Testing with Item Analysis: Why? How?

Item analysis provides submission statistics on overall test performance and individual test questions that were administered using the Blackboard Learning Management System. This data helps instructors analyze the effectiveness of their assessments. Using Item Analysis in Blackboard allows instructors the ability to analyze, and if necessary, improve questions for future tests or to adjust credit on current attempts to better reflect student performance.

Instructors can run item analyses on tests that include single or multiple attempts, question sets, random blocks, auto-graded question types, and short answer/essay questions. Statistics are only generated for scored questions and will not be generated for short answer/essay questions that have not yet been assigned scores. After an instructor has manually graded all questions assigned in an assessment, instructors can then run the item analysis again for a complete list of statistics for the given assessment.

Instructors can access Item Analysis in one of the following locations in their Blackboard course below:

- A test deployed in a content area.
- Any test that has been deployed and listed on the Tests, Surveys and Pools page accessible from the Course Tools menu on the Control Panel.
- The column for a test in the Grade Center.

Steps to Run an Item Analysis

1. Access the contextual (drop down) menu for the test.
2. From the options listed, select *Item Analysis*.

3. On the Item Analysis page, in the *Select Test* drop-down list, select the designated test.

   *Please note: Only deployed tests are listed.*

4. Click *Run*.

5. View the item analysis by clicking the new report’s link under the *Available Analysis* heading or by clicking *View Analysis* in the status receipt at the top of the page.

   **Once the Item Analysis report runs, instructors will be able to view crucial statistics for the test in the Test Summary area including:**

   - **Possible Points**: The total number of points available for the test.
   - **Possible Questions**: The total number of available questions in the test.
   - **In Progress Attempts**: The number of students currently taking the test that have not yet submitted it.
   - **Completed Attempts**: The number of submitted tests.
   - **Average Score**: Scores denoted with an * indicate that some attempts are not graded and that the average score might change after all attempts are graded. The score displayed here is the average score reported for the test in the Grade Center.
   - **Average Time**: This is an especially useful feature in the Item Analysis tool that allows instructors to analyze the average time students took to complete the assessment. This is helpful for determining future assessments Timer settings.
   - **Discrimination**: This area shows the number of questions that fall into the Good (greater than 0.3), Fair (between 0.1 and 0.3), and Poor (less than 0.1) categories. A discrimination value is listed as Cannot Calculate when the question's difficulty is 100% or when all students receive the same score on a question. Questions with discrimination values in the Good and Fair categories are better at differentiating between students with higher and lower levels of knowledge. Questions in the Poor category are recommended for review.
   - **Difficulty**: This area shows the number of questions that fall into the Easy (greater than 80%), Medium (between 30% and 80%) and Hard (less than 30%) categories. Difficulty is the percentage of students who answered the question correctly. Questions in the Easy or Hard categories are recommended for review and are indicated with a red circle.
Instructors also will be able to see the question statistics including:

- **Difficulty**: Please see above for description.
- **Graded Attempts**: Number of question attempts where grading is complete. Higher numbers of graded attempt produce more reliable calculated statistics.
- **Average Score**: Scores denoted with an * indicate that some attempts are not graded and that the average score might change after all attempts are graded. The score displayed here is the average score reported for the test in the Grade Center.
- **Std Dev**: Measure of how far the scores deviate from the average score. If the scores are tightly grouped, with most of the values being close to the average, the standard deviation is small. If the data set is widely dispersed, with values far from the average, the standard deviation is larger.
- **Std Error**: An estimate of the amount of variability in a student's score due to chance. The smaller the standard error of measurement, the more accurate the measurement provided by the test question.
- **Skipped**: Number of students who skipped this question.

The distribution shows you the types of students who selected the correct or incorrect answers.

- **Top 25%**: Number of students with total test scores in the top quarter of the class who selected the answer option.
- **2nd 25%**: Number of students with total test scores in the second quarter of the class who selected the answer option.
- **3rd 25%**: Number of students with total test scores in the third quarter of the class who selected the answer option.
- **Bottom 25%**: Number of students with total test scores in the bottom quarter of the class who selected the answer option.

From these statistics instructors can choose to redesign future assessments or adjust current assessments to more accurately rate student performance. It should be noted that the statistics mentioned above do not alone determine “good” and “bad” questions but instead identify questions that may need to be reviewed. After a review it is the instructor’s discretion to make any appropriate changes.