This handout is to help explain the differences in the *Report > Item Analysis* feature in *Quizzes* as well as *Question Sets, Question Pools*, as well as the differences found in ANGEL 7.4. All examples are comprised of 20 submissions with both correct and incorrect responses.

**Quizzes**

This is the Item Analysis feature in Quizzes. Relatively straight forward it will show a breakdown of each selected response. While there is not a lot of data given, what is available here is very easy to understand.

This feature, when used in *Assessments*, provides a different view of the data.

**Question Set (basic question) in Assessment**

This should be the most commonly seen item analysis report, given that this is the most basic question type in an assessment - a simple question in a *Question Set*. When viewing the Item Analysis report on a standard question set question, we can see that there is much more data available than in quizzes; however, the data is laid out in a similar manner. The data provided:
• **Sample Size** = Number of submissions = 20
• **Mean** = 4.3 (in this example, 17 correct answers worth 5 points each / 20 submissions = 4.3 'average' score).
• **Difficulty** - 85% (17 correct answers worth 5 points each / 100 total points possible that could have been earned from all 20 submissions).
• **Discrimination** - 1 (calculated using Cronbach's Alpha - don't worry about this if you have never heard of it, but this will be a number from -1 to 1, and closer to 1 is desired).
• **Frequency/Distribution** – illustrated by the bar chart, 85% selected A, 10% selected B and 5% selected C.

**Question Set (or Question Pool) in Assessment**

Before I discuss the differences seen in the Item Analysis of Question Pools (which is clearly different than those seen in basic questions) I need to point out - **A Question Pool is a type of question, and must be part of a "Question Set."** What this means is that when adding a Question Pool type question (similar to adding a "multiple choice", or "essay" type question) to your "Question Set", ANGEL will select questions to be used based on the given criteria (keyword, question bank, difficulty, question type, etc.). With this in mind, questions of this type are not "set-in-stone", so to speak (these questions could even come from a different course) which allows for a great amount of flexibility. Unfortunately, however, this flexibility creates difficulties in reporting (in 7.3) as can be seen when using the Item Analysis tool:

![Question Pool Table](image)

The first thing we will notice is that there is no way to see what individual questions were asked. In line with what I explained before, that a Question Pool is simply another type of question, all calculations done with this type of question (Sample Size, Mean, Difficulty, Discrimination, Distribution) are calculated in the same manner as with the multiple choice examples above. **The only information missing here is the data regarding what questions were asked.** Many instructors would like to know this information, but unfortunately, there does not appear to be a way to display this using the Item Analysis tool.
Improvements in ANGEL 7.4

Version 7.4 brings about two major improvements regarding the "Item Analysis" reports for assessments.

- **Question Set (Question Pool) 7.4:**

  By selecting the "Details" option, we can then be shown every question that was used in the "Question Pool", as well as the details for each of these questions. While this information is loaded in a new window, it should provide instructors with all the information for which they are currently searching regarding which questions were used, and how well the students did on the individual questions included in the pool.

  Select "Details" to show:

  ![Question Set Details Table](image)
• Question Set in Assessment (Select X questions from set)

ANGEL 7.4 allows the option to use X number of questions from a Question Set (much like section headers in Quizzes can be used); however, as you can see, the reporting for this usage is minimal. This image is of a full question set in an assessment that
was taken 20 times (just like all the others). Note that there is no "Sample Size" data - instead we get the column labeled "+" which shows how many times each response was used. To see how many times each question was selected we need to add the "+" values. Using the data provided above we can see that Q1 was used 5 times, Q2 2 times, Q3 10 times, Q4 3 times, for a grand total of 20 times. Note, also, that there is no distinction that these items are in a question set, nor does it show that they are sub-questions of Q1 - this will lead to what the students saw as Q2 being listed as Q5 in our report. While using this option for an assessment has its advantages, Item Analysis reports are not one of them.