WHAT YOU NEED TO KNOW – COMMON STUDENT ERRORS

Exploratory Data Analysis (EDA)

1. When asked to compare two data sets/distributions students list the key statistics, but do not actually compare them (ie A is greater than B).
2. When writing out the LSRL, they forget to write y hat and identify the variables.
3. Students should always comment on at least shape, center, spread of a distribution. Outliers if they exist should also be mentioned.
4. Show all your work when calculating a z-score (any math for that matter).
5. Writing too much on a FRQ answer, especially on the EDA question. Students list all the stats they learned and don't always answer the question asked. Short and sweet, answer the questions asked in context and then move on. No extra credit is given for added work.
6. Not understanding how/why we transform data to make "it look linear" and then interpreting the "new LSRL".

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Experimental Design

1. Students do not understand much of the vocabulary in this thread and use these words/concepts incorrectly.
2. Not explaining how they randomized the data, just stating that they randomly put the data into two groups.
3. Confusing causation with statistically significant results.
4. Completely randomized designs vs other randomized designs, such as a randomized block design.
5. Students confuse control groups with controlling outside variables entering into the experiment.
6. Stating the experiment cannot be double blind because “somebody needs to know what is going on in the experiment”.
7. Using complicated methods that are hard to explain for their randomization method. Put the names in a hat and shake them up works and it’s easy to explain.
8. Confusing confounding and lurking variables. Lurking variables are not in the curriculum and it may be better not even to mention this concept.

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Probability

1. Not showing any work, just writing out an answer/probability from a 2-way table.
2. Not showing any work for independence of variables, just commenting on there independence because they are/are not related.
3. Using calculator speak for their work, not proper statistical formulas.
4. Not putting their final answers in sentences/context.

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Statistical Inference

1. Students do not list assumptions, check conditions nor understand why they need to do this.
2. Not showing a graph to check for normality when data is given.
3. Not showing their work/set-up and just stating their final answers from the calculator (this is OK as long as students have correctly named the test earlier in the problem).
4. Not using parameters when listing the Ho, Ha
5. Not linking their p-value and significance level when writing their final conclusion.
6. Reversing their conclusion when p is low, “therefore we fail to reject the Ho”.
7. Accepting the Ho and/or the Ha.