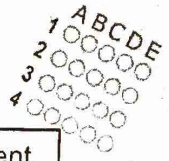
Name: _____ Hour: _____ Date: _____

Lesson 4.2: Day 3: Does type of SAT prep matter?

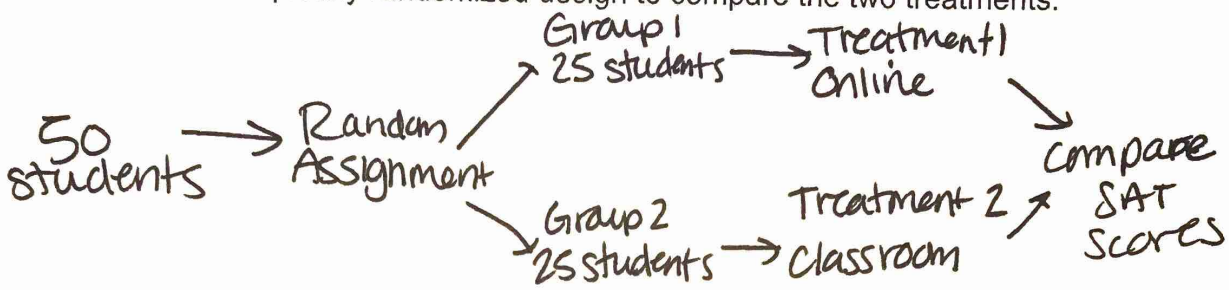
SAT



EKHS has decided to offer an SAT prep class again this year. It will be offered in two different formats: online or classroom teacher. The counselors want to know which teaching method will yield higher SAT scores so they have allowed us to set up an experiment. 50 students have signed up to take some form of the SAT prep class. (20 seniors and 30 juniors)

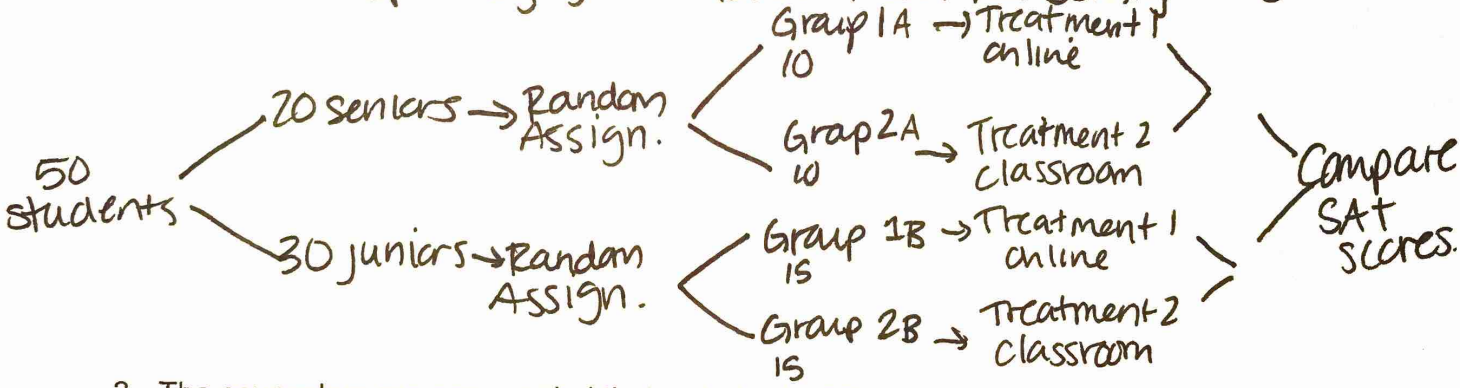
1. Outline a completely randomized design to compare the two treatments.

Completely Randomized Design



2. The counselors at EKHS hypothesize that the online vs. classroom results could be greatly affected by the grade level of students that were put into each treatment group. They know that seniors generally score better on the SAT than juniors. How could we adjust our experiment to ensure that there is even split of seniors and juniors in each class? Draw an outline of the experiment with your modifications. Split by grade level then randomly assign.

Randomized Block Design



3. The counselors are now worried that a student's GPA is certainly going to affect their SAT score. Let's look only at the Juniors. We want to be sure that the different GPAs are being evenly distributed into the two treatment groups. How could we be sure the GPAs are evenly distributed?

Matched Pairs Design

Order all students using their GPA's from least to greatest. Take the two students with the highest GPA's and pair them. Flip a coin to assign one to the online class and one to the classroom. Repeat this process with the next two highest GPA students until all 30 juniors have been assigned.

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Name: _____ Hour: _____ Date: _____

Lesson 4.2: Day 3: Randomized Block Designs

Big Ideas:

Block - group of experimental units that are known to be similar.

Randomized Block design - separate subjects to blocks and then randomly assign to treatments within each block.

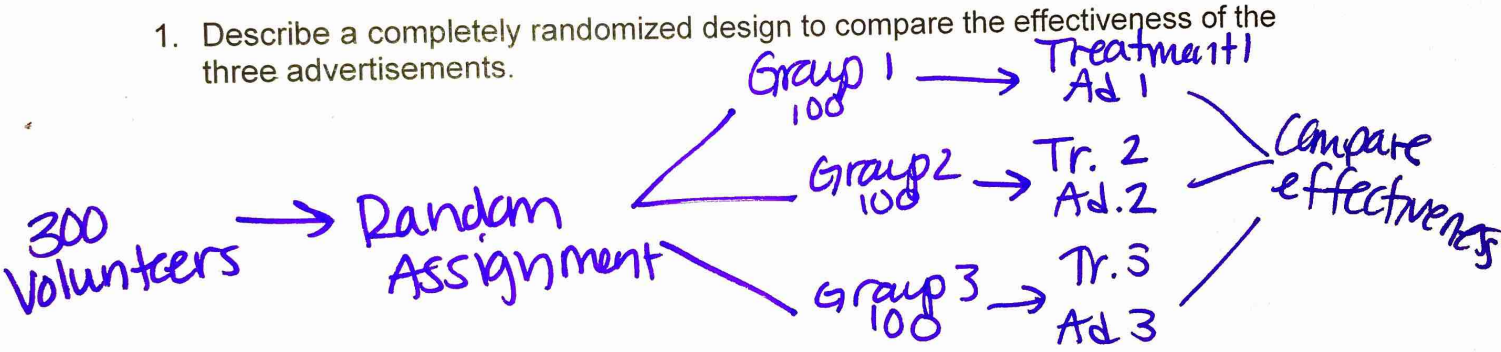
Matched pairs - experiment used to compare two treatments that uses blocks of size 2.

Two very similar experimental units are paired and then randomly assigned to a treatment.

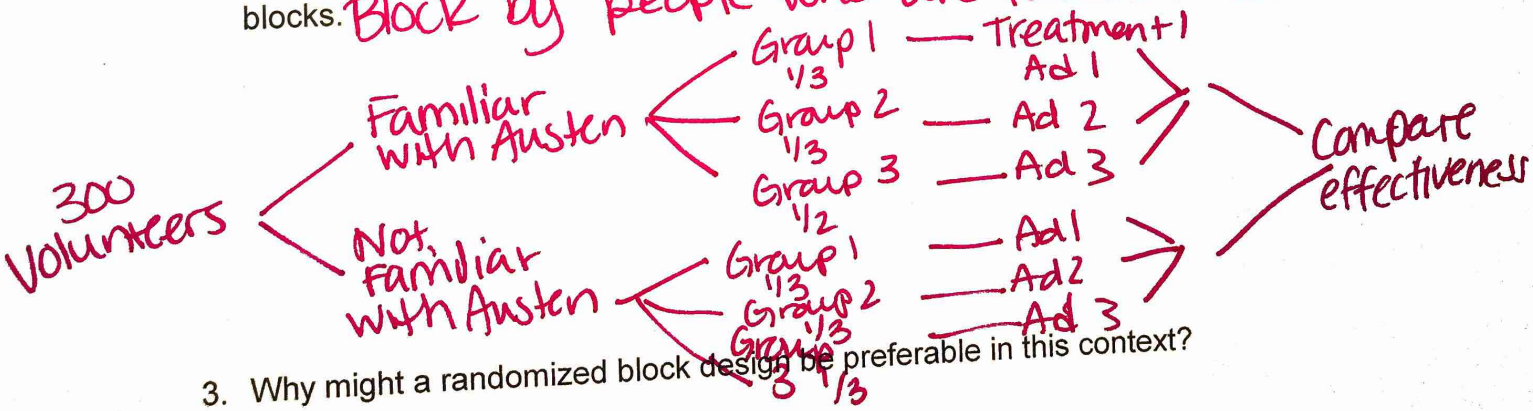
Check Your Understanding:

Researchers would like to design an experiment to compare the effectiveness of three different advertisements for a new television series featuring the work of Jane Austen. There are 300 volunteers available for the experiment.

1. Describe a completely randomized design to compare the effectiveness of the three advertisements.



2. Describe a randomized block design for this experiment. Justify your choice of blocks. Block by people who are familiar with Austen.



3. Why might a randomized block design be preferable in this context?

It minimizes the variability caused by those who have or haven't any familiarity with Austen. The ads may have different effectiveness based on

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