Crafting the Question: Get the Most Out of Your Student Response System

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Crafting the Question

• Create effective multiple-choice questions
• Create questions at different levels of learning
• Use a variety of question formats
• Understand time management and best practices
Clickers
None of the Above
Why Use Them?

• Encourage participation
• Check for understanding
• Direct instruction
• Promote discussion

(Vanderbilt University Center for Teaching)
Anatomy of a Multiple-Choice Question
1. Choose the resource that has details about an event as it happens.

A) Book
B) Scholarly Article
C) Encyclopedia
D) Internet news site
1. Choose the resource that has details about an event as it happens.

A) Book
B) Scholarly Article
C) Encyclopedia
D) Internet news site
Stem  =  Question
Options  =  All of the answers
Distractors  =  Wrong answers
Key  =  Right answer
Crafting the Stem
A stem should relate directly to a learning objective.
How is this question related to my objective?

What do I want to achieve by asking this question?

(Premkumar & Coupal, 2008, p. 146)
Stem Guidelines

• Keep the central idea in the stem, not the options
• Avoid complex language
• Avoid negatives, such as NOT or EXCEPT

(Haladyna, Downing, & Rodriguez, p. 312)
Effective Stems

• Complete
• Succinct
• Focused
• Positive
• Grammatically correct

(McDonald, p. 92-94)
Stem Formats

• **Question**
  What is a resource that has details about an event as it happens called?

• **Completion**
  A resource that has details about an event as it happens is called...

• **Instructional**
  Choose the resource that has details about an event as it happens.

(McDonald, 88-89)
Crafting the Options
Keep the Options Balanced
Effective Options

- Positive
- Succinct
- Grammatically correct
- Distinct

(McDonald, p. 95-98)
Effective Key

• Make sure there is just one
• Make sure it is distinct
• Vary the placement

(McDonald, p. 107)
Effective Distractors

• Make them plausible
• Use common misconceptions
• Avoid “All of the above” and “None of the above”

(McDonald, p. 107; Haladyna et al., p. 319)
How Many?
Pop Quiz
1 Problem?

Paraphrasing:

A. Synthesizing the original passage and writing it in your own words.
B. Changing the sentence order of the original passage.
C. Replacing certain words from the original passage.
Which of the following best describes acceptable paraphrasing?

A. Synthesizing the original passage and writing it in your own words.
B. Changing the sentence order of the original passage.
C. Replacing certain words from the original passage.
Problem?

I would have liked to spend more time on:

A. How to search PsycINFO
B. How to use RefWorks
C. How to search the library catalog
D. None of the above. I feel ready to research.
Better

I would have liked to spend more time on how to:

A. Search PsycINFO
B. Use RefWorks
C. Search the library catalog
D. None of the above. I feel ready to research.
Which of the following media do you NOT need to cite?

A. A chart from your textbook.
B. A video you saw on MTV.
C. A photo you took with your digital camera.
You do not need to cite one of the following media. Which one?

A. A chart from your textbook.
B. A video you saw on MTV.
C. A photo you took with your phone.
Problem?

Using AND to join search terms has the effect of

A. Narrowing your search results
B. Broadening your search results
C. Searching for two terms at the same time
Using AND to join search terms has the effect of:

A. Narrowing your search results
B. Broadening your search results
C. Removing a term from your search results
Levels of Learning
• Level 1  Remember
• Level 2  Understand
• Level 3  Apply
• Level 4  Analyze
Remember

The library service that allows you to borrow material from another library is called:

A. Interlibrary Loan
B. GetText
C. ScholarWorks
Verbs for the Remember Level

- Define
- Identify
- Know
- List
- Name
- Recall
- Recognize

- Relate
- Reproduce
- Select
- State
- Tell

(McDonald, 2002, p. 233)
Understand

What is an empirical study?

A. An article that surveys the current literature on a topic.
B. An article that provides an analysis of previously published statistics.
C. An article that is based on observed facts or behaviors rather than theory.
Verbs for the Understand Level

- Change
- Compare
- Convert
- Describe
- Differentiate
- Discuss
- Distinguish
- Estimate
- Explain
- Extrapolate
- Illustrate
- Infer
- Interpret
- Outline
- Rank
- Rearrange
- Reorder
- Rephrase
- Reword
- Summarize
- Translate
- Transform

(McDonald, 2002, p. 234)
Apply

Which of the options below is an academic journal article citation?


Verbs for the Apply Level

- Arrange
- Avoid
- Classify
- Construct
- Develop
- Demonstrate
- Determine
- Ensure
- Examine
- Identify
- Illustrate
- Locate
- Modify
- Relate
- Revise
- Use
- Utilize

(McDonald, 2002, p. 235)
Analyze

Which of the following searches will give the best results for this topic: **Is there a relationship between obesity and online gaming?**

A. obesity OR online gaming
B. obesity AND online gaming
C. obesity AND online gaming gam*
Verbs for the Analyze Level

- Analyze
- Associate
- Categorize
- Compare
- Contrast
- Correlate
- Delineate
- Deduce
- Detect
- Determine
- Differentiate
- Diagram
- Distinguish
- Divide
- Estimate
- Examine
- Infer
- Investigate
- Look for trends
- Order
- Question
- Recognize error
- Separate
- Solve
- Verify

(McDonald, 2002, p. 236)
Question Formats
Picture Questions

Which of these buttons will often take you to the full text of an article?

A.  
B. View Abstract  
C.
With this search, your results would contain which of the following words?

A. Teaches, Teaching, Teacher
B. Teaches, Teaching, Teak
C. Teaches, Instructs, Tutors
What is the question portion of a multiple-choice question called?

A. Stem
B. Leaf
C. Branch
Confidence Level Questions

How do you feel about your ability to find peer-reviewed articles on your topic?

A. Not confident  
B. Sort of confident  
C. Confident  

(Bruff, 2016)
Student Perspective Questions

How many library research classes have you had at SJSU?

A. None
B. One
C. Two
D. Three or More
Student Perspective Questions

Doing research in the library databases makes me feel:

A. Anxious
B. Nothing special
C. Exhilarated

(Bruff, 2016)
Choose Your Own Adventure

Your roommate asks if she can turn in a paper you wrote last semester for an assignment she’s really behind on. What do you say?

A. “Sure. What are friends for?”
B. “No. That’s plagiarism.”
Let’s Talk About This

Turning in someone else’s work as your own violates the campus policy on academic honesty. By letting your roommate use your paper, she could fail her assignment or the course. Both of these are consequences of plagiarism at SJSU.

How would anyone know it was your paper? SJSU uses Turnitin, a plagiarism detection service. It compares student papers with information found on the Internet as well as its own database of previously submitted papers, including yours.
Good Choice!

Turning in someone else’s work as your own violates the campus policy on academic honesty.

How would anyone know it was your paper? SJSU uses Turnitin, a plagiarism detection service. It compares student papers with information found on the Internet as well as its own database of previously submitted papers, including yours.
Choose Your Own Adventure

What would you like to learn about first?

A. Setting up Google Scholar to search the databases
B. Using RefWorks to automatically generate your Works Cited page
C. Using the library catalog to find books and articles
Assessment Questions

I would have liked to spend more time on how to:

A. Search PsycINFO
B. Use RefWorks
C. Search the library catalog
D. None of the above. I feel ready to research.
CLICKER PYRAMID

Scores
1
2
Final

Category F
Category D
Category E
Category A
Category B
Category C

(ITS, The University of Iowa, 2016)
Trivia

Multiple-choice tests were first used on a large scale in:

A. World War I
B. World War II
C. Korean War
Trivia

Multiple-choice tests were first used on a large scale in:

A. World War I
B. World War II
C. Korean War
Time Management
The One-Shot
Time Challenges

• Creating the questions
Time Challenges

• Creating the questions
• Technical problems

(Bruff, 2016)
Time Challenges

- Creating the questions
- Technical problems
- Adapting lesson plan

(Bruff, 2016)
Time Challenges

• Creating the questions
• Technical problems
• Adapting lesson plan
• Set-up

(Bruff, 2016)
Time Challenges

• Creating the questions
• Technical problems
• Adapting lesson plan
• Set-up
• Just-in-time teaching

(Bruff, 2016)
Proceed With Caution
Best Practices
Best Practices

• Make the commitment
Best Practices

• Make the commitment
• 3-4 questions at 10-20 minute intervals per 50-minute class session

(University of Wisconsin, 2016)
Best Practices

• Make the commitment
• 3-4 questions at 10-20 minute intervals per 50-minute class session
• Troubleshooting

(University of Wisconsin, 2016)
Best Practices

• Make the commitment
• 3-4 questions at 10-20 minute intervals per 50-minute class session
• Troubleshooting
• Low expectations

(University of Wisconsin, 2016)
Best Practices

• Make the commitment
• 3-4 questions at 10-20 minute intervals per 50-minute class session
• Troubleshooting
• Low expectations
• 30 seconds to 1 minute per question

(Carl Wieman Science Education Initiative (2009), p. 20)
A *stem* should relate directly to a learning objective.

(McDonald, p. 88)
“Just as there can be no set formulas for producing a good story or a good painting, so there can be no set of rules that will guarantee the production of good test items. Principles can be established and suggestions offered, but it is the item writer’s judgment in the application (and occasional disregard) of these principles and suggestions that determine whether good items or mediocre ones are produced.”

Robert L. Ebel

(Ebel, 1951, p. 185)
References

Do you have any questions?

A. Yes, a lot
B. A few
C. No, I think that covers it
1. Choose the resource that has details about an event as it happens.

Options:

A) Book
B) Scholarly Article
C) Encyclopedia
D) Internet news site