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**Appendix A. The rubric of 19 item-writing flaws used to evaluate the student-generated multiple-choice questions.**

Item-writing flaw	Definition
Ambiguous or unclear information	Questions and all options should be written in clear, unambiguous language
Implausible distracters	Make all distractors plausible as good items depend on having effective distractors
Use of none of the above	Avoid none of the above as it only really measures students ability to detect incorrect answers
Longest option is correct	Often the correct option is longer and includes more detailed information, which clues students to this option
Gratuitous information in stem	Avoid unnecessary information in the stem that is not required to answer the question
True/false question	The options should not be a series of true/false statements.
Convergence cues	Avoid convergence cues in options where there are different combinations of multiple components to the answer
Logical cues in stem	Avoid clues in the stem and the correct option that can help the test-wise student to identify the correct option
Use of all of the above	Avoid all of the above options as students can guess correct responses based on partial information
Fill-in-blank	Avoid omitting words in the middle of the stem that students must insert from the options provided
Absolute terms (never, always)	Avoid the use of absolute terms (e.g. never, always, all) in the options as students are aware that they are almost always false
Word repeats in stem and correct answer	Avoid similarly worded stems and correct responses or words repeated in the stem and correct response
Unfocused stem	The stem should present a clear and focused question that can be understood and answered without looking at the options
Complex or K-type	Avoid questions that have a range of correct responses, that ask students to select from a number of possible combinations of the responses
Grammatical cues in stem	All options should be grammatically consistent with the stem and should be parallel in style and form
Lost sequence in presentation of data	All options should be arranged in chronological or numerical order
Vague terms (sometimes, frequently)	Avoid the use of vague terms (e.g. frequently, occasionally) in the options as there is seldom agreement on their actual meaning
More than one or no correct answer	In single best-answer form, questions should have 1, and only 1, best answer
Negative worded stem (not, incorrect, except)	Negatively worded stems are less likely to measure important learning outcomes and can confuse students