

Use of Flawed MCQ's in Final Exams



which of the following is the largest

- A: peanut
- B: An Elephant
- C: The Moon
- D: A Kettle

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Assessments tests Exams

- Tests are a key component of assessing students' knowledge.
- Since test grades affect students' educational outcomes and subsequent career paths, test items should be well constructed.
- If tests are not well constructed, assessments of student performance may be invalid.
- Good **item** construction is critical to accurate assessment

What is a Flawed MCQ

- Guidelines for MCQ construction are clearly documented in the many books and articles that have been written on this topic from a variety of disciplines
- Item-writing flaws (**IWFs**) are violations of these accepted item-writing guidelines which **can affect student performance** on MCQs, making the question either easier or difficult to answer



Item Writing Flaws

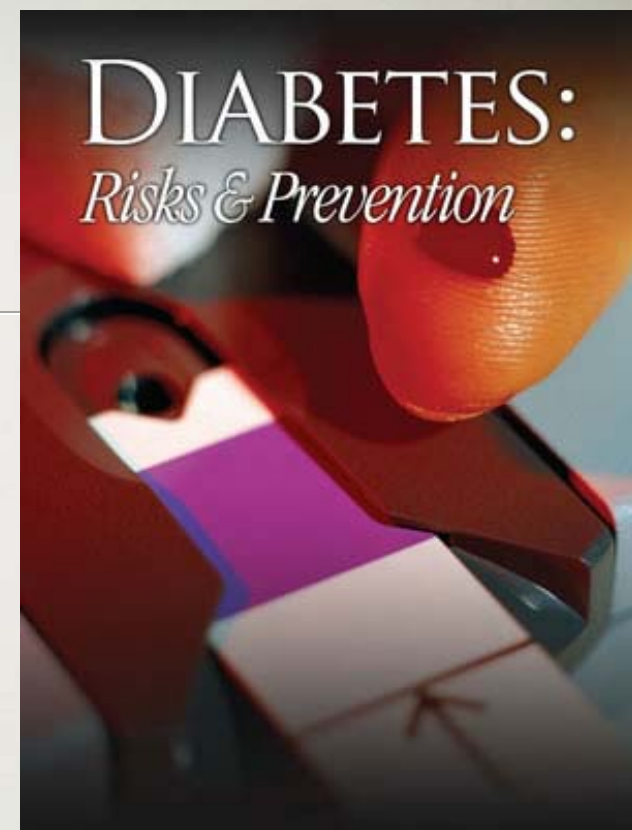
(there are 19 categories of IWF's - here are some common ones)

- ambiguous or unclear information in the stem
- negatively worded stems
- implausible distracters
- unnecessary or gratuitous information in the stem
- more than one or no correct answer
- the longest option is correct
- logical clues in the stem
- word repeats in the stem and correct answer
- grammatical clues associated with sentence completions
- convergence clues



Example

- **About Diabetes:**
- Which of the following is **NOT** true.
- A: Hb A1C is best for monitoring glycaemic control.
- B: Limb Salvage is possible in most cases of lower-limb ulceration if glycaemic control is good.
- C: Risk of Cardiovascular mortality is related to obesity not glycaemic control.....



Another one....

- The actions of Thyroxine include all except.....
- Which of the following is NOT an effect of the drug xxxxxxxx



What is NOT likely to pop-out
from this magician's hat

Difficulty related to construct rather than content

Impact of Flawed Item

- Students confused
- Affects pass-fail standards
- May affect test validity
- Cannot be ethically & legally defended



CUHK Exams

| Year | No of MCQ's | Flawed | Percentage |
|---------|-------------|--------|------------|
| 2006-07 | 150 | 24 | 16% |
| 2007-08 | 150 | 41 | 27% |
| 2007-09 | 150 | 22 | 15% |
| 2007-08 | 150 | 14 | 9% |
| 2008-09 | 150 | 19 | 13% |

**Mean
16%**

Impact on Pass-Fail Stats

| Passing Standard (%) | Passing Rates as Percentage | | |
|----------------------|-----------------------------|----------------------|------------|
| | With flawed items | Without flawed Items | Difference |
| 78 | 4.6 | 5.8 | 1.2 |
| 70 | 30.4 | 39.8 | 9.4 |
| → 64 | 61.6 | 68.1 | 6.5 |
| → 58 | 84.1 | 90.6 | 6.5 |
| 54 | 92.8 | 94.2 | 1.4 |

Affects 9 students

Impact on Pass-Fail Stats

| Passing Standard (%) | Passing Rates as Percentage | | |
|----------------------|-----------------------------|----------------------|------------|
| | With flawed items | Without flawed Items | Difference |
| 76 | 2.2 | 5.2 | 3.0 |
| 70 | 17.9 | 26.8 | 8.9 |
| → 64 | 48.5 | 59.0 | 10.5 |
| → 58 | 87.3 | 91.8 | 4.5 |
| 52 | 97.8 | 99.2 | 1.4 |

Affects 15 students

How may we avoid IWF's

- Use a Test Committee
 - single writer is more error prone
- use a blue-print
 - sample broad, set appropriate cognitive level
- set standards
 - use items of appropriate difficulty
- Review the Exam paper before and after the exam
 - identify IWF's and Content Validity
- Use MCQ' banks
 - IDEAL vets flawed items
- Attend an ITEM-writing workshop
- Use OES-TLRC staff with expertise and experience