

Interpretive Exercises

An interpretive exercise consists of a set of data or information, which we'll call a display, followed by a series of problems or questions having answers that are dependent upon the information given.

Interpretive Exercises

Displays may include:

Prose paragraphs

Numerical data

Charts, graphs, diagrams, or maps

Pictures, drawings, or photographs

Cartoons or caricatures

Lists of words or symbols

Mathematical formulas

Musical scores or excerpts

Audio or video recordings

Poems, short stories, or essays

Articles from newspapers, magazines, or journals

Quotations, adages, or scriptures

Specimens (rocks, plants, animals, chemicals, art, etc.)

Interpretive Exercise

One of the methods formerly used by geologists to determine the age of the earth was a calculation based on the amount of salt (NaCl) in the ocean, and the amount added to ocean waters each year by the rivers that empty into the ocean. If this method of age determination is used, certain assumptions must be made. Items 56-62 consist of a number of assumptions. Classify each assumption as:

- a. Necessary for the calculation and is probably true.
- b. Necessary for the calculation but is probably false.
- c. Not necessary for the calculation but is probably true.
- d. Not necessary for the calculation and is probably false.

- 56. The salt concentrations of the oceans is gradually increasing. (a)
- 57. Oceans have been on the earth since our planet was formed. (b)
- 58. Ever since its origin, the earth has revolved around the sun. (c)
- 59. The oceans now contain all the salt that has ever been added to them. (b)
- 60. The salts which rivers have carried to the oceans have all occurred in mineral form in the rocks before they were dissolved by the river water. (d)

Interpretive Exercises

The questions or problems which accompany the display may be presented in one or more of the following formats:

- Short answer or completion items**
- Alternative response questions**
- Matching exercises**
- Multiple-choice questions**
- Essay questions**

Interpretive Exercises

Advantages:

- **Allows you to test knowledge through the use of media that might be encountered in everyday situations (e.g., charts, pictures, etc.)**
- **Measure more complex knowledge through the analysis of data**
- **Greater depth**

Interpretive Exercises

Disadvantages:

- **Difficult to construct**
- **Must match test items with instructional goals and objectives**
- **Possibly a heavy demand on reading skill**

Short answer/completion Questions

- **Advantages**
 - Measure **RECALL** instead of **RECOGNITION**--reduces guessing
 - Easy to construct
- **Disadvantages**
 - Not suitable for complex learning outcomes
 - More difficult scoring (spelling/handwriting/diversity of answers-e.g., Where was George Washington born?)

Writing **GOOD** short answer items:

- Generally, one blank per question
- Stem needs to indicate the expected response
- **NOT:**
 - IQ is _____
 - ____ is a better ____ of ____ than _____
- **But:**
 - The term IQ is an acronym for what phrase?
 - Regression is a better way of analyzing continuous data than _____
- Ask direct questions rather than incomplete statements--they are more natural to students and generally better structured

Essay items

The following are some objectives for which essay items are appropriate.

1. Draw warranted conclusions from evidence.
2. Interpret a written selection, art work, etc.
3. Decide what information is needed to solve a problem.
4. Formulate hypotheses.
5. Determine an author's frame of reference.
6. Express a reasoned judgment and defend it.
7. Compare and contrast methods, selections, authors, etc.
8. Identify the assumptions implicit in ...
9. Integrate knowledge from related areas.
10. Evaluate the worth, merit, utility of ...

Restricted vs. Extended Response

- **Restricted** -- limits both the content and response
 - Similar to what can be measured with an interpretive exercise but requires the supply rather than selection of the answer
- **Extended** -- allows the student to select select, organize, integrate, and evaluate information

Linn & Miller on extended-response questions:

“Neither a hard-line measurement position that rejects extended essays as an approach to measurement nor one that ignores the difficulties of scoring seems to contribute much to the valid measurement of student achievement. It seems more sensible to identify the complex skills we want to measure, formulate questions that elicit these skills, evaluate the results as reliably as we can, and then use these admittedly limited data as the best evidence we have available.” (pg. 231)

Pros & Cons of Essays

- **Measures learning outcomes that cannot be measured by other means**
- **Emphasis on higher level thinking skills**
- **Ease of construction ??**
- **Directly measures writing skills**
- **Difficult to score reliably**
- **Time consuming to score**
- **Limited sampling**

Essay items

- **Specify parameters and limitations:**
 - In 100 words, one page, 3 paragraphs, etc.
 - List the advantages and disadvantages of...
 - Describe three reasons why the Nebraska Cornhuskers are the greatest college football team of all time.
- **Try for several short essays rather than one large one – allows you to sample mastery of several objectives**
- **Be as specific in stem as possible**
- **If assessing mastery, be careful allowing choice of essays from list**
- **Don't use essays to measure objectives more easily measured by objective items**

Scoring essays

- **If it is not in the objectives, don't score it**
 - Consider this statement when examining spelling/grammar
 - Handwriting/visual appeal should not count unless it is a design course
- **Score anonymously if possible**
- **Score all essay #1 and then all essay #2, etc. for consistency**

- **Develop a specific rubric to help you in awarding points:**
 - **5 points for successfully defining educational psychology**
 - **15 points for describing an application of operant conditioning successfully**
 - **15 points for evaluating a classroom in terms of Bloom's Learning for Mastery**
 - **65 points for listing 5 reasons why Seinfeld was the greatest show ever created**
- **Share rubric with STUDENTS before the test!**

Performance Assessment

- Also referred to as authentic assessment or alternative assessment
- Process may be ill-defined in that there may be multiple effective solutions
- Best suited for the creation of a product (e.g., model city, painting, invention)

Advantages of Performance Assessment

- **Motivation increases**
- **Teach to “real life”**
- **Assessment and educational product are the same**
- **External validity**
- **Utilize energy**
- **Student understanding of their work increases**
- **Tap higher level thinking & problem solving**

Disadvantages of Performance Assessment

- **Often contrived assessments**
- **Increased cost, material**
- **Increased time**
- **More difficult to score reliably**
- **Capture only a small part of academic achievement**
- **More things to consider for classroom management and planning**

Performance Assessment

Developing a good **rubric** is the key to having a quality performance assessment!

Scoring Rubrics

- Share with students beforehand
- Break them into meaningful facets/subscales related to learning objectives
- Weight each facet/subscale according to instructional emphasis & desired outcomes
- Clearly define score points throughout the scale
- Be able to clearly describe projects that vary from poor to excellent

Scoring Rubrics

Some common errors in scoring:

- Bias errors -- scoring is too generous, severe, or middle of the road
- Halo effect -- scoring influenced by knowledge of the student
- Logical error -- scoring influenced by beliefs about particular traits or characteristics (e.g., impulsive students more error prone)