

MICROCOMPUTERS EXPECTED TO BRING RADICAL CHANGES IN TESTING

Microcomputers will alter standardized admissions and placement tests radically in the next few years, speakers at the Educational Testing Service's annual invitational conference said.

They predicted that within 10 years:

- Students would take the Scholastic Aptitude Test and other examinations individually, using microcomputers at their high schools or colleges, rather than in large groups at times set by the E.T.S.
- Computerized tests would be "interactive" with the student—asking ever more challenging questions until he begins to give incorrect answers.
- Computer programs would not only rank a student in relation to others in his class but would analyze his strengths and weaknesses and, if necessary, begin remedial instruction on the spot.

Interactive tests, psychometricians here said, are considerably more efficient than paper-and-pencil versions now offered by the E.T.S. and other test manufacturers.

"After every item, the computer estimates the candidate's test score, based on the information so far, and selects as the next item one that will give the most additional information about the person's score," explained Bert F. Green, Jr., a professor of psychology at The Johns Hopkins University.

Because interactive tests do not waste time with items that are either too simple or too difficult for the student, as a conventional version must do to accommodate all those being tested, they can be completed in about half the time.

"We don't learn anything when a student answers correctly an item that was too easy for him, or answers incorrectly an item that was too hard," said Ernest J. Anastasio, vice-president for research management at the testing service, in an interview. "The point is to converge as rapidly as possible on the student's range of ability."

The Educational Testing Service, the country's most prominent test manufacturer, already offers a computerized career-counseling service called System for Interactive Guidance Information, or SIGI. Interactive versions of various E.T.S. tests are now being developed and an interactive basic-skills test for use by college placement officials—the first large-scale E.T.S. test to be computerized—is expected to be available in the fall of 1984.

OTHER ADVANTAGES

A number of standardized tests used in fields outside of education would also be affected by advances in microcomputer technology.

For example, Mr. Anastasio said, the Armed Services Vocational Aptitude Battery, a standardized test administered to military recruits, now requires about eight hours—often over two days—to administer to each of the 1.2 million people who take it each year. Cutting the time

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in half would save the Defense Department a considerable amount of money, he said.

Computerized testing, Mr. Green said, would offer several other advantages:

- The student would work at his own pace.
- Answer sheets—and the possibility that a student might mistakenly fill in the wrong blank—would be eliminated.
- Incorporating videodisc players into microcomputer systems would make it possible to include action sequences in tests. This would make them less dependent on narrative passages that place an emphasis on reading ability even when other skills are being tested—as is the case, for example, with examinations for fire fighters or police officers.
- It would be possible to score tests instantly.
- It would also be possible—as the sophistication of computer programs for tests increased—to eliminate multiple-choice questions in favor of items requiring "constructed responses"—answers consisting of numbers or words typed into the computer. This is important, said Mr. Anastasio, because "selecting the right response from among five is a very different behavior from actually working out and writing down an answer."

The psychometric methodology on which interactive testing is based has been understood for some time, Mr. Anastasio said, but test manufacturers have been obliged to wait until microcomputers became available at a reasonable price.

Mr. Green said it would be necessary to create computer programs that would be able, in choosing which questions to ask the student, to select items on the basis of both difficulty and variety of content. Programs must be created, he said, to assemble tests that are as well balanced as those produced by an experienced test editor.

Mr. Green also warned that "large amounts of data" would be needed to insure that items are properly "calibrated" or given weights in the scoring process that correspond exactly to their difficulty. Furthermore, interactive tests require a much larger bank of items on which to draw than do conventional examinations.

After such technical problems are overcome, Mr. Green and others here predicted, it will be possible to integrate standardized testing in high school and college curricula, making it a far more useful tool than it has been to date.

W. James Popham, a professor in the Graduate School of Education at the University of California at Los Angeles, told conference participants to "take advantage of the new situation" and create tests that will "serve as instructional catalysts." Microcomputers, said psychometricians here, will allow such tests to be administered as often as necessary—rather than once or twice in a student's career, as is now generally the case.

Lawrence Biemiller is an Assistant Editor of The Chronicle of Higher Education; this article, which appeared November 10, 1982, is reprinted in its entirety with the permission of the author.