Alternative Assessment and Questions Construction

Module 7

Presented by
Dr. Chan Chang Tik
Contents

- Instruction with assessment
- Types of assessment
- New Developments in assessment
Group Activity 1: Case Study

- Please refer to the scenario given for each group. Please write your group responses to the situations described in the space provided.
- Appoint a person to present your group views to the participants.

- Time: 20 minutes
Using Assessment to Improve Instruction

- Formative evaluation
- Summative evaluation

- Appraisal
- Diagnosis
Appraisal

- Prior knowledge
- Present skill
- Performance of prerequisites
Appraisal (2)

- Possible remediation you can give your students is as follows:
  - Get them to read recommended text books on their own. Of course, they can discuss among themselves.
  - Design computer assisted lessons (if you have the time) to help them attain the necessary prior knowledge.
Appraisal (3)

- Possible remediation:
  - Organize a discussion group for the students. You can appoint one high academic achiever student to guide them.
  - Allocate a few hours of your time to revise with your students.
Diagnosis

- Difficulties and deficiencies
- Remediation
-Criterion items used
Diagnostic (2)

- Some possible remediation is as follows:
  - Conduct a remedial class for your students outside the scheduled timetable hours.
  - Prepare some notes and exercises for your students to study and practice on their own. They will only consult you when necessary.
  - Get your colleagues to help out in the remedial class. If they are also teaching the same subject, then their assistance will benefit all parties.
Formative Evaluation

- Conducted over small bodies of content to provide feedback that directs further instruction.
- Test items must correspond with behaviour and conditions called for in the objectives.
- Using test results as feedback, you can arrange to modify instruction, undertake remediation or introduce prescriptive teaching.
Summative Evaluation

- Effectiveness of instruction
- Reflect on the objectives of instruction:
  - Objectives obtainable?
  - Objectives clearly defined?
Criterion- and Norm-referenced Assessment

- **Criterion-referenced**
  - Well-defined domain
  - Pre-established criterion behaviours
  - Additional guidance

- **Norm-referenced**
  - Put in relation to other individual
It’s Test Time

Have Fun!
Q1. Why do you carry out assessment?

- A. Search me, I don’t know.
- B. To make them suffer.
- C. To replace unprepared lesson.
- D. I am asked to do so by my dean.
Question 2

- (a) Assessment can be used to improve instruction.
  - TRUE
  - FALSE

- (b) What are the four types of assessment used to improve instruction?
  
  (i) ............(ii)...............(iii).........(iv)..........
Question 3

- State one difference between norm-referenced assessment and criterion-referenced assessment.

End of Test
Types of Assessment

- Multiple-choice Items
- Essay
- True-false items
- Completion items
- Mathematical and technical problem items
Group Activity 2: Questions Setting

- Each group is allocated one type of assessment question: multiple choice, essay, true-false item, completion item and mathematical and technical problem item.
- Prepare one question (college level) and present it to the participants.
- Time: 20 minutes.
Multiple-choice Items

- Place as much wording in the stem as possible.
- Avoid negative words.
- Avoid making the item essentially T-F.
- Parallel form.
- Definite task in the stem of the item.
- Alternatives in vertical list.
Multiple-choice Items (2)

- Avoid "All of the above"
- Alternatives same length
- Four or five alternatives
- Random positioning of correct alternatives
- Use incomplete statement when necessary
Essay

- Use clear and concise questions
- Measure effectively complex learning outcomes
- Establish scope of expected response
- Handling of technical terms
- Content versus mechanics of expression
- Use descriptive words of precise meaning as directions
- No optional items
Clear and Concise Questions

- Language usage and word choice are particularly important during question construction.
- The language dimension is critical because it controls the comprehension level of the item for the students and also it specifies the question parameters.

Example
Clear and Concise Questions (2)

- For example, “Describe the origins of World War I”
- A better question is “What were the principal diplomatic events in Europe between 1890 and 1913 that contributed directly to the outbreak of World War I”
- You have to narrowly specify, explicate, define, or otherwise clarify what it is that you want from the students.
Clear and Concise Questions

(3)

- The question set must have an answer that “expert” could agree upon, thereby rendering it **objective**. For example, “Describe the world and give two examples”.

Example
Complex Learning Outcomes

- Complex learning outcomes can be measured effectively with essay questions. These are the abilities to:
  - Explain cause-effect relationships
  - Describe applications of principles
  - Present relevant arguments
  - Formulate tenable hypotheses
  - Formulate valid conclusions
Complex Learning Outcomes (2)

- These are abilities to:
  - State necessary assumptions
  - Explain methods and procedures
  - Produce, organise, and express ideas
  - Integrate learning in different areas
  - Evaluate the worth of ideas
Extended versus Restricted Response

- From the instructor’s standpoint, an *extensive response* to a few broadly based questions allows an in-depth sampling of a student’s knowledge, thinking processes, and problem-solving behaviour relative to a particular topic.

- The open-ended nature of the question posed by the instructor such as “Discuss the bond and share markets in the Malaysian context” is challenging to a student.
Extended versus Restricted Response (2)

- Extensive response question is poorly structured and its free-response essay item tends to yield a variety of responses from the students, in both content and organisation, and thus inhibit reliable grading.

Example
Extended versus Restricted Response (3)

- A restricted-response question is preferable. For example, “Discuss the advantages and disadvantages of essay and short-answer question with respect to (a) reliability, (b) objectivity, (c) content validity, and (d) usability.

- This question presents a better defined task which lends itself to reliable scoring, yet allows students sufficient latitude to organise and express their thoughts creatively.
Content versus Mechanics of Expression

- Factors such as expression, grammar, spelling, and the like can be evaluated in conjunction with contents of the essay.
- Evaluation of such skills is legitimate provided they are included in the learning outcomes.
- You may point out such mistakes in the student’s coursework.
Directive Words

- Compare
- Defend
- Trace
- Contrast
- Explain
- Differences
Non-directive Words

- Review
- Tell all that you know
- Report your knowledge
Example for Clear and Concise Q.

- **External Examiner’s comment:**
  - The students can’t answer the question properly on the basis of the information given as they don’t know how to spread the finance charges and looking at the three main alternative methods is not part of the question. I consider the question is either unfair or unanswerable.
Example of Extensive Response

- ‘The relevance and the effects of accounting practices, have been the subject of much debate’. Discuss the impact on the accounting practices.

- **External Examiner’s comments:**
  - Give source.
  - I don’t think this is a clear question and I would be amazed if any student produced a response anything like the outline answer.
Example of Language Used

- A business or organisation can be positioned as effective as products and services.
- Internal examiner’s comment:
  - The sentence does not make sense. I suggest “Successful marketing of products and services often depends on effective positioning in the market place.”
True-false Items

- Based on one idea.
- Avoid specific determiners.
- Use positive statement.
- Avoid the word NOT.
- Avoid long and complex statement.
- To make a false statement true.
- Same number of true and false items.
Completion Items

- Omission at the end.
- Same frame of reference.
- Response unit and approximation.
- Omit only important word.
- Avoid turning it into a puzzle.
- One correct response per blank.
- Blank spaces same size
Mathematical and Technical Problem Items

- Provide **enough information and directions** so that students clearly understand the problem.
- Indicate the **degree of precision** expected in the response.
- Clearly specify the **units** for reporting the response.
- When using regular **“everyday” words** to present a problem, make sure the connection between the structured situation and the real world is genuine.
Group Activity 3: Tell Me Why?

- Each of the following questions is poorly constructed. Tell me why? How would you improve it?

- In the late 1890s, Guglielmo Marconi, an Italian inventor, developed a system of wireless telegraphy or what is now called the radio.

  T  F
Tell Me Why?

● Why were communities in early years of history started near rivers?
  A. Roads were difficult to build and boats could travel up and down the waterways bringing people and goods.
  B. The land along waterways was beautiful.
  C. People enjoyed swimming.
  D. The horse was a slow means of travel.
Tell Me Why? (2)

- A pulley is a grooved wheel that can lift a heavy ………………… vertically 10 feet.

- Tell me about Tun Dr. Mahathir Mohamad.

- A car moves at an average speed of 80 km/h. Calculate the distance (km) traveled from point A to point B.
New Developments in Assessment

- Performance assessment.
- Portfolio assessment.
Performance Assessment

- Attempt to evaluate student performance against criteria that are as realistic as possible.
- Steps in generating classroom performance assessment:
  - Clearly describe the **skill or process required**.
  - Need to discern whether the focus of assessment is on **product or processes**.
  - Appropriate degree of realism.
  - Develop **evaluation methods**.
Portfolio assessment

- What is a portfolio?
  Portfolio is a systematic collections of work complied by students and teachers that are reviewed against preset criteria to judge a student or program.
Instructors use portfolio for a variety of reasons such as:

- Encouraging self-directed learning.
- Enlarging the view of what is learned.
- Fostering learning about learning.
- Creating an intersection for instruction and assessment.
- Providing a way for students to value themselves as learners.
- Offering opportunities for peer-supported growth.
Types of Portfolio

- Documentation Portfolio
  - It involves a collection of work over time showing growth and improvement reflecting students’ learning of identified outcomes.
  - Your portfolio may include checklist of proficiency in lab skills, science concept maps, drawing of animals and plants studied, current events scrapbook, etc.
Types of Portfolio (2)

- Process Portfolio
  - It documents all phases of the learning process showing how students integrate specific knowledge or skills and progress towards both basic and advanced mastery.
  - It includes all collaborative reflections and metacognitive introspections in the form of audio and video tapes, learning logs, reflective journals, etc.
Types of Portfolio (3)

- Showcase Portfolio
  - It includes students’ very best work. It also includes written analysis and reflections by the student upon the decision-making process used to determine which works are included.
  - This form of portfolio is useful for courses where students will have finished products to present to you.
What are the Phases of Portfolio Development?

- Phase One (Organization and Planning)
  It entails decision-making on the part of students and teachers. Key questions must include:
  - How do I select times, materials, etc to reflect what I am learning in this class?
  - How do I organize and present the items, materials, etc that I have collected?
  - How will portfolios be maintained and stored?
Portfolio Development (2)

- Phase Two (Collection)
  It involves the collection of meaningful artifacts and products reflecting students’ educational experiences and goals. Collection should be based upon:
  - Particular subject matter
  - A learning process
  - Special projects or themes
Portfolio Development (3)

• Phase Three (Reflection)
  There should be evidence of students’ metacognitive reflections upon the learning process. These reflections can take the forms of:
  • Learning logs
  • Reflective journals
  • Other forms of thinking processes
How can Portfolio be Evaluated?

- Criteria of evaluation should include several of the following:
  - Thoughtfulness (including evidence of students’ monitoring of their own comprehension, metacognitive reflection and productive habits of mind).
  - Growth and development in relationship to key curriculum expectancies.
How can Portfolio be Evaluated? (2)

- Criteria of evaluation should include several of the following:
  - Understanding and application of key processes.
  - Completeness, correctness and appropriateness of products and processes presented in the portfolio.
  - Diversity of entries
Which one of the following best describes mathematics?

A. The greatness of maths is it is logical.
B. The greatness of maths is it helps to solve problems.
C. The greatness of maths is it is beautiful.
D. The greatness of maths is it is easily understood.
Avoid Negative Words

All the following terms are related to matrix EXCEPT

A. Dimension
B. Determinant
C. Transpose
D. Complement
Avoid T-F Alternatives

Which one of the following alternatives is true?

A. $4+3-2 = 6$
B. $-2-1+4 = -1$
C. $4(3-2)-1 = 3$
D. $(-2-3)(2+3) = -12$
Parallel Form

Sugar can be used

A. To cook rice.
B. To make candy.
C. It lowers blood cholesterol.
D. Causes heart problem.
Set Definite Task

Dress is a term that means to

A. Put in proper alignment.
B. Put in clothing.
C. Treat medically.
D. Check diagonals.

Dress is a military term that means to

A. Put in proper alignment.
B. Put in clothing.
C. Treat medically.
D. Check diagonals.
Vertical List

We are encouraged to exercise (A) 50 times per week, (B) 25 times per week, (C) 10 times per week, (D) 3 times per week.
All of the Above

Which one of the following is another name for 5?

A. -6+11
B. 1+4
C. (2 x 3) – 1
D. 2 + 15 ÷ 5
E. All of the above

A. All of the following
B. -6 + 11
C. 11 - 6
D. 1 + 3 – 4 + 5
E. (2 x 3) - 1
Directive Words

- Compare
- Defend
- Trace
- Contrast
- Explain
- Differences
Non-directive Words

- Review
- Tell all that you know
- Report your knowledge
One Idea

$1 + 1 = 2$ but $1 \times 1 < 2$
Specific Determiners

- Associated with false items:
  always, never, all, none, etc.

- Associated with true items:
  usually, often, most, may, should, etc.

Usually urban migration occurs when there is severe drought in the country side.  
T  F
Positive Statement

Undesirable family planning means unwanted birth. T  F
Avoid the word NOT

Hibiscus is not a national flower of Malaysia.

T  F
Complex Statement

In the late 1980s, Euler discovered a formula to simplify complex number expression.
False Statement True

Determine whether the statement below is true or false. If it is false, replace the word underline with another word to make the statement generally true.

The moon is the centre of the solar system.

T F
Omission at the End

The capital of Malaysia is ........
Frame of Reference

Ipoh is in .................
Unit of Measurement

The diameter of a circle with radius 2 cm is .... .... m (round to 2 decimal places).
Omit Important Word

Shah Alam is the ............ of Selangor.
Not a Puzzle

The ........ .......... of the ............ of Malaysia are ........, ..........., and ........
Enough Information

During the vacation Sue and Tai agreed to paint their house. One side of the house is eight-meters long. They mark a point on the side that is four meters from each other. Each one starts at one end and paints toward the center mark, four meters from each other. Can we be sure that each painted the same area of that side of the house if each paints to the center mark?
Degree of Precision

- In the following set of exercises for calculating z-scores from the raw scores, use the mean and standard deviation values to the nearest hundredth of a raw score unit.

- The proportions that you report for the ratios should be given in decimal fractions to the nearest hundredth.
Units

● Total elapsed time should be reported in minutes and seconds.
● When reporting the perimeters, give your responses in meters.
Everyday Words

● What words can you make from the letters in TEA?

   TEA, ATE, EAT, ETA, AET, TAE

● Create a permutation for the three letters in TEA.
Skill

Skills to look for in an oral presentation:
- Stands naturally
- Maintains eye contact
- Uses gestures effectively
- Uses clear language
- Has adequate volume
- Speaks at an appropriate rate
- Topics are well organized
Processes and Products

- **Maths**
  - Correct answer (product); Problem-solving steps leading to the correct solution (process)

- **English Composition**
  - Essay or term paper (product); Preparation of drafts and thought processes that produce the product (process)

- **Science**
  - Explanation for the outcomes of a demonstration (product); Thought processes involved in preparing the explanation (process)
Evaluation Methods

- **Systematic observations** based on predetermined criteria for student performance.
- **Checklist** to determine acceptable performance.
- **Rating scales** are written descriptions of dimensions and scales of values on which each dimension is rated.
Systematic Observations

- In a scientific problem-solving task, you may be looking for the following criteria:
  - Stated problem or question
  - Identified set of independent, dependent or controlled variables
  - Data collection plan
  - Evaluation of the problem based on the data collected
Checklist for evaluating a writing assignment:

**Direction:** Place a check in the blank for each step performed.

- 1. It has a title.
- 2. It is at least three pages long.
- 3. It specifies a setting.
- 4. It has dialogue.
- 5. It contains at least three characters.
- 6. It uses correct grammar.
- 7. It has a surprise ending.
Rating Scale

Rating scale for evaluating experimental technique:

Directions: Rate each of the following items by circling 4 for an excellent performance, 3 for good, 2 for fair, 1 for poor and 0 for nonexistent.

4 3 2 1 0 States problem or question clearly and accurately.
4 3 2 1 0 States hypothesis that clearly answers the question.
4 3 2 1 0 Uses appropriate data-gathering procedures.
4 3 2 1 0 Display gathered data accurately and clearly.
4 3 2 1 0 Draws appropriate conclusions.