

STEM Collaborative Cataloging Project
Mindflex Lesson Plan

Context (InTASC 1,2,3)

Lesson Plan Created By: Rachel Strand

Created:

Lesson Topic: Using the Mindflex game to explore and measure nervous system functions

Grade Level: High School (9-12)

Duration: 2-3 50 minute class periods

Kit Contents: http://odin-primo.hosted.exlibrisgroup.com/nmy:nmy_all:ODIN_ALEPH007797981

Desired Results (InTASC 4)

Purpose: The purpose of this lesson is to explore the Mindflex game and measure different homeostatic autonomic nervous system functions through group discussion and creation of an obstacle course.

North Dakota English Language Arts & Literacy Content Standards:

- Speaking and Listening Standards: Presentation of Knowledge and Ideas
 - SL.4 (Grade 9) Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

North Dakota Library and Technology Content Standards

- Information and Inquiry: Develop and Share
 - IAI.10 (Grade9) Collaborate with others to exchange ideas, develop new understandings, make decisions, and solve problems

Objectives:

1. Students will brainstorm different nervous system functions that could have an effect on the control of the Mindflex game.
2. Students will design an obstacle course and test different nervous system functions on the effectiveness of completing this obstacle course.

Assessment Evidence (InTASC 6)

Evidence of meeting desired results: Students will show evidence of learning on the group work page, showing ability to brainstorm several theories for the physiological signals and explain what happened during the testing process. Students will also show learning during the group presentation and answering follow-up questions about their results.

Learning Plan (InTASC 4,5,7,8)

Instructional Strategy: (Check all that apply)

Direct Indirect Independent Experiential Interactive

Technology Use(s): (Check all that apply)

Student Interaction Align Goals Differentiate Instruction Enhance Lesson

Collect Data N/A

Hook and Hold:

Come out with the Mindflex headset on and wait for a student to ask what you are wearing, and then respond that it is your device to control the console at the front of the room. Put the ball on the fan and start moving the ball around the track, without explaining to students what it is you are doing. Students will be very curious what kind of “trick” is being used to move the ball.

Materials:

- Mindflex Set including console, headset, obstacle course pieces, balls, and instruction manual
- Group Work Page
- Timer
- Writing Utensils

Procedures:

1. Before showing students or using the Mindflex in this lesson, the teacher should become familiar with the pieces in the kit for the headset, console, and obstacle course pieces.
2. Explain to students that the Mindflex machine uses brainpower to move the ball up and down, and the fan moves the ball around the track.
3. Ask one or two students to come and try a few of the quick start activities from pages 9 and 10 in the instruction manual to show how it works. These activities help students see how to raise and lower the ball and try to keep it in one spot as it moves around the track. Let students know that everyone will get a turn over the course of the next few class periods.
4. Have the class brainstorm and discuss ideas about how the headset may work to control how high the ball moves. There are many physiological signals that could be contributing to the headset signal.
 - a. The signals could include heartbeat, pupil dilation, galvanic skin response, eye movements, blinking, EEG, sweating, muscle tension (forehead wrinkling, ear wiggling), concentration, breathing.
 - b. Have students volunteer or assign a physiological signal to groups of 2-3, depending on the size of the class. Each group will get time to discuss how the headset detects the signal and then time to experiment and test their theory.
5. Give each student a copy of the Physiological Signals group sheet and have students sit with partners or groups. Before they can test their theories, they need to brainstorm together two solid theories and complete the top portion of the page.
6. As students finish the top portion of the page, they take turns using the Mindflex to test their theories. If other groups are using the Mindflex as they are ready to go, they can get an early start on the obstacle course design on the back of the page.
7. When groups have finished testing their physiological signals theory, students can go back to their group spots and create an obstacle course by drawing the pieces in different spots around the console. These obstacle courses will be completed by a student from another group when completed.
8. Give students a time limit for when everyone needs to be done with both sides of the group page. When the time is up, students will take turns setting up their course for another group to try out. They will be timed and the fastest time will win the course game. The rest of the students will be the audience and observe how the headset and console work with different kinds of set ups.

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Summary: Have a student from each group share their biggest findings from the physiological signals side of the page. Each group who is not presenting will need to ask one follow-up question to the presenting group.

Reflection (InTASC 9)**Reflect On:**

- *Preparation*
- *Planning*
- *Teaching*
- *Student Engagement and Participation*
- *Evidence of Student Learning*

Standards

Council of Chief School Officers. (2011, April) *Interstate Teacher Assessment and Support Consortium (InTASC) model core teaching standards: a resource for state dialogue*. Washington DC. Retrieved from

http://www.ccsso.org/documents/2011/intasc_model_core_teaching_standards_2011.pdf

North Dakota Department of Public Instruction. (2011) *North Dakota English language arts & literacy content standards*. Bismarck, ND. Retrieved from https://www.nd.gov/dpi/uploads/87/ELA_JUN0811.pdf

North Dakota Department of Public Instruction. (2012) *North Dakota library and technology content standards*. Bismarck, ND. Retrieved from https://www.nd.gov/dpi/uploads/87/lib_tech.pdf

This project was made possible in part by the Institute of Museum and Library Services. [SP-02-15-0044-15]