Immediate Feedback Assessment Technique in GIS Class

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1. IF-AT
   - a new type of multiple-choice procedure
     • provides immediate informational feedback to students for each question
     • permits the allocation of partial credit when used in classroom assessment exercises
   - based on solid psychological principles
     • Immediate feedback is beneficial for learning

2. Participating Institutions
   - More than 400 instructors with positive results in classroom assessment, test preparation and professional training
   - Tested effectively at levels of college
     • About 50 colleges and universities
       - University of Wisconsin
       - University of Florida
       - Rutgers University
       - Iowa State University
       - Arizona State University
       - ...

3. Scratch Quiz
   - The student receives the test
     • All answers are covered
   - The answer to question 1 is “D.”
     • The star underneath “D” informs the student that he/she is correct and immediately reinforces his/her learning
     • Most importantly, the student exits this question with knowledge of the correct answer
   - The correct answer to Question 2 is “B.”
     • The student narrows it down to “A” or “B” and scratches “A.”
     • The blank rectangle immediately indicates that “A” is incorrect
     • Knowing now that “A” was incorrect and reinforcing “B” as the correct answer in his/her mind, the student chooses “B.”
     • Again, the student exits this question with knowledge even though it took more than one attempt to answer correctly. (In addition, partial credit can be awarded for answering correctly on the second attempt.)

4. Scratch Quiz
   - Geography 371/H4: QREZ 6
     - Basic Spatial Analysis
     - Name: ____________________________
     - Date: ____________________________
     - Make a group of 3. Everyone in a group will get the same grade.
     - The first group in the right column (first question) is correct.
     - The second group is incorrect.
     - The blank rectangle indicates that “A” is incorrect.
     - The student chooses “B.”
     - Again, the student exits this question with knowledge even though it took more than one attempt to answer correctly. (In addition, partial credit can be awarded for answering correctly on the second attempt.)

5. Scratch Quiz
   - Question 1: Which one gives the shortest distance between two points in a vector format?
     - A. 0
     - B. 4
     - C. 1
     - D. 5
     - E. 1

6. Scratch Quiz
   - Question 2: Which one gives the shortest distance between two points in a vector format?
     - A. Euclidean distance
     - B. Great circle distance
     - C. Haversine distance
     - D. Cartesian distance
     - E. Spherical distance
# of Choices Matters?

- Case I: 4 choices
  - First guess: 10
  - Second guess: 5
  - Third guess: 0
  - Fourth guess: -1
  - No scratch at all: 2

- Case II: 5 choices
  - First guess: 10
  - Second guess: 5
  - Third guess: 0
  - Fourth guess: -1
  - Fifth guess: -2
  - No scratch at all: 2

Different Levels of Class Matter?

- Introduction to GIS
  - Average: 80 %
- Advanced GIS
  - Average: 82 %

Traditional Quiz vs. IF-AT

- QUIZ 6, 7 in Introduction Class
  - Improved 15%
- QUIZ 2 in Advanced Class
  - Improved 10%

Pros & Cons

- Pros
  - Great for quiz
  - Open discussion
  - Continuous thinking process
  - Immediate learning process
  - No grading

- Cons
  - Cannot be used in exam test
  - Recycle
  - Lack of variety

Findings

- Students prefer scratch choices to traditional multiple choices
  - According to students
    - Quick learn
    - Learn with fun
    - Like partial credit
    - Students blame themselves rather than materials or instructors
    - The student thinks about the question again
    - Their misunderstandings are immediately replaced with knowledge
    - The chance of repeating mistakes in the future is decreased