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| **Title of Resource** | Creating a Mnemonic Device for Data Analysis |
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| **Brief Description:** | This assignment has students create a mnemonic devise for pairing statistical tests with for various research designs and data types. |
| **Keywords:** | Applying Statistical Concepts |
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| **Additional Information:** | |

Background for Instructors:

One of the fundamentals of statistical courses is to equip students with the ability to choose between statistical tests. Statistical tests rely not only on the research question, but also on a set of assumptions about the participants and the measures used. If an inappropriate statistical analysis is chosen, results may be misleading, if not meaningless (Wang & Zhang, 1998). Unfortunately, students find it difficult to acquire this skill. This study attempts to answer the question, "What is the best way to teach statistical selection skills?" Although skills can be learned through observation and repetition, it may not be the most appropriate learning style for action-oriented tasks, such as choosing appropriate statistical methods.

Accordingly, the current study investigated the use of implementing mnemonics, via hierarchical charts which organize tests into concepts using level of measurement and function (Magnello & Spies, 1984). Therefore, this study posited that employing hierarchical mnemonics would increase students' efficacy, comfort, and confidence in statistical selection skills.

Allowing students to look at the big picture through statistical selection skills mnemonics increases their perceived comfort, confidence, and efficacy. Not only do students get the practice of choosing the correct test, but then the mnemonic that they have created in class can be used in later classes and research projects.

Project for Students:

**Statistical Selection Skills Mnemonic**

Knowing which statistical test to run and when to run it are arguably the most important things you will learn in a statistics class.  However, it isn't always possible to memorize the ins and outs of every computation. Therefore, your group will be creating a hierarchical mnemonic device that will help you not only in this class, but for years to come. For our purposes a hierarchical mnemonic device is anything that shows how to tell which statistical test is appropriate for various research designs or data types.  They can range from a logical flow-chart, a decision tree, or an image that leads the user to the correct decision. You can use virtually any medium to create and present your Stats Mnemonic (e.g. power-point, cardboard, Prezzi, etc).  It is only limited by your imagination.  *You may not use a device that is already created.*

On the date listed in your syllabus, your group will present your Stats Mnemonic to the rest of the class and explain it.  You will be graded on the accuracy and complexity of your device, and your presentation.

Example 1:     Imagery Flow Chart (Poster)



Selecting Appropriate Statistical Methods: Describing Your Data (Figure 1a)
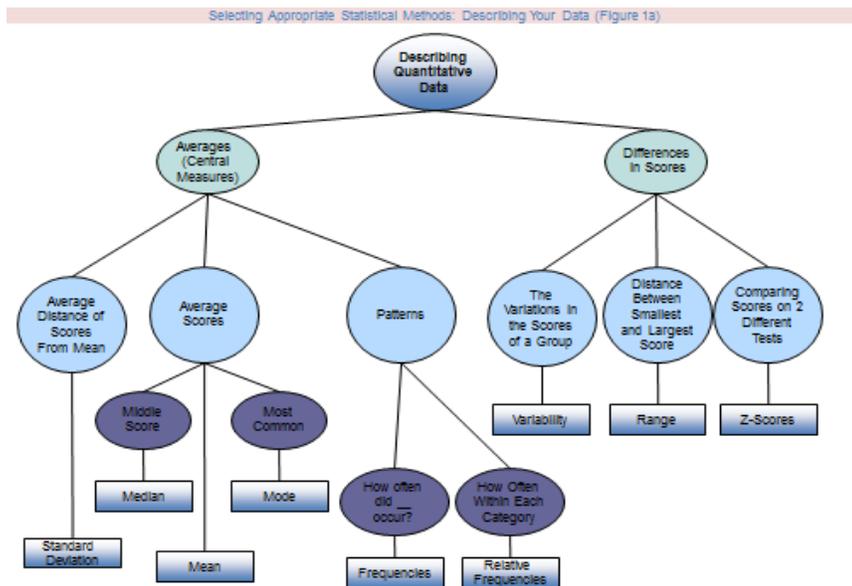
Example 2:    PowerPoint Decision Tree

**So…Your DV is Interval/Ratio**
**Step 2. How Many Groups Do You Have?**

‣ 1 Group
‣ 2 Groups
‣ 3+ Groups

Start Over

**You need to use….**

**Factorial ANOVA**

Start Over

**So you have 3 groups and interval/ratio data…**
**Step 3: What are you trying to do?**

‣ I am looking at 1 IV across the groups
‣ I have 2+ IVs across the groups
‣ I took measurements from each group 2+ times

Start Over

**Mnemonic Group Project Rubric**

Group Members:

*Total Project Points: _____/50 = _____ %*

*Mnemonic: 40*

> Was the device accurate (20 pts)?

> Was the device complex enough to detail many different types of statistical tests (minimum of 10 tests; 10 pts)?

> Was the device user-friendly/helpful/easy to navigate (5 pts)?

> Was the device professional, aesthetically pleasing, and creative (5 pts)?

*Presentation: 10*

> Were you actively engaged in the presentation (2 pts)?

> Were you able to answer questions effectively? / Were you able to guide other students through the mnemonic (2 pts)?