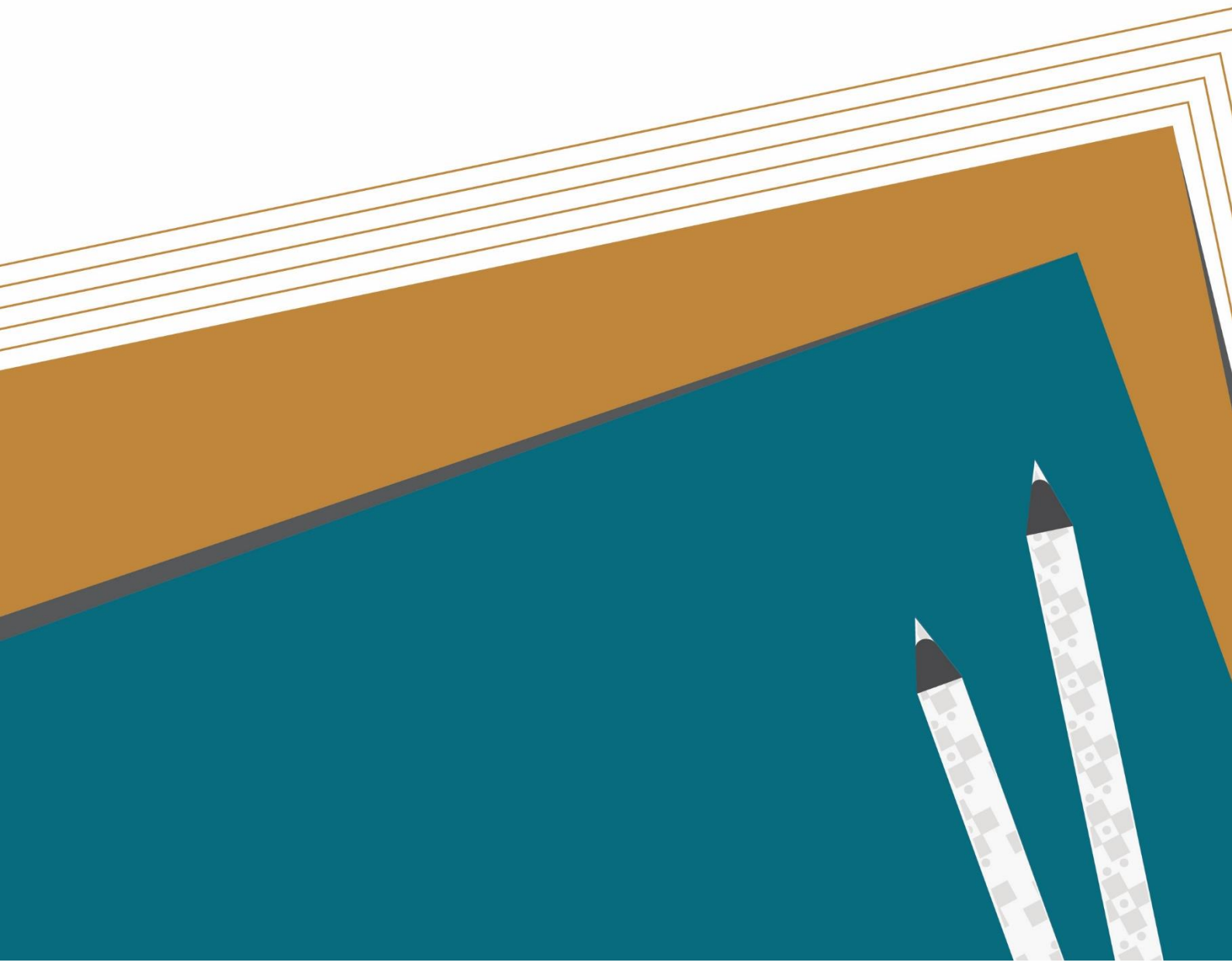


# Principles for Effective Classroom Assessment



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## Introduction

According to Standards for Educational and Psychological Testing (AERA, 2014) [1], Validity, Reliability and Fairness are critical attributes of quality of assessment. Mathematical measures of these attributes have been proposed and have been effectively used in estimating the quality of large-scale assessment (LSA). These measures are mostly statistical in nature and hence availability of large data set is essential as in the LSAs. Unfortunately, statistical measures are not applicable in the case of classroom assessment as the population sizes are limited. In this article, meaning of Validity, Reliability and Fairness is discussed for classroom context and guiding principles for qualitative evaluation are proposed. These principles though coarse grained can still provide helpful insights to classroom teachers willing to estimate the quality of the assessments designed by them.

## Meaning of Validity, Reliability and Fairness in Classroom Context

### Validity

AERA [1] defines Validity as the degree to which evidence and theory support the interpretations of the testing scores for proposed uses of tests. This definition stresses on usage of scores which indicates assessments which are primarily conducted to assign scores to students based on their level of proficiency of learning outcomes. However, the purpose of conducting classroom assessment which is mostly formative in nature is to provide feedback to the entire teaching and learning process. Therefore, validity here is related to the accuracy and quality of the inferences made about student-learning outcomes.

Valid assessment should be aligned to the learning outcome. The cognitive ability for the content domain assessed by the assessment item should be aligned to the cognitive level and content domain as indicated in the learning outcome to ensure validity. For example, for the learning outcome - Represents the collected information in tables and bar graphs and draws inferences from these, Example 1 is more valid as compared to Example 2 since the assessment item assesses both cognitive ability of analysis (draws inferences) and content domains (tables and bar graphs) as indicated in the learning outcome statement.

*Example 1:* The number of students in 7 different classes is given below. Represent this data on the bar graph.

Class	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	10 <sup>th</sup>	11 <sup>th</sup>	12 <sup>th</sup>
Number of Students	130	120	135	130	150	80	75

*Example 2:* The average monthly attendance of a class is given.

Month	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Attendance	42	46	30	50	38	20	36	32

1. Draw the bar graph of the data given.
2. In which month, the average attendance is minimum or maximum?
3. In which month, the average attendance was less than 40?
4. Find the difference between the maximum and minimum average attendance?

Figure 1. Example for less valid and more valid items

Also, validity is compromised when irrelevant material is used in the item stem. For example: items containing long and complex sentences; items that include difficult vocabulary; unnecessarily complex illustrations and diagrams; items in a math or science assessment that require a lot of reading, etc. Such factors should be avoided to make items more or less difficult because they do not contribute to assess students' skills and knowledge for the desired learning outcome.

## Reliability

AERA [1] defines Reliability in terms of consistency over replications of the testing procedure. Classroom assessment comprises of a series of informal and formal assessments including observation, projects, portfolio, debate, and science exhibition. Reliability in classroom context is understood in terms of consistency and uniformity properties. Consistency is ensured when there is uniformity in students' performance across multiple methods of assessments. Also, sharing clearly defined assessment expectations in the form of rubrics ensures consistency in students' performance and uniformity in teachers' evaluation.

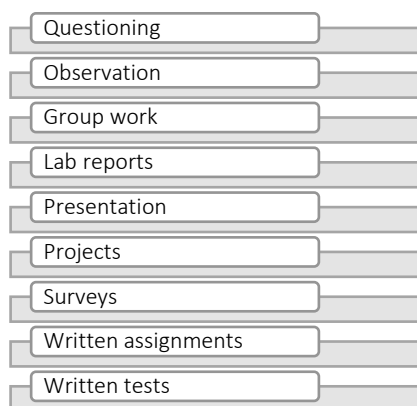


Figure 2. Examples for multiple methods of assessment

Criteria for assessment	Level			
	Excellent	Proficient	Adequate	Limited

Figure 3. Sample template for assessment rubrics

## Fairness

AERA [1] defines Fairness as responsiveness to individual characteristics and testing contexts so that testing scores will yield valid interpretations for intended uses. In the context of classroom assessment, firstly fair assessment should be providing opportunity for students to best demonstrate their achievement of learning outcomes through varied methods of assessment without teacher's explicit or implicit bias. Secondly, for assessments to be fair, students should be aware of learning outcomes, assessment content and their usage. Thirdly, topics or texts that are not accessible to the students; assessment items that favour a particular gender, group, community, religion or state should not be used.

In practice, validity, reliability, and fairness indicators overlap with each other. Ensuring one attribute guarantees another attribute too and vice versa. For example, while multiple methods of assessments need to be used for ensuring reliability and fairness, they also give accurate information about students learning for the learning outcomes that cannot be measured using just one method of assessment. Also, there are no absolute values for validity, reliability, and fairness. In qualitative evaluation, there values range from less to more instead of 0 to 1.

Following four important questions with guiding principles will help a classroom teacher to ensure validity, reliability, and fairness in classroom assessment and thereby be able to use the assessment results more effectively.

## Key to classroom assessment quality

### Why am I assessing?

Classroom assessment is a process used for collecting, analysing, and using evidence of student learning for a variety of purposes, including diagnosing student strengths and weaknesses, monitoring students' progress towards meeting desired levels of proficiency, assigning grades, and providing feedback to parents. Beyond the classroom, assessment for accountability is conducted to help the education system introspect about its own health and effectiveness. Stiggins [2] mentions that inept assessments may lead to inefficient decisions about students learning.

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Guiding principle 1: Begin with defining clear purpose of assessment, understanding users of assessment and the kind of decisions that will be taken based on assessment information.

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## What am I assessing?

Learning outcomes are like navigation tool for both students and teachers. It guides both pedagogy and assessment. They indicate what a student will be able to do at the end of an instruction unit by precisely breaking down broader goals of education such as problem solving and critical thinking to more measurable and observable behaviour for each class. For example, critical thinking in Language for a class 4 child is the ability to ask questions on read texts while for class 5 child, it is the ability to draw conclusions on a read text. Having a good understanding of these outcomes help a teacher design accurate assessment to assess the abilities what the students need to attain. These outcomes should also be communicated to students to ensure fair assessment.

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Guiding principle 2: Chalk out specific learning outcomes and closely align pedagogy and assessment with the learning outcomes.

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## How will I assess?

High quality assessment needs to be designed to assess the attainment of learning outcomes. Proper assessment method should be identified based on the nature of learning outcome. For example, for the learning outcome- Constructs Newton's colour disc using materials from surroundings and explains their working, project-based assessment will give most valid, reliable, and fair information about students' attainment of learning outcome. High quality assessment items that are factually and conceptually correct and free of sensitivity issues should be designed. Comprehensive rubrics in alignment to the cognitive level of the learning outcome should be created and shared with the students to ensure fairness in assessment.

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Guiding principle 3: Design high quality assessment to elicit evidence of students learning.

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## How am I going to communicate assessment results?

The purpose of communicating assessment results that are used in classrooms is not merely to report it but to support learning. Students need descriptive feedback focused on strengths and weaknesses in terms of specific misconceptions and learning gaps that reveals how they can do better next time and what kind of scaffolding needs to be provided by the teacher. The results can be communicated through words, pictures, illustrations, examples, and many other means to convey description of students' performances.

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Guiding principle 4: Communicate assessment results efficiently.

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## Summary

The meaning of quality attributes and the guiding principles will help a classroom teacher to enable better learning for students by-

- providing them information about what they should be able to do at the end of an instruction unit (learning outcomes they should acquire), their responsibilities, and the criteria used to assess their performance.
- assessing them using valid, reliable, and fair assessments.
- facilitating them to attain the learning outcomes and engaging and challenging them at the right level.
- providing constructive feedback and necessary scaffolding to enable them to do better.

## References

1. American Educational Research Association, American Psychological Association, National Council on Measurement in Education, Joint Committee on Standards for Educational and Psychological Testing (U.S.). (2014). Standards for educational and psychological testing. Washington, DC: AERA.
2. Stiggins, R. J., Arter, J. A., Chappuis, J., & Chappuis, S. (2004). Classroom assessment for student learning: Doing it right, using it well. Assessment Training Institute.

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