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# Sleep As A Social Justice Issue

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# Sleep As A Social Justice Issue

Students will evaluate claims related to the relationship between sleep, stress, and social discrimination through interpretation of graphs and figures.

## Suggested duration

- 1 x 45-75 min class period

## Essential questions

- How can the  $I^2$  method be used to interpret graphs and figures?
- Why is sleep important?
- Is sleep a social justice issue?

## Objectives

All students will...

- Evaluate claims about the relationship between sleep and social justice by interpreting real-world data
- Compare their own self-reported sleep levels to the recommended levels
- Derive meaning and draw conclusions from graphs and other figures
- Use evidence to support claims
- Discuss the impact of sleep on health
- Understand how to apply the  $I^2$  method to analyzing graphs and other figures

## Materials

- Projector
- Computer with internet access
- Sleep Survey
- Slidedeck
- Jigsaw worksheet

## Based on

The Stavros Niarchos Brain Insight Lecture

- “Sleep Health in the USA: Why Sleep is a Social Justice Issue”


By Carmela Alcántara, Ph.D.

<https://www.youtube.com/watch?v=i-bYwMlvwXk&t=442s>



# Instructional Activities

## 1. Opening: Why do you think sleep is important? | ⌚ 5min

 Show slides 1-6

This Opening Activity uses a Sleep Survey to get students thinking about their own sleep habits. Students will complete the survey individually and briefly reflect on the importance of sleep.

- Ask students to think about the following question: Why do you think sleep is important?
- Teacher will introduce the idea that sleep disturbances contribute to poor health


## 2. Introducing I<sup>2</sup> Method | ⌚ 5min

 Show slide 7-14

Teacher will use the graph "How Much Sleep We Need Differs by Age" to model the I<sup>2</sup> method of figure analysis.

- Identify: If possible, use a smartboard or projector to model writing "What I See" observations directly onto the graph.
- Interpret: Model adding "What it means" comments to each "What I See" comment.
- Caption: Use a topic sentence and the comments to build a caption for the graph.
- After modeling the I<sup>2</sup> Method, the teacher can revisit the survey data to compare the amount of sleep that students self-report to the amount of sleep that is recommended by the figure. Students can then discuss similarities and discrepancies.

## 3. Jigsaw Activity: Sleep Data | ⌚ 25min

 Show slides 15-25

Students will divide into "Teaching groups" of 4-7 people. There are 7 figures provided for this activity. Some of the figures are simple (Figures 1 + 2) and some are more complicated (Figures 6 + 7). This can be an opportunity to differentiate and omit some of the figures depending on your class size. Each student will be assigned to one "Expert Group" that will focus on analyzing one of the 7 figures.

- Expert Groups: Students work together in their expert groups to use the I<sup>2</sup> Method to analyze their figure, write a caption and answer the additional questions. (15min)
- Teaching Groups Students can then return to their original groups and take turns briefly sharing the results of their figure analysis with the rest of the group. (10min)

## 4. Class Discussion and Closing | ⌚ 10min

 Show slide 26

Use turn-and-talk or other strategies to initiate a discussion of the questions on the last slide. The purpose is to tie together the importance of sleep with the data from the figures to support the claim that sleep is a social justice issue. Encourage students to refer to evidence from the Figures while discussing these questions:

- Why is sleep important?
- Did you get enough sleep?
- Does everyone get enough sleep?
- What factors contribute to someone not getting enough sleep?



- What are the benefits of a good night's sleep?
- What are the risks of not getting enough sleep?
- Closing question and exit ticket option: What makes sleep a social justice issue?

## 5. Optional Extension and Assessments

Three different options are provided that can serve as an extension or assessment of the learning in this lesson. They are designed to suit the different needs of teachers in different contexts and can be used individually or in combination.

1. Living Environment Regents Style Questions: The attached questions are designed to be similar to those that students would encounter on the New York State Living Environment Regents test and can be used as an assessment or as supplemental practice.

2. Project-Based Assessment: After brainstorming a list of variables that could affect or be affected by sleep duration and/or quality, students should work (individually or in groups) to design an experiment that will interrogate the effects of one of the variables. The attached "Experimental Design Template" can be used to help plan an experiment that will eventually be carried out by the students, or it can serve as the assessment.

3. Claim, Evidence, Reasoning: Is sleep a social justice issue? The attached graphic organizer can be used to help students organize their evidence and reasoning to back up a claim answering this question. This can be used as an outline for an essay or can serve as the assessment, depending on your context.



# Standards

<p><b><u>NEXT GENERATION SCIENCE STANDARDS (NGSS)</u></b></p>	<ul style="list-style-type: none"> <li>Analyzing and Interpreting Data (HS-ESS3-5)</li> <li>Asking Questions and Defining Problems (HS-ETS1-1)</li> <li>Constructing Explanations and Designing Solutions (HS-ETS1-2)</li> <li>Evaluate a solution to a complex real-world problem (HS-ETS1-3)</li> </ul>
<p><b><u>COMMON CORE STANDARDS</u></b></p>	<ul style="list-style-type: none"> <li>Integration of Knowledge and Ideas 8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence</li> <li>RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations, etc)</li> <li>RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. (HS-ESS3-1),(HS-ESS3-2),(HS-ESS3-4)</li> <li>RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science</li> <li>RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. (HS-ESS1-5),(HS-ESS1-6)</li> </ul>
<p><b><u>NY STATE BIOLOGY</u></b></p>	<ul style="list-style-type: none"> <li>3.1a Interpretation of data leads to development of additional hypotheses, the formulation of generalizations, or explanations of natural phenomena.</li> <li>3.5a One assumption of science is that other individuals could arrive at the same explanation if they had access to similar evidence. Scientists make the results of their investigations public; they should describe the investigations in ways that enable others to repeat the investigations.</li> <li>1.2d If there is a disruption in any human system, there may be a corresponding imbalance in homeostasis.</li> <li>5.2a Homeostasis in an organism is constantly threatened. Failure to respond effectively can result in disease or death.</li> </ul>



# Vocabulary

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<b>Acculturation Stress</b>	Mental and emotional stress of adapting to a new culture.
<b>Chronic Stress</b>	Stress that lasts for a long period of time.
<b>Ethnic Discrimination</b>	Unfair treatment due to one's membership in an ethnic group
<b>Insomnia</b>	Persistent (long-lasting) problems falling asleep and staying asleep
<b>MACE (Major Adverse Cardiac Event)</b>	Bad health problems related to the heart. Examples: Heart Attack, Stroke, Death. .
<b>Peer Support</b>	Giving and receiving assistance from friends, classmates, etc
<b>Problem Solving</b>	Ability to define a problem and come up with solutions
<b>"Sleepless"</b>	Less than seven hours of sleep per night for adults
<b><u>Social Justice</u></b>	<u>The idea that opportunities such as education, employment, and health care, should be equally accessible to all people in a society</u>
<b><u>Survival Probability</u></b>	<u>The percent chance that someone will survive</u>



## Sources

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- The Stavros Niarchos Brain Insight Lecture, “Sleep Health in the USA: Why Sleep is a Social Justice Issue” by Carmela Alcántara, Ph.D” <https://www.youtube.com/watch?v=i-bYwMlvwXk&t=442s>
- BSSC Resource, "I Can Use the Identify and Interpret (I<sup>2</sup>) Strategy". © 2012 BSCS, elearn.bscs.org. [https://media.bscs.org/mss/se/icans/ps\\_i\\_can\\_use\\_the\\_identify\\_and\\_interpret\\_strategy.pdf](https://media.bscs.org/mss/se/icans/ps_i_can_use_the_identify_and_interpret_strategy.pdf)

## Acknowledgements

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