ASSESSMENT AND EVALUATION

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INTRODUCTION TO ASSESSMENT AND EVALUATION, MARKING SCHEMES, MODEL ANSWERS AND ASSESSMENT RUBRICS

Assessment

Process of systematic collection of information on educational outcomes of students from multiple & diverse sources, analyzing, interpreting, documenting and using those to improve student learning.

The most important single component in any educational system that serves as a tool which makes students learn

Purposes of Assessment (Why Assess)

- To obtain
    - evidence for success rate of achieving ILOs.
    - evidence for effectiveness of teaching.
    - information for students to know their level.
    - tool to make students to learn.

- To obtain diagnostic, formative and summative feedback on student learning and progress to promote student learning.
    - Assessment is used to determine:
        - What students have learned (outcome)
        - The way they learned the material (process)
        - Their approach to learning before, during, or after the program or course

- To provide a means for selection by qualification (certification)
- To contribute to the information on which judgments are made concerning the effectiveness of **individuals**, **programmes** and **institutions** in the system as a whole (evaluation)

What to Assess?

Guiding questions to determine which elements of learning to assess

- What kinds of content knowledge am I expecting students to demonstrate and at what level?
- What aspects of thinking do I want students to develop in my course and demonstrate through course assessments?
- Are there professional skills or attitudes that I expect students to develop in my course?
- Keep in mind that a test or an assignment is a valid measurement only if it will elicit from your students the kind of learning you want to measure**.**

Define Learning in Your Course

- Factual knowledge
- Application skills
    - Problem-solving skills
- Reasoning skills
    - Conceptual understanding
- Creativity
- Civic and global learning
- Professional skills
    - Writing skills
    - Collaboration skills
        - Critical reflection skills

How to Assess?

- Learning must be assessed through performance:
  What students can do with their learning.

- Types of assessments
    - formal or informal
    - individual or group (collective)
    - Internal or external

When to Assess?

- Initial -pre- (diagnostic)
- During -formative (educative)
- At the end -summative (Evaluation)

Evaluation

- The process of observing and measuring someone/ something for the purpose of judging it and of determining its "**value**," either by comparison to similar things, or to a standard.

- The making of a judgement about the amount, number, or value of something

- **Evaluation** is a systematic determination of a subject's merit, worth and significance, using criteria governed by a set of standards.

- **Evaluation** is the collection of, analysis and interpretation of information about any aspect of a programme of **education** or training as part of a recognised process of judging its effectiveness, its efficiency and any other outcomes it may have

Levels & Purposes of Evaluation

- Institutional-level
  to determine the extent to which a university is achieving its mission.
- Program-level
  to determine the extent to which the study programme is effective in facilitating its students to achieve the desired learning outcomes for the program.
- Classroom (Course) level
  to determine the extent to which a student has achieved the desired learning outcomes of the course.

Assessment and Evaluation

Who should be evaluated?

Types/ Forms of Assessment

- Based on the time & objective
    - Initial (pre- or diagnostic), formative (educative), summative (Evaluation)
- Based on the contribution to final grade
    - Informal, formal
- Based on the examining authority
    - Internal, external
- *Based on the basis of comparison (referencing)*
    - *criterion-referenced, norm-referenced, ipsative (self)*
- *Based on the form of questioning*
    - *Objective, subjective*

Assessing Student Performance

Core Principles of Assessment

1. Assessment should guide & enhance student learning.
2. Assessment should be aligned with and directly related to the aims and expected learning outcomes for each course, the course structure, and the teaching methods employed.
3. Expectations regarding assessment, including criteria for grading, should be transparent and clearly communicated to students.
4. Assessment should be progressive and should provide opportunities for feedback.
5. The weighting of individual tasks should reflect the relative importance of the learning outcomes they are designed to achieve as well as the size, timing, and level of difficulty of the task

Characteristics of Good Assessment

- Validity – Measures what it is supposed to measure
- Reliability – Produces consistent results
- Fairness - Inclusive & reasonable
- Practicability – Feasible in terms of time and resources

Others

- Impact on student motivation

Assessment Tools/ Tasks

Written examination
Oral examination
MCQs
Essays
Short answer questions
Quizzes
Portfolio
Book review
Problem /Scenario / Situation
Work-based problem
Case analysis
Role Play
Making a video
Writing a script
Group projects
Peer assessment
Design project
Portfolio
Presentation
Performance
Library research assignment
Data based project s
Oral presentation
Discussions /Debates
Report/ Lab report
Producing a poster
Concept maps

Some assessments tasks and the outcomes likely to be assessed

Assessment Mode	Most likely kind of learning assessed
Extended prose, essay-type	
essay exam	rote, question spotting, speed structuring
open book	as for exam, but less memory, coverage
assignment, take home	read widely, interrelate, organise, apply, copy
Objective test	
multiple choice	recognition, strategy, comprehension, coverage
ordered outcome	hierarchies of understanding
Performance assessment	
practicum	skills needed in real life
seminar, presentation	communication skills
posters	concentrating on relevance, application
interviewing	responding interactively
critical incidents	reflection, application, sense of relevance
project	application, research skills
reflective journal	reflection, application, sense of relevance
case study, problems	application, professional skills
portfolio	reflection, creativity, unintended outcomes
Rapid assessments (large class)	
concept maps	coverage, relationships
venn diagrams	relationships
three-minute essay	level of understanding, sense of relevance
gobbets	realising the importance of significant detail
short answer	recall units of information, coverage
letter to a friend	holistic understanding, application, reflection.

Formative assessment

- Carried out during a programme of instruction (to monitor student learning) and
- Provide feedback to the learners on progress
- Help students to identify their strengths, weaknesses and target areas that need attention and learn more effectively
- Help instructors to improve their teaching & help weak students

Summative Assessment (Evaluation)

- Carried out at the end of a program of instructional unit to *evaluate student learning* (establish or measure what the learner has achieved) by comparing it to a standard or a benchmark.
- Count towards a final grade, mark or award, or is used to determine whether the learner is allowed to make progress through the course.

Grading

The process of applying standardized measurements of varying levels of achievement in a course.

- Grades represent one score reflecting the **overall proficiency** of measure of student achievement.
- Does not provide information regarding student performance on individual (or specific) learning goals or outcomes
- Limited use.

Grades can be assigned as letters (generally A through F), as a range (for example 1 to 6), as a percentage of a total number of questions answered correctly, or as a number out of a possible total (for example out of 20 or 100).

The goal of *grading* is to evaluate individual students' learning and performance.

Norm Referenced

- Assessment based on comparing the relative (not absolute) performances of a student in a class.
- May simply involve comparing / ranking the students, or scaling their marks or grades so that they fall on a standard distribution of some sort.
- May also involve establishing arbitrary pass rates, mark distributions or grade distributions, e.g., telling the students that only 10% will be awarded 'A' grades, 20% 'B' grades, 35% 'C' grades etc.,
- Traditional method.

Criterion-referenced

- Assessment of the performance of students against pre-determined criteria (ILO) without regard to their relative performance.
- Normally involves determining whether the student can carry out specific tasks or activities, within a particular situation or context, and to a set minimum standard.
- Normally carried out on a 'pass/fail' basis, or, in modern parlance, on a 'competent/not-yet-competent' basis, with no attempt being made to assign numerical marks to the performance.
- Used in all competence-based courses, and in vocational qualifications. Ex. The standard driving test.

Objective Assessment

- Simple items that assess factual information and/or discrete skills.
- A form of questioning which has a single (typical) OR multiple specific correct answer.
- **The term objective refers to the fact that each question has a right and wrong answer and that they can be impartially scored** (questions are objective in terms of scoring or marking).
- The answer is visible, thus the student needs only to recognize it. e.g. True/ false, MCQs, Fill-in the blanks, Matching sets
- Called Fixed/Selected Response Assessment.
- Needs no professional judgment to score correctly (although interpretation of the scores requires professional judgment).
- Could be scored accurately by a reasonably competent individual armed with an answer ke**y.**

Advantages of Objective Assessments

Disadvantages of Fixed Response

- Measures superficial knowledge - Although selective response items can address the higher levels of Bloom's taxonomy, many of them demand only lower levels of cognition.
- Cannot measure certain types of skills (e.g., the ability to organize and express ideas in writing; conduct a scientific investigation).
- Easier for students to cheat.
- Performance on MC items can be influenced by student characteristics unrelated to the subject of measurement, such as reading ability and "test-wiseness."
- Difficult and time consuming to construct. Storing OAs in a Question bank for reuse helps to payback the time spent in writing.

Writing Objective Assessment Items

Subjective Assessments

- A form of questioning which may have more than one correct answer (or more than one way of expressing the correct answer).
- Student has to construct the answer: Called Constructed Response testing.
- Yield many possible answers of varying quality, requiring professional judgment to score.
- An assessment of quality where there is no pre-established measure or standard and is thus based solely on the opinion of the evaluator.

What are Constructed Response Items?

Advantages of Subjective Assessments

- Evaluator can get an understanding about the thought process of the student.
- Evaluate many skills that OAs cannot, including organization, synthesis, and problem solving skills.
- Tools of choice for encouraging creativity and originality.
- Can assess skills directly, for example, writing sample is more convincing of a student's writing skill than answers to MCQs on how to write.
- Promote deep long lasting learning.
- Scoring procedures for SAs allow nuances/ gradations. For example on a subjective Math test, a student may receive partial credit for the procedure followed although the final answer is incorrect, whereas, in a MCQ, s/he will not receive credit.

Disadvantages of Subjective Assessments

- Questions are more subjective making it more difficult to grade.
- More chances of having inconsistent grading.
- Cannot use computers for scoring.
- More time consuming for grading.

<u>WHEN</u> to use Constructed Response?

<u>HOW</u> to Develop Constructed Response Items:

- Set the Context
    - Specify the knowledge to be tested
- Specify the Reasoning
    - Use specific verbs e.g. analyze, cite, describe…
- Develop the Scoring Rubric
    - Clear articulation of the appropriate evaluation criteria by which to judge the quality of student responses.
    - Point the Way
    - Inform students of the criteria that will be applied to evaluate their responses

Developing Constructed Response Assessments

Marking Schemes

- The **marking scheme** is a guide to awarding **marks** to candidates' **answers**.
- A system for awarding points for correct answers or for proficiency in an examination or competition.
- The **marking schemes** should not be considered as **model answers**.
- In some instances only key words are given, words that must appear in the correct context in the candidate's **answer** in order to merit the assigned **marks**.
- It is essential, when drawing up an examination paper, to draw up Outline Solutions and Marking Schemes at the same time.
- Outline solutions should reflect the answers you expect the Learner to produce. Depending on the questions, outline solutions may have:
    - one correct answer
    - a range of acceptable answers
    - a list of minimum acceptable key points
- In devising a marking scheme and outline solutions for an examination paper assessors should refer to:
    - The assessment guidelines in programme module for the weighting of the examination, the format of the examination and the allocation of marks per question

Model answers

- Representative answer (smaller version with important points and marks)
- A model answer indicates which elements you should focus on during your assessment
- Based on these **response elements or evaluation criteria,** you indicate which students' answers get which grades.
- The model answer also includes **the maximum score for each question** and (where appropriate and possible) the division of the maximum scores into **subscores**
- A model answer is intended as a guideline for the assessor and is best made during the formulation of the exam questions.
- Based on the students' responses you can, if necessary, refine or modify the model answer.

Assessment Rubrics

- An assessment tool that clearly outlines marking criteria.
- A rubric provides a set of criteria that outlines the important components of the activity being planned or evaluated. Rubrics help clarify the criteria and expectations for the assignment.
- When used effectively, rubrics can:
    - Provide timely and detailed feedback that students can use
    - Encourages critical thinking/self-evaluation
    - Communicate expectations to students
    - Expose the component skills of any task
    - Encourage fair and consistent marking

- **Rubric Structure**

  - A rubric is structured like a matrix which includes two main components:
    - Assessment Criteria used to evaluate the student product

    - Assessment Standards (Descriptors of Criteria)

  - When the intended learning outcomes are best indicated by performances—things students would do, make, say, or write—then rubrics are the best way to assess them.

- **Types of Performances That Can Be Assessed with Rubrics**

Processes	Products
Physical skills Use of equipment Oral communication Work habits	Constructed objects Written essays, themes, reports, term papers Other academic products that demonstrate understanding of concepts

- **What Cannot Be Assessed with Rubrics?**
  - Test items with only one (right/wrong) answer.

Types of Rubrics

- **General Rubrics**
  - Description of work gives characteristics that apply to a whole family of tasks (e.g., writing, problem solving).

- **Task-Specific**
  - Description of work refers to the specific content of a particular task (e.g., gives an answer, specifies a conclusion).

- **Based on the number of Criteria assessed (one or Several Judgments)**
- **Analytic Rubrics**
    - Each criterion (dimension, trait) is evaluated separately.
    - Gives diagnostic information to teacher and formative feedback to students.
    - Good for formative assessment; adaptable for summative assessment

- **Holistic Rubrics**

Creating an Assessment Rubric

1. Write the performance objective (Specific Learning Outcome), specific KSA the learner should gain and display as a result of the instructional activity. SLO should consist of 3 elements:
    --Student Performance
    -- Conditions (tools, resources, environment)
    -- Criteria (level of accuracy expected)

2. Identify the dimensions/tasks comprising the performance

    Dimensions are the broad concepts (intellectual or cognitive competencies) or specific tasks the student should demonstrate when performing the activity. E.g., contribute to group activities, respect others viewpoints etc.

3. Identify the potential gradations of quality starting with the worst quality to the best quality.

4. Assign a point value to each gradation, and a total point value for the assessment

5. Identify the criteria for each level of quality within a dimension/task

6. Create the rubric table

Criteria	A (Excellent)	B (Very good)	C (Fair)	D (Poor)
Depth and focus	Responds to prompt with appropriate depth and focus	Appropriate focus, although could be in more depth	Some attempt to focus	Not at all focused and/or very superficial; may not follow prompt given
Structure	Clear introduction, smooth transitions between topics, and thoughtful conclusion	Introduction, transitions, and conclusion present, but could be clearer or smoother	Evident which topics are being discussed, but no introduction, conclusion of transitions	Unclear which topics are being discussed and when; transitions non-existent
Content and application of concepts	Concepts correctly interpreted; own applications given for each concept discussed; applications are reasonable	Concepts correctly interpreted; own applications given but may be unreasonable	Some concepts interpreted incorrectly; few applications given or applications are ill-explained	Most concepts interpreted incorrectly; no applications given
Sentence structure	Sentences well-formed and appropriately varied in length and style	Most sentences well-formed, with occasional awkwardness	Some sentences poorly constructed but generally understandable	Many sentences poorly constructed, incomplete, and/or awkward
Mechanics	Few if any spelling or grammatical errors	Some spelling and grammatical errors, but paper is still understandable	Some spelling and grammatical errors, making paper difficult to understand in places	Many spelling and grammatical errors, which present significant barrier to understanding

Giving Constructive Feedback to Students and Staff

What is feedback?

- Information or statements of opinion about something
- Process in which the effect or output of an action is 'returned' (fed-back) to modify the next action
- The part of the receiver's response communicated back to the sender is called feedback.
- Helpful information or criticism that is given to someone to say what can be done to improve a performance, product, etc.

Importance

- To become more aware of what we do and how we do it.
- Gives us an opportunity to change and modify in order to become more effective.
- Feedback conveys information about behaviours and offers an evaluation of the quality of those behaviours
- Feedback can
    - reinforce existing strengths,
    - keep goal-directed behaviour on course,
    - clarify the effects of behaviour, and
    - increase recipients' abilities to detect and remedy errors on their own

From Whom & How

Things to consider when giving feedback [81]

1. Invite the individual to self-assess	For instance, "what do you see as the strengths and weaknesses of your analysis?
2. Comment on positives	Whenever possible, try to give some (genuine) positive feedback – it makes the negative easier to bear.
3. Focus on the behaviour not the person	For instance, "I think that the draft you've given me needs more thorough editing here, and here", rather than "Your writing is really shoddy."
4. Be specific and clear; if possible, suggest concrete ways to make improvements	For instance, "The proposed method does not align well with the methodology. Are there studies in the literature that can provide guidance?
5. Be realistic. Focus on what can be changed.	Avoid using the words "always" and "never." People's behaviour is rarely that consistent.
5. Own the feedback statement . Use the pronoun 'I' than 'you'	Example "I find your description confusing" rather than "you sound confused here".
6. Be timely. Don't wait	Immediate feedback is the most valuable. If this is not possible, give it as soon as you can.
7. Balance the content. Use the "sandwich approach."	Begin by providing comments on specific strengths. Then identify specific areas of improvement and ways to make changes. Conclude with a positive comment.
8. Offer continuing support, after feedback.	Feedback should be a continuous process, not a one-time event. After offering feedback, make a conscious effort to

Things to consider when receiving feedback [82]

1. Self-assess your ideas and work beforehand	Prioritize your ideas. Select specific questions that you want the other person to provide feedback on.
2. Listen to the feedback given without interrupting	Listen to what they are really saying, not what you assume they will say
3. Be open	Be receptive to new ideas and different opinions.
4. Ask for help in finding solutions to the difficulties	For instance, "Can you tell me what you think would work better?"
5.Remind yourself that all feedback, even negative, can be useful.	Take notes so that you can think through more thoughtfully the specifics of any negative feedback you receive.
6. Check that you have fully understood the specifics of the feedback.	For instance, "So the main things I should focus on are xxx, yyy, etc.
7. Reflect and decide what to do.	Assess the value of the feedback, the consequences of using it or ignoring it, and then decide what to do. If you disagree with the feedback, consider asking for a second opinion from someone else.
8. Follow up	On your own or by setting another meeting

Obtaining Feedback from Students – General Guidelines

- Anonymity
- Explain the reasons
- Report back
- Change
- General to specific
- Encourage discussion

Aspects to be included

- Course Content and Organization
- Learning Environment and Teaching Methods
- Learning Resources
- Quality of Delivery
- Assessment
- Any other

- **Options**
    - Strongly Agree/ Agree/ Uncertain/ Disagree/ Strongly Disagree.
    - 4/3/2/1/0

When

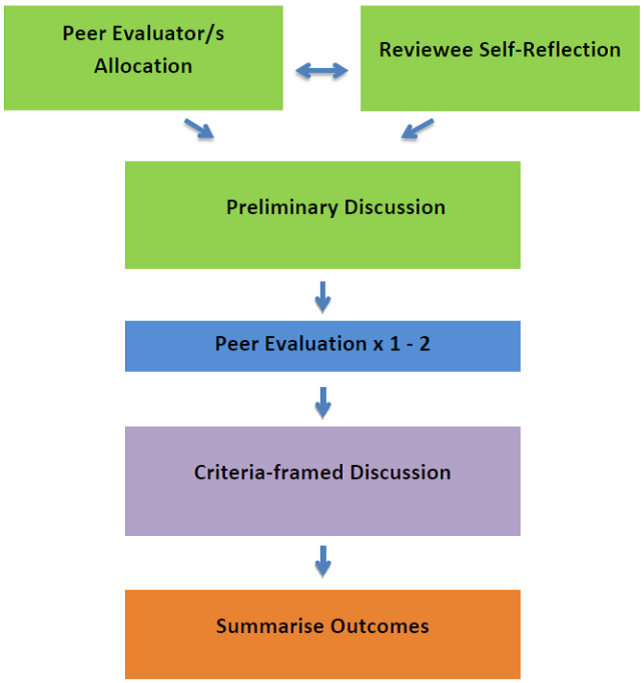
Start-Stop-Continue

Peer Evaluation

- A process of collegial feedback on quality of teaching.
- Consists of the review of teaching performance by colleagues, usually in the same or a similar discipline, with the purpose of assessing and improving the quality of teaching.
- A purposeful process of gathering information and evidence about the effectiveness of teaching processes and the educational environment with a view to subjecting it to constructive critical scrutiny.
- Usually begins with people identifying what areas they would like feedback on, and works best where the process is reciprocal between peers.

Purpose

Peer Evaluation Process



Components of Peer Evaluation of Teaching

- Pre-visit Meeting
    - On context for the lesson to observe. (content areas, learning outcomes, lesson plans, type of teaching approach, any preparatory activities that students will have engaged); areas where the instructor would like specific input from the observer, any concerns resulting from previous observations
- Course Material Review
- Observation of a Class Session
- Post-visit Meeting

Preparation for Peer Evaluation

1. Self-evaluate
2. Choose desired feedback
3. Choose teaching activities
4. Preliminary discussion
5. Evaluation
6. Criteria-framed discussion
7. Preparing the Summary of Evaluation Outcomes

Peer Review of Teaching Form

Classroom Teaching Observation Guide

	OBSERVED	NOT OBSERVED	OBSERVED, NEEDS IMPROVEMENT	NOT APPLICABLE	REMARKS
AVAILABLE BEFORE CLASS					
BEGINS ON TIME					
STATES GOALS/OBJECTIVES					
EFFECTIVE WARM-UP					
LINKS TO PRIOR CLASSES					
LOGICAL CONTENT SEQUENCE					
EFFECTIVE TRANSITIONS					
PERIODIC SUMMARIES					
APPROPRIATE EXAMPLES					
EFFECTIVE VISUALS					
VOICE CLEAR & AUDIBLE					
ACTIVE LEARNING/ENCOURAGES					
PARTICIPATION					
CHECKS FOR UNDERSTANDING					
ASKS QUESTIONS					
ENTERTAINS QUESTIONS					
ENCOURAGES CRITICAL THINKING					
PACING APPROPRIATE					
USES “THINK TIME”					
EMPHASIZES CONCEPTS					
SUFFICIENT KNOWLEDGE OF SUBJECT					
MATERIAL CURRENT & RELEVANT TO COURSE					
OBJECTIVES					
ENDS ON TIME					

Post-Observation Meeting

Activity 1

- List the elements of learning that you wish to assess in the students following a course that you teach.
- Course Title & Credit value .....
- Year & Semester offered.....
- Elements of learning need to be assessed (be specific)

    - .....
    - .....
    - .....
    - .....
    - .....
    - .....
    - .....
    - .....

Activity 2

- List appropriate assessment tasks that could determine the achievement of the elements of your course listed under Activity 1.

Elements of learning need to be assessed	Appropriate Assessment task

Activity 3

- List the elements of your course of which the achievement could be assessed through formative assessment
- List the elements of your course of which the achievement could be assessed through summative assessment

Elements of learning need to be assessed	Appropriate Assessment task (Formative/Summative)

Activity 4

- Identify the elements of learning in your course that could be assessed using objective assessments.
- Write objective assessment items for those elements.

Activity 5

- Identify the elements of learning in your course that could be assessed using objective assessments.
- Write objective assessment items for those elements.

Activity 6

Devise a marking scheme for an element of learning in your course

Activity 7

Create a model answer for an element of desired learning in your course

Activity 8

Identify the Dimensions and Standards of a Subjective Assessment Item in your course

Create an Assessment Rubric (use the below given grid)

Performance Statement (Element of Assessment)

.....

.....

Dimension/Task	Poor (1 pt.)	Fair (2 pts.)	Average (3 pts.)	Very Good (4 pts.)	Excellent (5 pts.)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					

Activity 9

Develop a form to obtain feedback from students following your course.

Course Title & Number .....

Year..... **Semester .....**

Activity 10

Create a form to be used for Peer Reviewing your teaching.

- Instructor: _____ Observer: _____
- Course: _____ Topic: _____
- Year of Study: _____ Date .....Time .....