

How do I generate a multiple-choice (MC) item list?

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What is a multiple-choice item list?

The multiple-choice (MC) item list includes all selected MC items from a course. In other words, only MC items selected by the user will be printed or exported. List generation is useful when selecting MC items for export to other compatible Navy tools, selecting MC items for a paper-based review and/or selecting MC items for a test.

When printing a MC item that was selected for **randomization**, the alternatives will print in a different sequence than what is displayed on the screen. Randomized Answers is for changing the listed sequence of alternatives when a MC item list is printed. Randomizing answers allows the same multiple-choice item to vary across different tests, because the order of the alternatives varies. Selecting an item to have randomized alternatives is done in the MC Item Construction Tab. It is a good idea to randomize answers, but items should not be randomized when there is a numerical or sequential order to the alternatives.

Example:

The alternatives of the following item are in sequential order.

What is the operating time, in seconds, for the pressurization/ compensation blow valve to roll from shut to open?

- a. 1 to 3
- b. 4 to 6
- c. 7 to 8
- d. 9 to 11

If this item was selected for randomization, the item might print like the example below, which appears awkward. Therefore, since the alternatives form a numerical sequence, **they should NOT be randomized.**

Example:

What is the operating time, in seconds, for the pressurization/compensation blow valve to roll from shut to open?

- a. 7 to 8
- b. 1 to 3
- c. 9 to 11
- d. 4 to 6

What does a sample multiple-choice item list look like?

The following is a sample multiple-choice item list. This is displayed when you click the preview/print selected questions button. Note that when choosing this list, the questions are displayed without the answers.

Charting a Course: Tests Module

MC ITEM LIST - SELECTED ITEM LIST

COURSE TITLE

A-xxx-xxx

Modified Date: 07/25/2002

Purpose

This report lists user selected multiple-choice (MC) items from the indicated course. The item's correct alternative is not indicated. The list is sorted by unit and learning objective.

Unit 2: Writing Objectives

TO 2.0: Convert Course Training Task List to learning objectives.

Item 1

TO2.0 1. What are the three elements that an objective must address?

- a. Performance, source, and condition
- b. Job, duty, and task
- c. Behavior, condition, and standard
- d. Task, source, and standard

EO 2.1 Write terminal objectives for duties.

Item 1

EO2.1 2. A curriculum developer is writing a learning objective that addresses a process. What standard is required to be stated as part of the objective?

- a. With no errors
- b. Without assistance
- c. With 100% accuracy
- d. In correct order

What is an answer key and what does a sample answer key look like?

The following is a sample answer key for selected items. An answer key is a list of answers for the selected multiple-choice items. The answer key may be helpful, especially when the alternatives are randomized.

Charting a Course: Tests Module

MC ITEM LIST - ANSWER KEY

COURSE TITLE

A-xxx-xxx

Modified Date: 08/05/2002

Purpose

This report lists of answers for user selected multiple-choice items. This report lists only the multiple-choice (MC) item stem and its correct alternative.

Unit 2: Writing Objectives

TO 2.0: Convert Course Training Task List to learning objectives

Item 1

What are the three elements that an objective must address?

Task, source, and standard

EO 2.1 Write terminal objectives for duties.

Item 1

A curriculum developer is writing a learning objective that addresses a process. What standard is required to be stated as part of the objective?

With 100% accuracy

What are points to consider when generating a multiple-choice item list?

When generating a multiple-choice item list, it is important to note the purpose of the item list. If the items will be exported to another test item bank, the item status and status on compromise should be taken into consideration. Similarly, if the items will be printed for a paper-based review, the item status should be taken into consideration.

When generating a multiple-choice item list for use on a test, it is important to:

1. [Determine the mastery level.](#)
2. [Determine the ideal and practical amount of items needed to assess the learning objective or content area.](#)
3. [Select the items with the appropriate item status.](#)
4. [Check the selected items to ensure that the information contained in the MC items do not answer any other items in the list.](#)
5. [Check the selected items to determine if there are very similar items.](#)
6. [Estimate test time.](#)

1. **Determine the mastery level.**

The mastery level identifies the minimum level of understanding, knowledge, or skill necessary in order to achieve a learning objective or content area. Mastery learning measures how well a student achieves the learning objective (LO), because instruction and testing is linked to a specific LO in mastery learning. In order to determine if a student has mastered the learning objective, the mastery level of each LO must be determined. Ideally, the achievement level of a LO should be 80%, but may vary. For an 80% mastery level, if 10 items are used to assess the LO, the student must correctly answer 8 items to pass the LO.

Mastery level of a learning objective may depend on:

- The overall criticality of the LO. In general, learning objectives with higher criticality scores have higher mastery levels.
- The safety criticality score of the LO. In most cases, learning objectives with high safety scores should have higher mastery levels. For instance, if safety is a must to prevent injury or death, a 100% mastery level should be set.
- The on-the-job performance criticality score. If an LO is important to on-the-job performance, especially on day one, it may be important that the student really knows the information. As a result, the LOs with a high on-the-job performance score may have higher mastery levels.
- If the information covered by the LO is essential to the learning of other learning objectives. If new learning is built on the material covered in the LO, it may be important that the LO is mastered before the student begins learning the new information. Thus, the mastery level may be higher. This varies depending on the criticality of the current and new information.

2. **Determine the ideal and practical amount of items needed to assess the learning objective or content area.**

In general, the more items used to assess a learning objective, the more accurate the results in evaluating the student's learning. When assessing a LO, use as many questions as necessary in order to determine achievement of the LO. However, due to constraints it may be impossible to use a lot of items. In some cases, a simple LO may only need one item in order to determine achievement, but in other cases, asking more items may be appropriate. For example, if testing the capitals of the 50 states and the students are expected to know all of the capitals, it may be difficult to have 50 items on a test (the ideal amount). Instead, take a sample of the states, perhaps a random 20% and/or the most difficult. This is the practical amount. Assume that if the student correctly answers the sample items, they know all of the capitals. As a result, there are less than 50 items on the test. In general,

- LOs that are highly critical should have more test items than LOs that are not as critical.

- LOs with a higher K-level may have more items, because lower K-level items may be necessary in order to determine where the learners are having problems.
 - The amount of items should be proportional to the amount of instructional time. For instance, if 50% of the teaching time was spent teaching one LO or content area, then 50% of the items on the test should be geared toward the one LO or the content area.
 - If two similar LOs supports and/or covers the same material, fewer items may be used to assess each LO.
3. **Select the items with the appropriate item status.**
Only items designated as active or validation may be used on a test. The amount of items selected for a learning objective should depend on the practical amount calculated in step 2.
 4. **Check the selected items to ensure that the information contained in the MC items do not answer any other items in the list.**
Item selection should not be random. The information in a stem and/or the alternatives of one test item may contain the answer to another test item.
 5. **Check the selected items to determine if there are very similar items.**
A very similar item is an item that says and asks the same question, except it is reworded. In general, there should not be very similar items in the list, unless the very similar item tests new information. Item selection should not be random.
 6. **Estimate test time.**
A majority of students should be able to complete all items within the test time period. Estimate the time to complete each item and use the estimation in the selection of items. Reselect items as necessary and repeat steps 3 to 6.

Where can I learn more about selecting items for a test?

The following is an outside source that you can refer to in order to learn more about selecting items to use on a MC test.

Block, J., Eftim, H., & Burns, R. (1989). **Building effective mastery learning schools**. White Plains, NY: Longman Inc., 135-217.

Levine, D., & Associates. (1985). **Improving student achievement through mastery learning programs**. San Francisco: CA: Jossey-Bass Publishers, 241-255.

Oosterhof, A. (2001). **Classroom applications of educational measurements, 3rd ed.** Upper Saddle River, NJ: Merrill Prentice Hall, 87-251.