Exploring Blackboard’s Item Analysis Tool
Monday, February 25, 2013
12:11 PM

Do you want to leverage student data to improve the effectiveness of your assessment? Attend this workshop session to learn how to:

- Access and run item analysis
- View statistics from your tests such as attempts and average test time
- Focus down to question-level data such as discrimination and difficulty ratings
- Investigate questions that may not correlate with typical student performance
- Make meaningful edits to improve test questions
- Re-grade test questions that have been edited

Attendees of the Item Analysis session will be introduced to the topics above through written instructions, screen shots, a hands-on demonstration, and a question and answer session. Please contact Nick Gogno in the Academic Computing department with any questions at gogno@lasalle.edu or 215-951-1912.

Welcome (1:00 - 1:05)
- Log in to computer using your LUNA credentials and select Windows 7 (not Windows 8)
- Go to http://tech.lasalle.edu and download the training agenda if you have not done so yet
- Log in to Blackboard via the La Salle portal or http://online.lasalle.edu

Ice Breaker (1:05 - 1:10)
- What data sets do you have to work with today?
- What topics are you interested in?

Session Overview (1:10 - 1:15)
- Session Objectives
  - Participants will learn how to:
    - Access and run item analysis
    - View statistics from your tests such as attempts and average test time
    - Focus down to question-level data such as discrimination and difficulty ratings
    - Investigate questions that may not correlate with typical student performance
    - Make meaningful edits to improve test questions
- Purpose
  - Leverage item analysis data will help you improve your assessments to be more accurate.
  - Identifying erroneous, ineffective, or misleading questions can help you grade students more equitably.
  - Item analysis and automatic re-grading can help reduce your time and stress levels.

Overview of Item Analysis (1:15 - 1:30)
- Who can access?
  - Roles with grading privileges can access item analysis
- What?
  - Deployed tests with submitted attempts
    - Single or multiple attempts
    - Question sets
    - Random blocks
    - Auto-graded
    - Manual graded
- Not on Surveys
- Where in Blackboard?
  - Generate new reports from the contextual menu of a test:
    - Tests in content areas
    - Tests in Grade Center column
- How?
  a. Select Item Analysis from any test menu within Blackboard
  b. Click the Run button
  c. Click the link to the report in the "Available Analysis" section

![Image of Blackboard test interface]

- **Practice:** Access the Blackboard course named Gogno_test and take the Item Analysis Test in the Course Content. You can use the test results to run a sample Item Analysis if you don’t have any data from your own test.

- **Practice:** Run an item analysis report on a test from one of your classes.

**Overview of Item Analysis Page (1:30 - 1:40)**
- Test Summary
  - Provides basic test data
- Edit Test button
  - Provides quick access to Test Canvas

![Image of Item Analysis report]

**CHAPTER REVIEW QUIZ**
Analysis Last Run: February 25, 2013 2:45 PM. Run Item Analysis again to display the latest question data.
- **Discrimination**
  - A question is a good discriminator when students who answer it correctly also do well on the test as a whole.
  - If the discrimination score is less than 0.1 percent than the question might not be a good question to differentiate between students who know the subject matter and those who do not.
  - Discrimination values cannot be calculated when all students get the same score on the question.
- **Difficulty**
  - Percentage of students who answered the question correctly.
  - Questions that are either too easy or too hard may need review.
    - A red circle will appear next to questions labeled either Easy or Hard
- **About Question Labels**
  - **Easy** ( > 80%) difficulty
  - **Medium** (30% to 80%) difficulty
  - **Hard** ( < 30%) difficulty
  - **Good** or **Fair** (greater than 0.1) discrimination values
  - **Poor** ( < 0.1) discrimination values.
  - Bottom line is that effective questions ideally have a:
    - **Medium** difficulty
    - **Good** or **Fair** discrimination value

<table>
<thead>
<tr>
<th>Discrimination</th>
<th>Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 Good Questions</td>
<td>12 Easy Questions</td>
</tr>
<tr>
<td>2 Fair Questions</td>
<td>4 Medium Questions</td>
</tr>
<tr>
<td>1 Poor Questions</td>
<td>0 Hard Questions</td>
</tr>
<tr>
<td>2 Cannot Calculate</td>
<td></td>
</tr>
</tbody>
</table>

- **Table Legend**
  - Review recommended when discrimination values are less than 0.1 or when difficulty is either too hard ( > 80%) or too easy ( < 30%)
  - "Questions might have changed" label indicates that the data may not be reliable.
  - Item analysis only applies to attempts that have been graded at the time you run the report.
  - Due to random question delivery from Question Sets (QS) or Random Blocks (RB), data may be skewed if some questions have been deployed more than others.

- **Filters and Table Statistics**
  - Data can be filtered by question type, discrimination category, and difficulty category.
  - **Average Score**
    - Score denoted with an * means that some attempts have not yet been graded
    - Average score can also be seen in the Grade Center
  - **Standard Deviation**
    - Measure of how far the scores deviate from the average score
    - Small standard deviation means that the scores are tightly grouped close to the average
    - Large standard deviation means that the scores are widely dispersed
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 test question.

*** Practice: Filter your Item Analysis report results by question, type, discrimination, and/or difficulty.

**Viewing Details for a Single Question (1:40 - 1:50)**
- Click on a question's title to display the Question Details page
- Use the arrows in the top right hand side to toggle through questions
- Edit questions by clicking "Edit Test" button
- Additional Details vary based on question type:

<table>
<thead>
<tr>
<th>Type of Information Provided</th>
<th>Question Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students who selected each answer choice - and - distribution of those answers among the class quartiles.</td>
<td>Multiple Choice, Multiple Answer, True/False, Either/Or, Opinion Scale/Likert</td>
</tr>
<tr>
<td>Number of students who selected each answer choice.</td>
<td>Matching, Ordering, Fill in Multiple Blanks</td>
</tr>
<tr>
<td>Number of students who got the question correct, incorrect, or skipped it.</td>
<td>Calculated Formula, Calculated Numeric, Fill in the Blank, Hot Spot, Quiz Bowl</td>
</tr>
</tbody>
</table>

- **Answer Distribution**
  - For Multiple choice, multiple answer, true/false, either/or, and opinion scale/likert question types, you can see the distribution of answers among the class quartiles:
For tests that allow multiple attempts, item analysis will use the last submitted attempt.
Grade Center overrides do not impact item analysis data.
Manually graded questions, partial credit, do not update automatically and you will have to run the item analysis report again after any changes have been made.

Additional Scenarios (1:50 - 1:55)
- For tests that allow multiple attempts, item analysis will use the last submitted attempt.
- Grade Center overrides do not impact item analysis data.
- Manually graded questions, partial credit, do not update automatically and you will have to run the item analysis report again after any changes have been made.

Session Wrap-Up (1:55 - 2:00)
- Questions and Answers
- Review Objectives
  - Did you learn how to:
    - Access and run item analysis?
    - View statistics from your tests such as attempts and average test time?
    - Focus down to question-level data such as discrimination and difficulty ratings?
    - Investigate questions that may not correlate with typical student performance?
    - Make meaningful edits to improve test questions?
- Final Tips for Best Item Analysis Results
  - Use single-attempt tests
  - Run after all attempts are submitted
  - Score manually graded before running item analysis
  - Be aware that the number and type of students taking the test impacts statistics.
- Additional resources:
  - From Blackboard's help files:
    - https://help.blackboard.com/en-us/Learn/9.1_SP_10_and_SP_11/Instructor/070Tests_Surveys_Pools/112_Running_Item_Analysis_on_a_Test
  - From Blackboard's video tutorials:
    - http://ondemand.blackboard.com/r91/movies/Bb91_tools_item_analysis.htm