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ABSTRACT

Testbanking provides teachers with an effective, low-cost, time-saving opportunity to improve the testing aspect of their classes. Testbanking, which involves the use of a testbank program and a computer, allows teachers to develop and generate tests and test-forms with a minimum of effort. Teachers who test using true and false, multiple choice, matching, and short answer fill-in-the-blank formats benefit the most from testbanking. First, a teacher identifies particular instructional goals, course modules, learning objectives, or student behaviors; develops questions to test learning in these areas; and then inputs this information into the computer. When a test needs to be produced, the instructor tells the testbank what material is to be covered on the test and lets the bank select questions, and then generate and format the test. This eliminates much of the work involved in generating single tests. Students can benefit from testbanking through activities such as custom testing, re-testing, self-administration of tests, and interactive programs providing instant test feedback. For teachers, testbanking can greatly reduce the time spent on test creation. Also, many testbank programs will grade tests, produce syllabi, and store student records. When purchasing testbank software, buyers should be sure that the program includes the following: (1) a classification system allowing use of existing curricular structures; (2) ASCII (American Standard Code for Information Interchange) import/export capabilities; (3) compatible mark/sense readers and drivers if the testbank is to be used for checking tests; (4) a common database structure; and (5) options, such as graphics and network support. (PAA)

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Introduction:

The educational process as it is practiced today is: 1) present material for learning, 2) practice or study the material, and 3) evaluate mastery of the material. While all three legs of the educational tripod are equally important we will focus on one, the evaluation phase, specifically, the written test.

Testbank software is probably one of the most effective, easiest to implement, low cost computer technologies available to educators. Unlike Computer Assisted Instruction the development of a test bank can be accomplished by one person working on their own. Design consultants, video production personnel, graphic artists, or programmers aren't necessary to develop a first rate testbank. Just the teacher, a computer and a banking program are all that is needed. While I don't want to leave the impression that developing a test bank doesn't involve a great deal of work, it doesn't require expertise in multiple disciplines to provide teachers and their students with great rewards.

Who can benefit from test banking?

Typically test banks are best suited for certain testing methods. Educators who use true and false, multiple guess, matching, and short answer fill in the blank testing will gain the most benefit from a test bank. Test bank software can often provide math teachers with special services. Numbers used in questions and answers can be calculated, picked off tables, or randomly generated, allowing tremendous variability in questions presented to the student.

Educators who use a consistent hierarchical structure in curriculum design will probably have the easiest time in the initial phases of bank construction. The easier the initial design phase is the more likely is a successful completion.

Finally, anyone who hates writing tests, who finds the process, dull, repetitive and boring has a great deal to gain from the production of a test bank.

The traditional method of test production:

Traditionally a written test is created by the instructors of a particular course. Instructors have an intimate knowledge of the flow and content of the material. Armed with this knowledge they begin

the, at times, arduous task of creating a particular test for a particular semester. The creation of a typical test will follow, somewhat, this sequence: 1) think up a question, 2) write it down, 3) edit the results, and return step #1 until complete. During the editing phase, the question is checked for spelling, grammar, and "give away" syntax. Finally, the test form and key is produced and the test is administered. The primary focus of the entire process is to produce the test.

A natural byproduct of this scenario is that so much work goes into test production that instructors keep and store their tests under security conditions that would make the folks at Fort Knox green with envy. The test is subsequently recycled in other classes or used in other terms. This hording of the test forms itself helps the teacher get the most "return on investment" or usefulness out of the considerable efforts expended to produce the test.

When test forms are not released to the student, they have little opportunity to see where mistakes lie and get some feeling for their weaknesses. After a test is administered, students need to know, as soon as possible, what questions were missed and why. The more immediate the feedback, the more effective is reinforcement of the material. Feedback can be enhanced by the simple action of allowing the students to keep their test forms to use as a study tool. While allowing students to keep test forms will not eliminate the test anxiety, or cause a dramatic increase in learning, it will have a positive effect. I always return tests and often observe small groups of students comparing, arguing, and analyzing questions. For some, this is the most effective, critical thinking type interaction that they have with material. For others, it is another variation of the learning experience.

Test bank construction:

The construction of a test bank requires that the development process follow a different route. To begin, a framework or skeleton of the bank should be completed. Usually goals, modules, objectives, or student behaviors need to be identified. This skeleton will support the muscle of the bank, the question. Questions will then be produced and linked to the particular tasks or behaviors. This portion of production closely resembles the "think -¿ write -¿ edit -¿" scenario that the manual production methods follow. The major difference is that questions are produced to measure specific behaviors or tasks, and a major shift in focus away from production of a single test occurs. An intimate linkage between questions and objectives is established. Tests become more representative of the material and more relevant.

When a test needs to be produced, the instructor tells the bank what material is covered and lets the bank select questions, generate and format the test. Individual or multiple versions are easily generated. The need of the instructor to collect and retain test forms is greatly reduced or completely eliminated.

A second benefit that occurs with the use of a test bank is that once an error is fixed, it stays fixed. So often in the production of a test, spelling, grammatical, or contextual errors will creep in. Not even a computerized spell checker and other computer tools will rid manually produced tests of errors. When an error is found in a bank generated test, the question is easily located in the bank and corrected. Once corrected, the error is never seen again.

Student benefits:

Students can often reap benefits from an instructor that uses a test bank to produce evaluations. Among these benefits are:

New possibilities in testing methods. As test production becomes easier, new and different testing methods can be easily explored. Possibilities of test-retest, custom tests, pre and post test, or mastery type testing techniques, can be implemented with great ease.

Improved student control over their educational destiny. Testing can be moved away from a teacher centered to a more student centered activity. Using the ability of many banks to administer tests, students can be given control over such aspects of the testing process as when testing occurs, how many times particular tests are given and can even effect what questions are asked.

The use of tests as feedback. Interactive, bank administered, tests can feedback results instantly. Also the importance of allowing students to keep test forms and use them as feedback tools and study guides can't be overemphasized.

Educator benefits:

For the teacher, the use of a test bank can literally save hours of work in test creation. A bank can easily reduce to minutes a task that used to take hours. Once a bank is "debugged", instructors have the satisfaction of knowing their tests are free of errors. Questions are better linked to expected outcomes and student complaints regarding the testing process are reduced.

Many test banks will grade tests, produce syllabi, and keep student records, freeing the teacher from repetitive and somewhat boring work and allowing them to concentrate on more demanding tasks. Banks can even administer tests leading to the possibility of removing testing from the classroom entirely, allowing students to test with more flexibility and control. The possibility of providing an online testing service might become available in the future, enhancing the opportunities of distance education.

Benefits to education:

A test bank's effect on the educational process is that it encourages planning and structure in the classroom. The shift in focus in the development process helps encourage linkage and relevance in materials. Test bank materials can be sent to a desk top publisher program for further formatting and printed on a laser printer giving them a professional quality that speaks well of the system that produces them. The use of bank administered tests, retests and/or custom tests can shift the responsibility of testing away from the teacher to the student, placing more control in the hands of the student. One can easily see that this empowerment of the student can lead to less anxiety, and a better feeling toward the educational process.

If standardization of curricula is desirable in a particular institution, a test bank is a good means to maintain standards across multiple classes. Tests and syllabi all can originate from a central entity.

A test bank buyers guide:

When purchasing testbank software look at and for the following items: 1) the classification system, 2) import and export facilities, 3) mark/sense reader drivers, 4) a common database structure, and 5) options.

The classification system should allow you to use your existing curricular structures in constructing the testbank. It can make a lot of extra work if you must adapt your curricula to a "foreign" format, unless that format is very superior to your present system. Generally a goal, objective scheme is used as a *minimum* classification format. Some other helpful question categories might include, question type (eg. True-False, multiple guess, etc.), cognitive level, weight, and teacher defined data types.

ASCII import/export is a must have item. The ASCII text coding scheme is the most widely recognized in the computer world. ASCII import/export allows users to not only share files between most word processors, but between different computer platforms. Apples, Macintosh, DEC, and IBM micros all can use ASCII as their text coding method. Text book publishers often give question banks away with particular texts and these are often in ASCII format.

If one expects a test bank to check tests, compatibility with existing scanning equipment or mark/sense readers should be confirmed.

The files created by a particular test bank should be in a popular database format. Probably the most common format is dBase that was developed by the Ashton Tate company. Delimited ASCII or fixed length ASCII are the next most popular, with Paradox the least. The reason for this recommendation is that damaged dBase and the ASCII files can be most easily recovered. Additionally, these file types can be shared by other programs to create new uses for the test bank data.

Finally options like: support for on-line interactive administration, graphics, reporting facilities, network support, multi-user licences, and copy protection should be considered before buying a particular piece of banking software.

To conclude:

Test banking can provide an effective, low cost, "medium-tech", time saving, opportunity for teachers to improve the testing aspect of their classes. Not only does the teacher benefit from the use of the test bank, but also the student and the educational process as a whole.