**Multiple Choice Construction Checklist**

**Whole Item:**

* represents a significant educational objective. (“If I could only ask one question, is this the question I would ask?”)
* addresses a single problem.
* does not rely on any other item for its correct answer.
* is free of cultural, gender, religious, or other biases.
* does not require more than its fair share of the student’s total time for the test.
* has appropriate vocabulary to the student’s level.
* is contained on the same page. (Where a passage or data takes the entire page, it is acceptable to place related questions on the *facing* page. Avoid placing data on a back of the page forcing students to flip back & forth.)
* has been proofread/spell checked ( including incorrect alternatives!)

**Stem:**

* is self-contained and introduces what is expected of the student. The examinees should be able to read the stem and answer the question before reading the alternatives.
* is clearly worded and free of ambiguity.
* is free of irrelevant or unnecessary detail.
* asks a question that has a definite answer. It does not measure personal opinion.

 UNACCEPTABLE: “The greatest inventor of the 20th century was…”

 ACCEPTABLE:“The most prolific inventor of the 20th century was...”

* All conditions and qualifications necessary to make the intended response have been specified.

 **WRONG:** “The BEST sound is obtained from a flute when…”

 The criteria for the “best” must be specified:

 **BETTER:** “The LOUDEST sound is obtained from a flute when…”

 “The CLEAREST sound is obtained from a flute when…”

* In BEST-answer items (as above example), the key qualifier in the stem has been emphasized by the use of capital letters, boldface, and/or underlining.
* Key words from a reading passage or data set are **not** repeated in the stem or alternatives.
* does not provide grammatical clues to any alternative; that is, the stem is grammatically correct in its relationship to each alternative.
* Avoid the use of absolutes (e.g. “always”, “never”).
* The use of negatives has been avoided. Where negatives must be used, the negative wording has been emphasized by the use of capital letters, bolding, underlining etc.

 **WRONG:** “Which of the following countries does not have a Marxist government?”

**Slightly BETTER:** “Which of the following countries does **NOT** have a Marxist government?”

 **BETTER:** “All of the following countries have Marxist governments **EXCEPT ONE.** Choose the **EXCEPTION**:”

 **BEST:**  “An example of a capitalist nation is:”

**Alternatives/Distracters**

* The alternatives are all appropriate to the question asked or implied by the stem.
* The distractors are all plausible.
* The use of trickery has been avoided.
* All alternatives are consistent with what would be learned in future levels; that is, the item would still be correct (though easier) in a more senior course.
* Distractors do not present false information.
* The alternatives are stated as briefly and simply as possible.
* Wording common to all alternatives has been placed in the stem.

 **WRONG:** A perception check is a

 a) verbal statement that reflects our interpretation of what others say

 b) verbal statement that reflects how others interpret what we say

 **RIGHT:** A perception check is a verbal statement that reflects

 a) our interpretation of what others say

 b) how others interpret what we say

* The correct alternative is not stated in textbook or stereotypical language.
* One alternative is not significantly longer than the others.
* Key words in the stem have not been repeated in any of the alternatives.
* The alternatives are grammatically consistent with the stem, and parallel in grammatical structure, type of content, length and complexity.
* Overlapping alternatives have been avoided.

 Who was dancing in the story?

 a) Jane was dancing.

 b) Mary was dancing.

 c) Jill was dancing.

 \* d) All the ladies were dancing.

d) subsumes a), b) and c), but a), b), and c) nevertheless remain correct answers.

* “All of the above” has not been used.

 Student may see the alternative a) is correct, choose it, and go on to the next question without noticing “all of the above” option. (In effect, students get the item wrong, even though they chose a correct answer to the question posed). Furthermore, if examinees can identify one alternative as incorrect, they can automatically eliminate “all of the above”, so question no longer involves guessing out of four alternatives, but has been narrowed down to one out of two.

* Combinations of alternatives (e.g., “both A and B”) have been avoided.
* Avoid “None of the above” as an alternative. (Students may legitimately eliminate “correct” answer, may get item correct without knowing answer, etc.)
* Keyed answer is inarguably correct.
* Alternatives on mathematics and science tests show correct number of significant digits (except where item assessing student’s knowledge of significant digits).
* Absolutes such as “always” and “never” have been avoided.
* The number of alternatives is consistent, at least within groups of items.
* Consider using fewer alternatives. (Until recently, four alternatives were recommended. Current studies suggest, however, that attempts to four alternatives often results in the adoption of implausible fourth alternatives, and that this may lead to overall decline in the standards applied to other alternatives. Three alternatives are therefore recommended. )

**Key**

* The keyed answer is the only correct, or clearly the best, answer.
* The placement of the keyed answer has been varied; i.e., same number of ‘a’s, ‘b’s, ‘c’s, etc.
* Alternatives have been arranged in ascending or descending order.

 Numerical alternatives are arranged in either ascending or descending order.

 Non-numerical alternatives are arranged in logical order (e.g., alphabetical, chronological, positive to negative), or where there is no obvious continuum, by length of the alternative in either ascending or descending order.

* Every item is independent of every other item. (Choosing the correct answer to any item does not depend on students having chosen correct response to previous item and information provided in one question does not provide clues to another.)
* Each question is worth the same number of marks.

Instead of assigning items different weights, important topics may be assigned

additional questions. Or if there is a strong reason to have different marks, have them clearly in differentiated sections of the test.

**Context-Dependent Multiple-Choice Items**

**(Questions on a passage or about data, or figures, etc.)**

* The answer to one item is independent of the answer to all previous and following items on the same passage of data.
* The number of questions asked on a single passage or data set reflects the length and complexity of the passage.
* The passage or data presented is new to all students; or materials with which all students have had an equal opportunity to familiarize themselves.
* Visual material is clearly reproduced.
* Any questions related to the passage are on the same page, or at minimum, on the facing page.

**Innovative Ways of Engaging Critical Thinking through Multiple Choice**

Some research has argued that implementing multiple choice exams fails to facilitate critical thinking, an essential aspect of long-term learning. Below are innovative strategies for encouraging critical thinking while still using multiple choice examinations.

**1. Students Challenging Multiple Choice Questions** (Kerkman & Johnson, 2014)

* Students are given the opportunity to challenge multiple choice questions that they believe to be inadequate, unfair, too challenging, or incorrect.
* Students that choose to challenge a question (or questions) can attach a piece of paper at the end of their test and briefly describe their concerns with the question.
* This approach not only increases critical thinking, but also assists with the development of an adequate question bank.
* Challenges that are invalid reveal knowledge gaps in the course material.

**2. Self-correcting Multiple Choice Exams** (Gruhn & Cheng, 2014)

* After students complete the exam they hand it in, but are given a second opportunity to take the exam home and correct their answers for fewer marks.
* Arguments against this approach are inflated grades, and greater cheating. However, self-correct MC exams should only be used for highly difficult exams where the answer isn’t obvious or easily reached.
* Students are more engaged with the material if they choose to self-correct, which positively impacts their long-term learning and future performance.

**3. PeerWise**

* An innovative technology that allows students to create their own multiple choice questions, answer their peers self-generated questions, and make comments.

**4. Collaborative Testing**

* Students can work on tests in pairs or groups, which has shown to lead to better performance, greater retention, and less test anxiety.
* Providing feedback to students is more feasible using this type of design.

**5. mTuner**

* Innovative online technology that incorporates several cognitive learning strategies (i.e. free recall, immediate feedback, repetition with unsuccessful retrieval etc.) to enhance student learning in multiple choice assessment.
* Provides important statistical data regarding student assessment behaviour (i.e. question recall times) that may better assist item difficulty.
* Currently being implemented in introductory to psychology courses at the University of Windsor (contact Lindsay Shaw shaw11r@uwindsor.ca or Dr. Jill Singleton-Jackson).