**Sleep Deprived?**

**Subject area/course**: Social Sciences, Introduction to Statistics

**Grade level/band**: 11–12

**STUDENT PROMPT SECTION**

1. **Task context**:

Do students get the sleep they need? One way to examine this question is by using the normal probability distribution to model sleep data. It is well known and well documented that there are many performance and health issues associated with sleep deprivation, yet some people seem to believe that they can function effectively on a minimal (4 to 5 hours) amount of sleep.

In order to determine the sleep levels of students around you, gather sleep data from a group of students using a sample size of *n* > 30. Using technology, create a histogram of the sleep data, and then analyze the graph describing the distribution of the sleep data in terms of the center, symmetry, and the existence of outliers. Compare the distribution of the sleep data to the plot of a normal probability curve with the same mean and standard deviation. From the comparison, decide whether or not the data are approximately normal.

Then generate a normal probability plot using the sleep data. From that graph, determine the suitability of using the normal distribution as a model for that data.

1. **The task**:

After researching the issue of sleep among high school or college‐aged students using scientific or technical texts, develop a research question and test a hypothesis about sleep habits among students at your school. Gather data from students about their sleep habits, create a histogram, and conduct other analyses to determine the characteristics of the normal probability curve for the data set. Write a 2- to 3-page paper in which you summarize your conclusions and support your claims with data from your readings and research.

Your final product should:

* Include an evaluation of competing claims.
* Discuss any limitations of the study.
* Use the language and terminology of probability and statistics appropriately.
* Cite your sources in your paper and include a Works Cited page that follows the MLA style or another format and style that your instructor selects.

1. **Material/resources:**
   * Base your research on reliable Internet web sites, databases, and journals. Consult a reference librarian at your local library or your instructor to ascertain the reliability if you have questions.
   * You should use statistical technology to generate the histogram and the normal probability plot.
2. **Time requirements:**

This task will take approximately one week to complete. Your teacher will provide additional details regarding deadlines and due dates.