**Quantitative Reasoning Lesson Plan-Introduction to Psychology**

QR Learning Goals

* **Knowledge and conceptual understanding**
  + Students should be able to explain, calculate and interpret percentages and measures of central tendency (i.e., mean, median and mode).
  + **Thinking and other skills**
    - Students should be able to critically evaluate the use of percentages and measures of central tendency reported in contemporary media (e.g., advertisements, newspapers, or popular magazines), which includes determining whether the reported statistical data is presented appropriately and accurately enough to allow consumers to make informed decisions.
    - **Attitudes, values, dispositions and habits of mind**
      * Students should be able to develop effective strategies for evaluating percentages and measures of central tendency in making real-life decisions and to identify specific real-world instances in which their strategies will help them make better decisions.

1. **First day of lesson-In class**

1. **1.      Students will work together in small groups and write out their answers to the following questions:**

1.  What percentage of students in your group are psychology majors? Write out the steps you took to determine this value.

2.  What percentage of students in your group are not psychology majors? Write out the steps you took to determine this value.

To answer questions 3-5, take out all the coin change you have with you right now. Write down the total value of the coins you have with you today (keep this record so that you can collect your money at the end of this assignment). Put all of the group’s coins on one desk and use them to answer questions 3-5.

3.  What is the mean (or average) value of all the coins? Write out the steps you took to determine this value.

4.  What is the mode value of all the coins? Write out the steps you took to determine this value.

5.  What is the median value of all the coins? Write out the steps you took to determine this value.

\*\*\*I will visit each group to check in on their progress and give them additional questions to consider (depending on the current direction of their discussions). This will include giving examples of steps they might take as they attempt to solve the problems when needed.

**2.      Next, students will continue working in their groups to write out their answers to the following questions:**

1.  What does the statistical term “percentage” mean to you?

2.  What does the statistical term “mean” mean to you?

3.  What does the statistical term “median” mean to you?

4.  What does the statistical term “mode” mean to you?

5.  Explain how you use percentages and/or measures of central tendency (mean, median, and mode) in your everyday lives.

6.  In what ways do you think psychologists might use these statistical tools? Please identify at least two possible ways.

**3.      As a class, we will discuss the students’ answers to each question and work together determine our agreed upon answers to each question.**

**4.      With the students’ help, I will then give a quick mini-lesson on how to calculate percentages and measures of central tendency. After the lesson, students will test their ability to calculate percentages and measures of central tendency by completing the in class assignment below.**

* The students will first work individually to solve the following word problems. I’ll ask the students to make note of the steps they are taking as they solve each problem. To avoid confusion, I will give them examples of steps they might take as they attempt to solve the problems. I’ll later have the students share their helpful problem solving strategies with the class.
  + 1.  Brittany earned 45 out of 50 possible points on her Psychology Midterm exam. What percentage of the questions did Brittany answer correctly? What percentage of the questions did she answer incorrectly?
  + 2.  Calculate the mean, median and mode of the following list of numbers:

5  5  7  2  9  2  0  0  0  5  5  3  4  7  9  6  4  1  2  2

* Next, students will rejoin their original groups to compare their answers. If there are disagreements amongst group members, the group must work together to determine their agreed upon answers.
* We will then discuss these word problems together as a class and work together to clear up any confusion. During this discussion, I’ll ask students to share helpful strategies for completing the calculations.

**5.      Short mini-lesson on Social Influence**

* I’ll start this mini-lesson first asking the students to consider whether they have ever been influenced by others to do something they hadn’t thought to do on their own (example: wear a particular type of clothing, buy a product, use a new phrase, etc.). I’ll also ask them to think about a time during which they influenced someone else to do something and, additionally, to reflect on the strategies they employed to persuade that person. I’ll open up a discussion and allow students to converse with one another. As relevant topics and concepts from psychology come up in the conversation, I’ll take the opportunity to explain how their experiences relate to psychology.
* I’ll introduce the term **social influence** and explain that social influence is a central topic of study in social psychology (I plan to also use this lesson for my Social Psychology class).

1. At home: **For homework, students will find an example a contemporary advertisement in which the creators use percentages and/or measures of central tendency to persuade consumers**. I will provide students with several examples of advertisements that fit this description (one possibility: <http://media.al.com/bargain-mom/photo/trident-gumjpg-9579b280dc172c49_large.jpg>).  Students will examine the reported statistical data and provide written answers for the following questions:

* Assignment Instructions: Find an example of an advertisement in contemporary media (e.g., in magazines, television commercials, YouTube videos, etc.) that uses percentages and/or measures of central tendency to persuade consumers. Please bring a copy of the advertisement with you to our next class meeting. For videos, please save the hyperlink to your video. Next, carefully review the advertisement, paying close attention to the use of statistical data. Write out your answers to the questions below (use Standard English writing rules). Please bring your written responses to our next class meeting. This assignment is worth 10 points. You will earn 1 point for submitting an appropriate advertisement. The remaining points can be earned by providing complete answers to the questions below.
* 1.  What statistical values are reported in the advertisement? (2 points)
* 2.  Why do you believe the company used this/these particular statistical tool(s) in this advertisement? Provide at least one reason. (1 point)
* 3.  Given the statistics reported in the advertisement, what do you believe consumers can reasonably conclude about the advertised product? (1 point)
* 4.  Does the advertisement include any misleading information? Explain your answer.  (2 points)
* 5.  In addition to the statistical information, what other tactics do you believe the company is using in this advertisement to convince consumers to buy their product. Identify at least one additional tactic. (2 points)
* 6. What aspect of the advertisement is most likely to persuade you to purchase the advertised product? (1 point)

**2. Second Day of Lesson-In class**

* **Students will begin class with a small, individual assignment.** I’ll ask students to (1) identify two new things they learned during our last class meeting and/or from their homework assignment (2) write down a question or topic from our previous lesson that they would like to discuss further and/or draft a short answer exam question that they believe tests some content we discussed in the previous lesson. I’ll collect the students’ responses and use them to guide class discussion.
* **Next, students will share and discuss their homework assignment with a partner.** The pairs will complete the following tasks:
  + Share their advertisements with their partner and explain their evaluation of the company’s use of percentages and/or measures of central tendency in the advertisement.
  + Determine whether they believe the consumers were provided adequate information to make an informed decision about the product or whether more additional statistical information will help consumers make better decisions regarding the product. The pairs will write out their rationale.
  + Identify the additional social influence strategies they believe the company is using to persuade consumers.
  + Share whether or not they believe they would purchase the product after viewing the advertisement.
  + We will then have an open discussion as a class about the students’ experiences reviewing the advertisements and their evaluations of how statistical information is used to persuade consumers as well as the other social influence tactics they believe were used in the advertisements. I will probe the students with questions and encourage student to student exchanges.
  + **Students will complete a second assignment with their partner.** Students will work together to identify other real-life situations in which they will need to use percentages and measures of central tendency to make informed decisions. Students will also identify two effective strategies they believe will help them to evaluate reported percentages and measures of central tendency when making real-life decisions. Additionally, the student pairs will identify three effective strategies they can use to avoid making poor decisions due to social influence pressures.
  + **Students will share their real-life situations and effective strategies with the class in an open discussion.**