

THEME-2

**Improving Quality through Attainment  
of Learning Outcomes**

# Rubrics: A Reliable Tool for Assessing the Attainment of Program Outcomes

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## ABSTRACT

Outcomes Based Education (OBE) is a process that facilitates desired changes within the learners to improve knowledge and skill along with positive attitude, values and judgment. Outcomes are clear learning results that learners have to demonstrate at the end of significant learning experiences. These outcomes can be measured by direct and indirect formative/summative assessment methods. Most educators and researchers accept that rubrics can be used for quality assessment. Two main categories of rubrics are well-known: holistic and analytical. In holistic scoring, the rater makes an overall decision about the quality of performance, while in analytical scoring; the rater assigns a score to each of the component being assessed in the task. Holistic scoring is usually used for large-scale assessment because it is assumed to be easy and accurate. Analytical scoring is useful in the classroom since the results can help teachers to identify strengths and learning needs of students.

**Keywords:** Rubric, Holistic, Formative/Summative.

## INTRODUCTION

In outcome based education system, the outcomes should be the reliable result of assessment of course content and assessment structure. The assessment processes should be designed in such a way that it specifically demonstrates the performance of the learner. Attainment of Programme Outcomes (POs) and/or Graduate Attributes (GAs) laid down by National Board of Accreditation (NBA) can be used as performance indicators. Table 1 describes Graduate Attributes and the corresponding Programme Outcomes as defined by NBA for the Bachelor of Pharmacy.

**Table 1:** GAs and the Corresponding POs as Defined by NBA for the Bachelor of Pharmacy

<i>No.</i>	<i>Graduate Attribute</i>	<i>Programme Outcome</i>
1	Pharmacy Knowledge	Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices
2	Planning Abilities	Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines

<i>No.</i>	<i>Graduate Attribute</i>	<i>Programme Outcome</i>
3	Problem analysis	Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions
4	Modern tool usage	Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations
5	Leadership skills	Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and well-being
6	Professional Identity	Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees)
7	Pharmaceutical Ethics	Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions
8	Communication	Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions
9	The Pharmacist and society	Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice
10	Environment and sustainability	Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
11	Life-long learning	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis

After a thorough analysis of the GAs and corresponding POs, it was observed that curriculum does not fulfil several POs significantly. Table 2 describes correlation of GAs with Curriculum and need for additional activities.

From the above correlation it was concluded that the curriculum must be supplemented with allied activities. Co-curricular and extra-curricular activities can be planned for the poorly attained POs. Some of the allied activities with mapping to POs and attributes imparted are listed in Table 3.

All the allied activities can contribute to overall PO attainment. Thus when the students are assessed for their performance in allied activities we should have a reliable and validated tool. The purpose of this review is to develop an approach to design rubrics for co-curricular and extracurricular activities.

**Table 2:** Correlation of GAs with Curriculum and Need for Additional Activities

Sr. No.	Graduate Attributes	Mapping to Theoretical Knowledge	Mapping to Practical Knowledge	Need for allied Activities
1	Pharmacy Knowledge	Strongly	Strongly	No
2	Planning Abilities	Weakly	Strongly	Yes
3	Problem analysis	Weakly	Moderately	Yes
4	Modern tool usage	Moderately	Strongly	No
5	Leadership skills	Weakly	Does not Map	Yes
6	Professional Identity	Weakly	Moderately	Yes
7	Pharmaceutical Ethics	Moderately	Strongly	No
8	Communication	Weakly	Weakly	Yes
9	The Pharmacist and society	Strongly	Strongly	No
10	Environment and sustainability	Strongly	Strongly	No
11	Life-long learning	Moderately	Moderately	Yes

**Table 3:** Co-Curricular and Extra-Curricular Activities with PO Mapping

Sr. No.	Extracurricular and Co-curricular activity	Mapped to POs	Attribute imparted
01	Poster presentation	2,3,5,11,8	Thinking ability, Communication
02	Project/Mini model competition	2,3,5,11,8	Thinking ability
03	Oral Presentation	6, 8	Communication
04	Debate	5, 8	Communication, Team work
05	Skit or Drama	7,8,5	Planning ability, Team work

## RUBRIC AND ITS ELEMENTS

A rubric is any set of criteria that describes the varying degrees of excellence or levels of development in an activity, process, or product (Andrade, 2005; Goodrich, 1997). It can be used for assessing a particular type of work or performance and provides more details than a single grade or mark. Rubrics will help to grade learners more objectively and provide unbiased judgement. While developing a rubric, the teacher should clearly indicate what is expected from students.

A rubric can be either holistic or analytical, or it may be a combination of the two. A holistic rubric is used to assess the overall quality of a student's response and it gives single overall score for the task as a whole. Holistic rubrics are more product-oriented than process-oriented, and are primarily concerned with the total performance or product rather than with the individual steps taken to arrive at the final product. An analytical rubric consists of multiple, separate scales and therefore provides a set of scores rather than just one. Analytical scoring provides students with at least a rating score for each criterion. It also offers teachers enough room to provide some feedback on each criterion.

In the assessment of written examination commonly used rubrics will be holistic. To assess the subjective questions, evaluator should use holistic rubrics which will give marks to student for the answer as a whole. In case of activities given to student or group of students based on common theme, the assessment of student's quality and performance can be done by analytical rubrics.

Typically designed scaffold of a grading rubric includes criteria, levels of performance, scores and descriptors which become exclusive assessment tools for any given assignment.

### **Criteria**

It determines the attributes which are to be measured and include an explanation to clarify the meaning of each attribute being assessed. Number of criteria may vary based on activity to be assessed.

#### *Criteria for Project can be*

1. Creativity and Innovation
2. Scientific thought/approach
3. Technical skills
4. Teamwork (More than one Participant)
5. Utility/Educational value
6. Economic aspects/Portability/Durability
7. Demonstration/Presentation/Explanation.

#### *Levels of performance*

Each criterion should have multiple expectation levels which will indicate performance of students. These levels tell students what they are expected to do. Adjectives used for levels of performance could influence a student's understanding of performance level.

#### *Levels of performance can be*

1. Beyond Proficient, Proficient, Below Proficient
2. Superior, Moderate, Poor
3. Excellent, Good, Fair
4. Master, Apprentice, Beginner
5. Accomplished, Developing, Beginning.

### **Scores**

Each criterion will have certain weightage (system of numbers or values) which will be divided into scores (range) and often are combined with levels of performance.

Consider creativity and innovation as one of the criterion for Project evaluation with weightage (10). In this case levels of performance with score can be Accomplished (8-10), Developing (5-7) and Beginning (1-4).


**Descriptors**

It should have detail explanation of what is expected from the student by the assessor. Descriptors will help assessor to categorise the students. Students will be able assess their own performance and identify areas for self improvement.

Example of rubric for co-curricular activity: PROJECT (*More than one participant*)

**OBJECTIVE**

Theme based projects are very important teaching tool in technical studies. They can be used as a way to demonstrate the technical proficiency of the students and how well they are ready for their future vocation. Project will help to improve the practical skills of the students and critical thinking ability.

 Levels Criteria/Attributes	Low (1-4)	Medium (5-7)	High (8-10)
Creativity and Innovation (10)	Basic, existing idea represented	Modification with enhanced features in existing idea	Novel idea – unique and genuine
Scientific thought/ Principle/Approach (10)	Poor application of theory concepts	Average application of theory concepts	Complete application of concepts
Technical skills/ Teamwork (10)	Preliminary/Lack of coordination	Satisfactory level	Utilization of recent technologies/ Excellent Teamwork
Utility/Educational value (10)	Hypothetical/ Infeasible solution	Applicable with scaled & modified model	Highly applicable
Economic aspects/ Portability/ Durability (10)	Costlier/poor material selection	Average	Affordable/compact/Eco- friendly, Recyclable
Presentation/Explanation & Demonstration (10)	Poor/No working model/lack of time management	Good communication/poor convincing ability/partial implementation/good time management	Fluent communication, Presence of mind, great convincing power, within time limits

**CONCLUSION**

Rubrics give the impression to promote learning and/or improve teaching. The main reason for this potential lies in the fact that rubrics make expectations and criteria explicit, which also facilitates comments and self-assessment by the students.

Rubrics are assumed to enhance the consistency of scoring across students as well as between different raters for an assigned task. Another positive effect is the possibility to provide valid judgment of performance assessment that cannot be achieved by means of conventional methods. It seems like rubrics offer a way to provide the desired validity in assessing complex competencies. The

rubrics help us to assess the attainment of allied activities and can be used on successive group of students with reliability.

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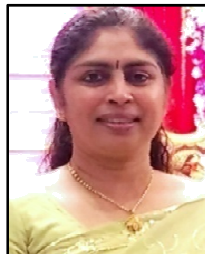
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