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ACTIVITY 4.2
Neuroplasticity and Mindfulness

Concept

Research has shown that mindfulness activities, such as meditation and rhythmic exercise that encourages a flow of repetitive motion (Urich, n.d.), can lead to an alteration in the brain's structure. Students will look at research that supports that mindfulness can impact neuroplasticity.

Units it could embed into

Biological Bases of Behavior, Consciousness, Abnormal Psychology & Therapeutic Methods.

Learning Targets

1. Determine the extent that mindfulness can physically alter the brain.
2. Analyze psychological research and apply the scientific method.

Materials

Positive Psychology Handout 4.2, EdPuzzle link, and internet connectivity

Time

20-30 minutes with review. This could be completed as a homework assignment.

Instructions

- Review with students the concept of neuroplasticity and how the brain can reorganize and change through experience or in spite of trauma.
- Students receive the neuroplasticity & mindfulness handout 4.2 and then watch the EdPuzzle for the Draganski study (Draganski et al, 2004). *Note*: teachers will need to subscribe to EdPuzzle to share this link. If you choose not to subscribe, you can search for the BBC Two docuseries, *Alternative Therapies*, and use episode one, "The Power of Meditation" (Barrett & Walker, 2007). The clip from the EdPuzzle is around minute 52:00.
- Students will then read an interview with Dr. Sara Lazar regarding the neuroscience of mindfulness and meditation.
- Encourage students to share further questions that they have regarding this topic.

Extension activities

- Invite students to find additional studies that show how mindfulness and meditation impact the brain. Students can share this research in class through a verbal presentation, poster, or summarize the article on an online class post (Google Classroom stream) and have other students respond with their thoughts or ideas.

Alternative uses for the lesson

- This lesson could be used in a scientific methods lesson. Have students watch the EdPuzzle and read the article and examine the use of scientific inquiry.

Reference

Draganski, B., Gaser, C., Busch, V., Schuierer, G., Bogdahn, U., & May, A. (2004). Neuroplasticity: changes in grey matter induced by training. *Nature*. 427, 311-2. https://www.researchgate.net/publication/305381230_Neuroplasticity_changes_in_grey_matter_induced_by_training

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HANDOUT 4.2

Neuroplasticity & Mindfulness

Learning Targets

1. Determine the extent that mindfulness can physically alter the brain.
2. Analyze psychological research and apply the scientific method.

Step 1

1. Provide a definition of **neuroplasticity**, in your own words.

2. Hypothesize how learning a new skill that involves hand-eye coordination involves neuroplasticity.

3. Watch the linked clip on EdPuzzle and answer the three included questions.
   a. Why is looking at the adaptable change important to science?

   b. According to the Draganski study, how long did it take for the visual processing centers to change?

   c. When does your brain stop changing due to experiences?

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Step 2

1. Read an article from *The Washington Post* about the changes that can occur in your brain with meditation practice. Summarize some of the scientifically proven impacts of meditation on the human brain.

2. Examine how Dr. Lazar's inquiry demonstrates the scientific method.

3. Write down a few questions that you have and would like to find answers to regarding this topic. Be ready to discuss them in small groups.