Using Calculated Multichoice Questions (CMQs)

Dr. Rick Jerz
The University of Iowa
Objectives

• What are calculated multichoice questions?
• Advantages and disadvantages
• Provide an illustration
• Share a “real” example
• Summary and some notes
What are calculated multichoice questions?

- **Multiple choice**
  - Easy to grade. Automatic by Moodle.
  - Saves the time grading. Improves productivity.
  - Randomized re-attempts easily implemented.
  - One exact answer. No student data entry errors.
  - Students typically explore wrong answers, too.

- **Calculated multichoice**
  - Uses variables in question and in answers.
  - “Algorithmically” generated questions.
  - Easily provides many versions of the question.
  - Avoids students sharing answers (cheating).
  - Variables can be synchronized across multiple questions
Calculated MultiChoice Characteristics

• Advantages
  • Can create the “correct” answer
  • Can have “constant” answers
  • Can have “text” answers, like “none of these”
  • Can create calculated incorrect answers
  • Can include words, after or before
  • Can have many choices (many more than 4)
  • Many functions are available
  • Can include “bogus” variables
  • Multiple questions can “share” variables!!!

• Disadvantages
  • More complex to set up
Two variables: length \((x)\) and width \((y)\)

Two problems:
1. Calculate the area of a rectangle
2. Calculate the perimeter of a rectangle
   - Purposely use the same \(x\) and \(y\) letters
   - To demonstrate private and shared datasets
Let’s get started!

1. Create a quiz (framework)
2. Create a quiz category
3. Create the first question (use most defaults)
   - Variables in curly brackets {=...}
4. Create a second question (using defaults)
5. Add the questions to the quiz
6. Observe via previews
Add the Second Question

• If it makes sense, just duplicate the first question

• **Synchronized** Questions, three conditions:
  1. The questions are kept in the **SAME** question bank category
  2. The questions must have the same number of versions
  3. We have to instruct Moodle to **synchronize** the datasets
Course: Business Analytics
Exam Topic: Descriptive Statistics
  - Mean, Mean Deviation, Median, Mode, Standard Deviation, Range, Minimum, Maximum, Variance

40-45 Students
Unique “Dataset”
Summary

• CMQs are a powerful question type
• CMQs are a bit complex
• CMQs take time to learn and master
• CMQs are great for avoiding “cheating”
• CMQs do not exist in other LMSs, giving Moodlec a powerful question type
Limitations and Notes

• This is not Excel. More functions are needed.
• Going backwards between setup screens is tricky. Start at beginning and step forward.
• Removing one specific “set” is difficult.
• It would be nice to be able to use a “Description” question type with variables.
• Better documentation is needed.
• Requires experimentation and practice.
• I hang out in the Moodle.org forums, if you need me.
• For more support, including this video, go to www.rjerz.com