SN EDUCATOR GUIDE

September 16, 2017

Flex Time

Cross-Curricular Discussion: Q

Directions: The following list of discussion questions is provided to help you take notes, brainstorm ideas and test your thinking in order to be more actively engaged in class discussions related to this article. All questions in this section are related to topics covered in "Flex time."

PHYSICAL SCIENCES

Discussion questions:

1. What is magnetic resonance imaging and how does it generally work?

Extension prompts:

2. What is functional magnetic resonance imaging and how can it be used?

3. What is resting state functional magnetic imaging?

BIOLOGICAL SCIENCES

Discussion questions: Depending on the level of your class, you may preface this discussion with this brief NBC Learn video describing how neurons process information.

1. Describe the structure of a neuron.

2. How does a neuron send signals within itself, and from one neuron to another?

Extension prompts:

3. What is long-term potentiation and how does it work?

4. How could too many connections interfere with learning?

5. How could unusually high amounts of brain flexibility be related to typical schizophrenic behaviors?

ENGINEERING AND EXPERIMENTAL DESIGN

Discussion questions:

1. In performing resting state functional magnetic imaging, or fMRI, to measure the connectivity between different brain regions, what factors would need to be screened out by the data processing algorithm to avoid irrelevant or erroneous results?

2. What other applications could fMRI be used for?

Extension prompts:

3. What are ways that one might improve the ability of the human mind to learn?

4. What are some technologies that are inspired by how brains learn?