



Lifelong
Learning
Programme



SERIO – GUIDELINES TO EXERCISES

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FOREWORD

The main goal of this document, produced by CIAPE on behalf of the SERIO project consortium, is to provide partners with easy-to-follow, quick-to-read guidance for creating exercises of varied types for the SERIO e-learning modules.

The exercise types proposed are:

Type 1. Matching questions

Type 2. Multiple Choice Questions

Type 3. True - False Questions

Each "question type" section has:

- Overview - definition, characteristics, examples, advantages, disadvantages
- Construction - how to write the questions

Strategically planned questioning can engage construction workers in learning by helping them reflect on knowledge, develop problem-solving skills, form concepts, or simply practice foundational skills.

Here are some guidelines for question writing

- The questions you ask should match what you expect workers to learn.
- Questions should not give away the answers or be unreasonably difficult.
- Relate questions to lesson objectives.
- Avoid questions on trivial or inconsequential details.
- Avoid questions that can be answered solely on the basis of intelligence or general knowledge.
- Use clear, concise, and precise language.
- Each item (question) should test only one idea.
- Don't use acronyms in the questions without defining them unless the acronym is common knowledge or you are asking for a definition of the acronym.
- Review and edit your questions.
- After your own review, ask someone less familiar with the material to review the questions for clarity and grammar.

Type 1. Matching questions

A matching question is two lists of related words, phrases, pictures, or symbols. Each item in one list is paired with at least one item in the other list.

- Used for recognition of relationships and making associations
- Can be used for a wide range of subject matter
- Can be used to match
 - terms and definitions
 - symbols and names
 - questions with answers
 - cause with effect
 - parts with functions
 - procedures with operations
 - principles with situations in which they apply
- Good matching items can easily be converted to multiple-choice items.
- The premises and responses should be homogeneous.

Example - good

Column A contains a list of characteristics of questions. On the line to the left of each phrase, write the letter of the question type in Column B that best fits the phrase. Each response in Column B may be used once, more than once, or not at all.

Column A

- (B) 1. Least useful for educational diagnosis
- (A) 2. Measures greatest variety of learning outcomes
- (C) 3. Most difficult to score objectively
- (B) 4. Provides the highest score by guessing

Column B

- A. Multiple-choice
- B. True-false
- C. Short answer

Example - bad

Column A lists several phrases related to Pennsylvania. On the line to the left of each phrase, write the letter of the response in column B that best fits the phrase.

Column A

- ___ 1. Pennsylvania's official state flower
- ___ 2. Pennsylvania's official state bird
- ___ 3. Major steel producing city
- ___ 4. 2003 Penn State student population

Column B

- A. Ruffed grouse
- B. Pittsburgh
- C. Mountain laurel
- D. Over 80,000
- E. Erie

Main errors:

Directions about how to handle choices in Column B are unclear.

The responses are not homogeneous. That is, answers for 1, 2, and 4 are obvious, leaving only the two cities as choices for 3.

Advantages of matching questions

- Quite easy to write
- Easy to score
- Matching exercises are a space-saving, objective, compact method to assess learning targets.
- Matching questions can be developed to use with pictures, maps, graphs, etc.

Disadvantages

- Does not measure any type of interpretation, judgment, or application
- If lists contain same number of choices, the last few choices may be give-aways.
- Students can use rote memorization to answer these exercises especially since typical matching problems involve assessment of rote associations such as names, dates, etc.
- Can be difficult to develop homogeneous premises and responses.

Construction of Matching Questions

- Directions should provide a clear basis for matching.
- Have from 4 to 10 items in each list.
- Have about 3 extra items from which responses are chosen.
- Mix the order of the items in the columns.
- Use brief phrases and as few words as possible in each list.
- Longer statements should be in the premise (left) column and shorter statements in the response (right) column.
- Use a larger or smaller number of responses than premises. That is, avoid perfect matching which allows for elimination of responses when the test-taker is unsure of the correct answer.
- Format the entire item on the same page.
- All responses should be plausible solutions.

Type 2. Multiple Choice Questions

A multiple-choice question consists of two parts. The first is a question or incomplete statement called the “stem.” Second are the choices that are possible answers to the questions or that complete the statement.

Example - good

Which type of test do college admissions offices use most often in reviewing applications? (This is the Question stem.)

- a. ETS
- b. CAT (These are the Choices, responses, alternatives)
- c. IQ
- d. SAT

Example - bad

Joan is a top-level gymnast on her college team and is amenorrheic. This means that she:

- a. Has not yet experienced puberty.
- b. Is much shorter than most girls her age.
- c. Starves herself.
- d. *Does not menstruate.

Main error: There is not necessarily a relationship between being a top-level gymnast and being amenorrheic.

Advantages of multiple-choice questions:

- Many kinds and types of subject matter and learning outcomes can be measured
- Item analysis can provide diagnostic information
- Easy to score

Disadvantages:

- Difficult to write higher order questions (i.e., procedural, metacognitive)
- Cannot test ability to organize and present knowledge

Constructing Multiple-choice Questions

Question stem

- When the stem is an incomplete statement, place the “blank” for the correct choice at the end of the statement.
- When a negative item is used, emphasize the negative word or phrase by underlining, capitalizing, or italicizing, for example, “DOES NOT.”
- Avoid grammatical clues to the correct answer such as “a” or “an” as the last word of the stem or plural verbs that match plural choices.
- If all responses begin with common words or phrases, then place these commonalities at the end of the stem.

- Write the stem such that the students don't have to read all the choices before they can determine the question.
- When several stems have the same set of choices, consider using a matching question.

Question choices or responses

- Include at least four, but not more than five, possible responses.
- Provide reasonably plausible choices.
- Only one response should be correct.
- Omit responses that are obviously wrong.
- List possible responses in a column – easier to read and answer
- Avoid patterns in placing correct answers (such as having "c" be correct in more than half of the questions).
- If a hierarchy exists within the responses, place them in ascending order (e.g., numerical responses in numerical order, years in chronological order).
- Use "none of the above" and "all of the above" with appropriate discretion. They can give away the answer or cause confusion, if all alternative choices aren't worded very carefully.
- Avoid language that is similar or identical to important words in the stem.

Type 3. True - False Questions

Used to measure ability to identify whether statements of facts, principles, generalizations, relationships, or evaluative statements are correct
Can be factual or can be a thought question that requires reasoning

Example - good

The true/false item is also called an alternative-response item.

- a. True
- b. *False

Example - bad

The true-false item, which is favored by all test experts, is also called an alternative-response item.

- a. True
- b. *False

Main error: The question contains two ideas and therefore is confusing.

Advantages of true/false questions

- Quite easy to write
- Easy to score
- Scoring is objective
- More information is sampled from a lot of content

Disadvantages

- Measures only low level of learning - facts, knowledge, comprehension
- Need a larger number of items to distinguish stronger and weaker knowledge levels.
- Students have a 50 percent chance of being correct, just by chance.
- May be perceived as an unfair judgment of learning
- Encourages guessing since there are only two alternatives.

Constructing True/False Questions

True/false topic

- Make questions require application of knowledge as much as possible.
- Always make certain the statement is unequivocally true or false.
- When using opinion statements, cite the source that will make the complete statement true or false.

True/false protocol

- Develop approximately the same number of true and false statements.
- Do not consistently make true statements longer than false statements, or vice versa
- Avoid negative and complicated statements.
- Words such as "all," "only," "never," and "always" give hints about the answer and are usually false. Use them only when the question is to measure understanding.
- Statements with the words "generally" and "usually" tend to be true.

Type 4. Exercise based on the graphic solutions.

Memory games – picture matching game

- Click on the different cards to find pairs of matching pictures. Try to finish the memory puzzle using as few moves as possible. Can you remember where the pictures and descriptions are hiding? Score as many points as you can while searching for the pairs.

One choice test with pictures

- The correct answer is presented on the picture. This kind of exercise combines text with picture to better illustration of solution.

Organizing text - filling the gaps

- The exercise is based on the drag and drop correct answer to the relevant place.

Organizing text - rank the parts

- The aim of this exercise is to rank gradually the given content.

Point the specific spot on the pictures

- The aim of this exercise is to point on the picture wrong or good practice. Upon appearing bad or good practice on the screen user will have to point the right place on the pictures.

Pictures in the right order

- The aim of this exercise is to put pictures in the right order presenting the solution of the stated problem.

One second pictures

- Picture or pictures will appear only for one second on the screen. The aim of the user will be assessing whether it is good or bad example.

Short instruction movie + test

- The short movie presents correct activities. On the basis of this movie user has to find the correct answer in the given content.



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