



The Immediate Feedback Assessment Technique (IF-AT). An Engaging Alternative to Standard Multiple Choice Tests



Stephen L. MacNeil

Department of Chemistry, Wilfrid Laurier University, Waterloo, Ontario N2L 3C5

INTRODUCTION

Students are often discouraged by multiple choice tests because they do not provide the opportunity for part marks. In addition, research indicates that students do not learn from mistakes made during multiple choice tests, in part owing to the delay between completing the test and receiving feedback. An excellent alternative to using standard multiple choice tests with Scantron answer sheets is the Immediate Feedback Assessment Technique (IF-AT).

WHAT IS THE IF-AT?

• a “scratch and learn” or “answer until correct” (IF-AT first you don’t succeed...) response card for multiple choice questions

• student scratches his/her chosen answer

• a star is revealed to indicate a correct response; learning immediately reinforced

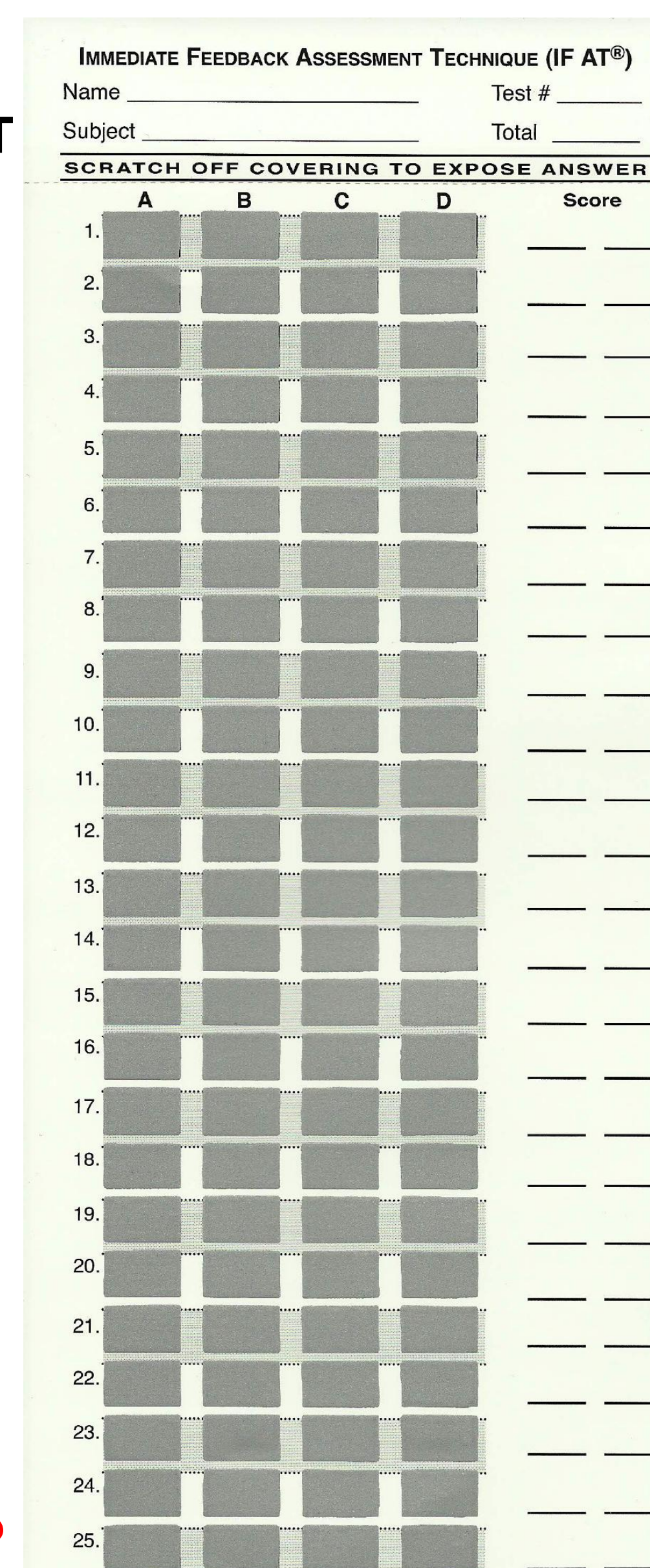
• a blank rectangle indicates an incorrect response

• student scratches until correct answer is revealed; misconceptions immediately corrected

• part marks awarded based on number of boxes scratched

• student learns while being assessed owing to immediate affirmative and/or corrective feedback

• student leaves test knowing exactly how he/she did



WHY WAS THE IF-AT DEVELOPED?

• creators: Dr. Michael L. Epstein and Beth B. Epstein, Rider University

• is it fair to award a grade of zero to a student who has narrowed a multiple choice question down to two answers and chosen the wrong one? NO!

• immediate feedback is beneficial to learning

• students more motivated to learn from immediate feedback because potential exists to improve scores immediately; not the case with delayed feedback

• the best test / quiz / assignment doesn’t just assess; it also teaches

• the last response given by students on a test item is the one they learn

WHAT RESEARCH SUPPORTS THE USE OF IF-AT?

Selected examples:

Epstein, M. L.; Epstein, B. B.; Brosvic, G. M. *Psychology Reports*, 2001, 88, 889-894

• 75 introductory psychology students subjected to the IF-AT or Scantron form multiple choice unit tests

• all tested with Scantron form on final exam

• for questions answered incorrectly on the unit tests which were repeated on the final exam, students previously tested with the IF-AT were twice as likely (M = 60%) to respond correctly than were students previously evaluated with Scantron forms (M = 30%)

Epstein, M. L.; Brosvic, G. M. *Psychology Reports*, 2002, 90, 1136-1138

• 159 undergraduates enrolled in psychology courses responded to questionnaire after completing classroom examinations using either IF-AT or Scantron forms

• students evaluated with the IF-AT scored significantly higher on scales measuring ease of understanding, ease of completing response requirements, perceived fairness of and preference for the IF-AT and enhanced involvement in the test-taking process

Epstein, M. L.; Brosvic, G. M.; Costner, K. L.; Dihoff, R. E.; Lazarus, A. D. *The Psychology Record*, 2003, 53, 177-195

• students in Grades 1, 3, 5 and 7 read a story and were tested on content using either the IF-AT or a Scantron form

• retention was examined one week later using the IF-AT

• scores of students previously evaluated with the IF-AT showed an overall increase on the follow-up quiz

• scores of students previously evaluated with a Scantron form showed an overall decrease

DiBattista, D.; Gosse, L. *The Journal of Experimental Education*, 2006, 74, 311-327

• 185 students enrolled in an introductory level research design and statistics course were examined to determine the relationship between reactions to the IF-AT and levels of test anxiety

• preference of undergraduates for the IF-AT was not related to test anxiety

• no evidence that the IF-AT put students with higher levels of test anxiety at a disadvantage with respect to test performance

• use of the IF-AT did not generally increase test-related anxiety; for majority of students, it reduced it

• only 19% of students felt that the IF-AT interfered with their test performance; still would prefer to use the IF-AT in future tests

ARE THERE DISADVANTAGES TO USING THE IF-AT?

Yes...

• no commercially available optical scanning device for scoring

• item analysis laborious and time-consuming

• may increase risk that cheating will occur

• test construction takes more time

• IF-AT forms more expensive than Scantron forms

...but see DiBattista, D. *The Canadian Journal of Higher Education* 2005, 35, 111-131 for helpful suggestions.

WHAT ARE SOME SUGGESTED USES OF IF-AT?¹

1. individual study, review or practice at home or in class

• makes students more aware of what they know and don’t know

• students score themselves

2. short quiz

• students keep score themselves and turn in answer sheets for recording

3. pyramidal / sequential / process quiz

• questions arranged according to steps of a thinking process

• correctly mastered first question is the basis for the next question, and so on

• instructor and student can pin-point the moment in the thinking process that the student misses

• the IF-AT corrects and teaches, and students progress to the next step of the “pyramid”

3. mid-term tests

• saves on valuable class time lost to reviewing test because students have already received feedback and corrected mistakes during the test

4. final exams

• students learn that instructor is not merely interested in test scores but expects to teach and that students will learn, even during the final exam

5. group learning

• students work in groups to complete a set of multiple choice questions

• the answers to a particular question are discussed until a consensus is reached regarding the correct answer

• IF-AT used to check answer

• if first choice is correct, students immediately rewarded for group effort

• if first choice incorrect, discussions continue until correct answer revealed

• misconceptions corrected and learning occurs before proceeding to next question

WHERE CAN I GET IF-AT CARDS AND AT WHAT COST?

• IF-AT response cards can be purchased from epsteineducation.com

• 10, 25 and 50 question forms are available

• for 10 and 50 question forms, 4 and 5 answer choices are available

• for 25 question forms, only 4 answer choices are available

• short (10 question) forms start at \$80 / 500 forms

• medium (25 question) and long (50 question) forms start at \$105 / 500 forms

HOW DO I ADAPT EXISTING TESTS?

Epstein Education Enterprises has developed an on-line “Test Maker” that allows instructors to adapt tests, quizzes and homework assignments to each of the different versions of the IF-AT answer forms

• Test Maker free of charge to any educator who (or whose educational institution) has purchased IF-AT forms

• tests may be stored and accessed any time you wish

REFERENCES

1. <http://www.epsteineducation.com/home/about/uses.aspx> (accessed August 26, 2010)

ACKNOWLEDGEMENTS

Teaching Support Services and the Department of Chemistry, Wilfrid Laurier University are gratefully acknowledged for funding that allowed purchase of IF-AT response cards