or other data-related topics.
4.	Higher Cognitive Level Questions	Conceptual understanding, application and other higher order thinking abilities should be at the cognitive level of the items. Reduce the number of factual questions that test memorization of facts. It is important to ensure that the question's cognitive level matches the learning outcome or indicator.
5.	Distribution of Item Difficulty	Items must have varying degrees of difficulty. They can be between 30% simple, 40% moderate and 30% challenging.
6	Constructed Response/ Descriptive Questions	All potential correct answers should be included in the scoring criteria. It is important to accurately express and grade the performance levels provided in relation to each criterion.
7.	Multiple Choice Questions	Item Stem: The stem of the item should have enough details to make it distinct and unmistakable. Extraneous material shouldn't be included in the stem because it may confuse pupils who would otherwise know the right answer. Avoid using negative stems, which include terms like NOT, LEAST, WORST, EXCEPT, etc. Highlight the negative word if using a negative stem is absolutely necessary. Use only positive response alternatives and avoid double negatives if the stem is negative. Response Options (Distractors): There should only be one accurate or appropriate response. To reduce the likelihood of a simple guess, the correct answer should be split approximately evenly across alternatives A, B, C and D. The four possible responses must be distinct from one another. Response choices, for instance, shouldn't be considered subsets of other options. For example, one option might be a river and the other a body of water, or one option might be an acid and the other sulphuric acid. Avoid responding with "None of these" or "All of these." Common blunders and misconceptions ought to be used as distractions. It is necessary to avoid matching words from the question stem that make some responses simple to guess and responses that are unusually long or short in compared to other distractors.

Step-4: Selection of good quality questions and alignment with course outcomes along with Blooms level

In this step, we can choose the questions from the question bank and structure them according to the usual test. It is crucial to map questions to course outcomes at various learning levels. When creating the question paper, associate each question with the relevant course outcomes. The marks for each question can be used to calculate the course outcome attainment in relation to the test. By calculating the weighted average utilizing the strength of the mapping as a weight, these ratings can be assigned to the

corresponding course outcomes. Figure 2 shows an example OBE question paper.

Step-5: Question paper validation and finalization

There are a number of tools for the validation of question paper that can be used, depending on the examination objectives. The question paper set can be validated and finalized using two key tools: validation by panel testing and validation by pilot testing. With a representative sample of students, a few sample items and a full exam are administered as part of the pilot testing process and it is noted whether any students have trouble reading the questions or comprehending the language, as well as how long it takes them to finish the test. Validation by panels entails reviewing the exam questions with topic specialists, instructors and assessment specialists. It is helpful to examine the accuracy, alignment with cognitive levels, balanced nature, visibility, clarity and readability of question paper. The question paper can be verified and refined using a check list. Table 4 presents the checklist for review of question paper.

CONCLUSION

The proposed publication concludes that framing a question paper in line with OBE requires careful alignment with these predefined outcomes. The process of creating test questions should be addressed systematically. It involves aligning questions with specific learning outcomes, ensuring a variety of question types and difficulty levels and providing clear instructions and fair marks allocation. This approach helps in accurately assessing students' achievement of learning outcomes and supports a more targeted and effective teaching-learning process. OBE focuses on what students are expected to achieve by the end of a course or program, emphasizing measurable outcomes and competencies. It helps for aligning the learning objectives, improving teaching and learning, enhancing the assessment accuracy, continuous improvement, skill and competency development and meeting accreditation Standards.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

OBE: Outcome Based Education; **CO's:** Course Outcomes; **BL:** Blooms Level; **IA:** Internal Assessment; **PO's:** Program Outcomes.

SUMMARY

OBE is a complete strategy for planning and managing a curriculum that is focused on and characterized by the effective demonstrations of learning expected from each learner, according to the review article's conclusion. The work of developing questions should be addressed methodically because questions are the most widely used assessment instrument. To be a viable and trustworthy tool of evaluation, there should be alignment between all the stages of question paper preparation. The process of creating a question paper is iterative, requiring constant analysis and evaluation of the test build, the various components of the framework, the blueprint and how it aligns with the framework/construct, as well as the caliber of the items and scoring guidelines. A high-quality document can be produced through teacher collaboration at a school or subject matter experts in an organization.

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