SPECIAL REPORT

The Anatomy of Board Certification

Have you ever wondered what guidelines and criteria must be followed to create a certification examination? In April 1999, the Board of Governors of the ASCP Board of Registry (BOR) approved a new certification: Specialist in Laboratory Safety (SLS). This article details the process for developing and maintaining a certification examination.

Testing for board certification is a solemn responsibility. It requires setting the standards and scope of practice for a profession so that employers can make informed hiring decisions and the public can be confident that an individual is competent. As such, a certifying board must demonstrate a high caliber, psychometrically sound assessment.

The ASCP-BOR has a tradition of excellence and high standards for its certifications, and has remained cutting-edge in its search for the best methods of testing. Computer-adaptive tests (CAT) were first developed by the military in the late 1970s, and have proven to be an effective testing procedure. After careful evaluation the ASCP-BOR decided to convert its paper-and-pencil examinations to computer-adaptive testing. The BOR was the first medical certification board to use this method. This occurred in April 1993.

Examination Development
Preliminary Steps
After members of the ASCP-BOR identify a particular laboratory domain that has a definable scope of practice, a motion to explore development of an examination is presented to the Board of Governors. If passed, a Board member acts as liaison and chair of an ad hoc committee, in this case made up of laboratory safety experts. Laboratorians who identify themselves as safety officers are randomly sent feasibility study surveys. The committee members establish content areas and write questions on the various topics.

The committee meets to review draft questions, and decide if the proposed certification has merit and is testable and marketable. If agreed, the committee recommends the minimum qualifications necessary to take the examination. A formal motion to endorse the new examination is then presented to the Board of Governors.

Creating the Item Bank
Assuming support from the Board of Governors, the examination committee continues to write and review additional questions. The initial goal is to develop 200 questions for the first test administration. Items are scrutinized to determine if they originate from acceptable reference material, have plausible choices, and there is one best answer. The test is then mapped into content areas, and percentages are assigned. Content guidelines and possible reading lists are established. After database entry, the items are converted to a computerized, but non-adaptive, test. This examination will then be given at national testing centers.

Testing the Item Bank
The examination item pool must be tested for validity and reliability, then calibrated. The BOR has used Rasch Analysis (see sidebar) since 1993 when CAT began.

In a Rasch data analysis the first function is to "test the test": examine item validity and create a standardized ruler to measure the variable. In this case, the variable would be "ability in laboratory safety."

Do the items cover the range of the variable? That is, are some items easier than others? Obviously, it is not useful if all items are of similar difficulty. It would be like giving a test with only simple addition problems. We would not know whether the person could perform other mathematical functions—we would have no idea of that person's ability, only whether he or she could add. So, too, it is with "job ability." If we have a range of easier-to-harder items, then we have an indication of the level of ability in that content area.

Glossary
Criteria-Referenced Test—measures a person's ability by determining an examinee's performance on specified, hierarchical tasks. The pass point is established and maintained based upon an objective standard, regardless of the ability of any particular group of people.
Logit—from "log odds unit." A measurement unit, such as an inch or an ounce, used by psychometricians.
Norm-Referenced Test—describes a person's ability by ranking examinees in comparison to a predesignated group. Results are usually given in percentiles. This can result in a floating pass point or changing pass rate, depending upon the reference chosen.
Psychometrician—from the Greek "psycho" (mental) + "metric" (measurement). A psychometrician has training and expertise in all aspects of testing and measurement.
Do all of the items "fit"? That is, do the items have a predictable response pattern? Are we measuring what we think we are measuring? Which items, if any need, to be rewritten or clarified for future exams? Checking for fit also allows us to check for bias.

Each item on an ASCP-BOR exam is submitted to repeated, rigorous scrutiny. The psychometric requirements are that all items must fit and have a range of difficulty. When these conditions are met we have developed a calibrated instrument that measures what it is designed to measure. This instrument can be used to establish an objective standard for board certification. It is used to determine the examinee's level of ability and set a pass point. It also is used to create a frame of reference for the profession and provide clear mandates for basic competency to practice.

The units of measure are called "logits" and each logit has 100 points. When reading Rasch reports, all numbers are directly comparable with each other. The results for each test, or examinee, or item, are in the same units of measure. Thus we can compare measures from this year to the next, or from one school to another. Logits can be compared with units of money. There are 100 pennies in a dollar, and a "dollar" is a "dollar." A dollar is comparable from year to year; we have a common frame of reference. It is the same principle with logits.

In this way benchmarks are created that can be used to compare performance and help establish standards for competency.

Certification

When a new certification is offered, the first group of examinees provides the data upon which the Safety Committee bases its initial decisions. Those who take the examination in the first quarter will not receive their scores and certification until the end of the cycle.

Several months after a new examination is given, the committee examines the item pool, sets the standard, and establishes the pass point. All ASCP-BOR examinations are criteria referenced, not norm referenced. This ensures that an examinee's outcome will not be influenced by the scores of the other examinees.

Computer-Adapted Test

After the above is completed, a new examination such as the SLS goes computer adaptive. The items are calibrated, thus allowing the interaction of an examinee's answer with the computer's selection of the next item. With CAT, when a person answers a question correctly, an item of slightly higher difficulty is presented until such time as the answer is wrong. Then the next item is easier than the last. In this way each person has a test tailored to his or her ability level. CAT is beneficial for many reasons:

- The test is pinpointed to an individual’s ability.
- Test security is maximized.
- Items are not overexposed.
- The test is fair.
- Pass/Fail decisions are based on objective measures.
- There is precision in measurement, and comparability of scores.

Board of Registry Commitment

Clearly, the ASCP-BOR is committed to raising the professionalism of its membership. Certification is part of this process. When dedicated professionals devote their time pursuing the truth of the measurement and take great care to ensure the value of the certification, then the results are trustworthy. This is the inherent promise given with every certification the BOR confers. This is just one of the significant reasons the ASCP-BOR was first—and is foremost—in certifying laboratory professionals.

As the profession continues to undergo profound changes, the ASCP-BOR pledges its ongoing efforts to provide proper and meaningful certification to all laboratory professionals.

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