

Precision Versus Practicality

Cindy Brito, MPH, MT(ASCP)

Histology technologists play an important role in the pathology laboratory. They are responsible for the handling of surgical tissue specimens which must be processed, embedded in paraffin blocks, sliced into thin segments, placed on a glass slide, stained, coverslipped and labeled before presentation to the pathologist.

The pathologist can then microscopically examine the tissue on the slide and render a diagnosis of healthy or diseased.

The American Society of Clinical Pathologists (ASCP) has, for many years, administered a practical examination in histology. After completing an appropriate course of study, a qualifying candidate submits fifteen stained slides and tissue blocks of varying difficulty which are scored by a panel of judges on a semi-annual basis. A candidate whose slides are of a quality deemed acceptable by the judges and who also successfully passes a written examination is awarded a certificate, and is eligible to Place the initials HT(ASCP) following their name. This professional designation is nationally recognized as the Gold Standard for technologists working in the histology laboratory.

The judging process begins with the selection of 20-25 pathologists and histology techs from across the nation who are asked to volunteer their time for the important project. All judges are flown to Chicago where a marathon 2-1/2 day grading session takes place. Using well-defined guidelines and standards, blocks and slides are reviewed and graded using either dichotomous (1 = acceptable and 0 = unacceptable) or 4 step rating scales (3 = excellent, 2 = acceptable, 1 = marginal, 0 = unacceptable). The results are then analyzed using a Rasch multi-faceted model (John Linacre's Facets).

The histology practical grading session has traditionally been subsidized by the ASCP. In essence, a candidate seeking certification pays the same fee as candidates do for other certification exams not including a practical. While the judges volunteer their time, the ASCP assumes all expenses for airfare, lodging, and meals for the approximate 25 judges required. The estimated cost to grade each practical is \$400. In an effort to be more fiscally controlled without increasing the financial burden to the candidate, a study was undertaken to determine if the resources required to grade a practical could be streamlined, i.e., use fewer judges in each grading session. The time required for a judge to grade a set of slides has been well established over the years. Therefore to reduce the number of judges required, the choices were two: increase the number of days in the grading session, or



Cindy Marie Brito, MPA, MT(ASCP)SC

Cindy Brito is a Medical Technologist and works at the American Society of Clinical Pathologists as a Manager of Research and Evaluation in the Board of Registry department. Interests include camping, Hosta gardening and reading Ben Wright's "Best Test Design" to her cat Tigger.

T
E
S
T
I
N
G
-
T
E
S
T
I
N
G
-
T
E
S
T
I
N
G

decrease the number of slides being graded.

The grading session takes place over a weekend and is a very demanding full two-day schedule for the volunteer judges. After much consideration, it was decided that another day of judging would be mentally exhausting and a fatigue factor could set in. Thus an analysis of the data was conducted to determine if reducing the number of slides would yield results that were psychometrically equivalent to the fifteen slide/block practical.

The slides each candidate submits are equally divided into three groups. There is a random assignment of the groups to judges and most practicals have input from three different judges. Another judge grades the qualities of coverslipping and block characteristics.

Using data from the May 1999 grading session, a range of scenarios were evaluated and compared to the baseline conditions described above. Eliminating the coverslipping and block scores had negligible impact on both the mean ability and precision of the scores. Next, slides were "peeled" away one by one starting with the easiest. As can be seen by the data in Figure 1, the mean ability remains stable across nearly the entire range of slide deletions until the level of two slides is reached. A decision was made that any decrease in the number of slides must be made in multiples of three in order to maintain the judging system in place. Table 1 summarizes the mean precision and the numbers of candidates who pass and fail with each three-slide decrease.

Note that some precision in the score is lost and the pass rate decreases slightly as slides are eliminated. The final question weighs precision and pass rate against finances. With each three-slide decrease, the number of judges required is reduced by approximately twenty percent, which reduces expenses by 30%. The committee reviewing the data struck a balance at nine slides. At this

level, the mean ability of the candidates remains the same, the precision changes by 0.09 logits, and the pass rate decreases by 6%.

Implementation of the reduced slide practical will be effective starting with the year 2000. It is a win-win situation. Candidates will not be charged a fee for the practical portion of their exam, results are psychometrically valid and comparable to the fifteen-slide exercise, and the ASCP gets to shave \$125,000 off of their operating budget for the year!

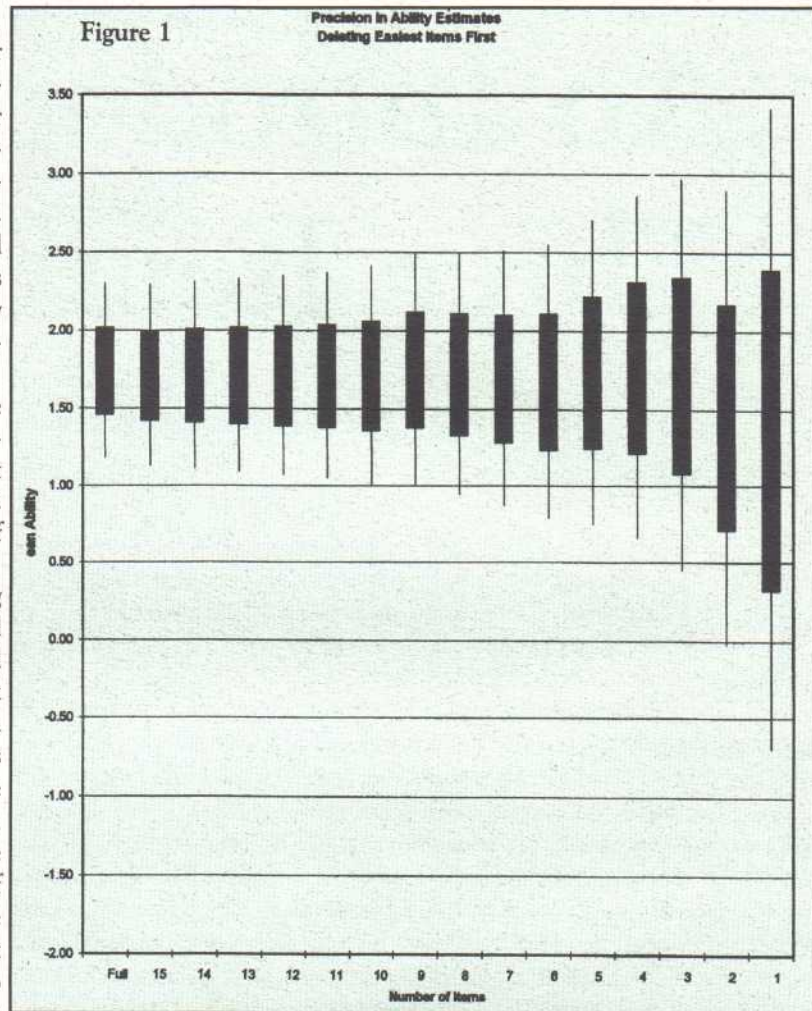


Table 1

Practical May 1999

	15 slides 9 blocks 1 coverslip	15 slides	12 slides	9 slides	6 slides
Pass	127	127	120	118	113
Fail	18	18	25	27	32
Mean precision of score	+/- 0.28 logits	+/- 0.29 logits	+/- 0.32 logits	+/- 0.37 logits	+/- 0.44 logits

