PLAN "D": THE EFFECT OF VIDEO GAMES ON YOUR BRAIN

The Effects of Video Games on Your Brain

Based on results in Daphne Bavelier's lab. This activity enforces that games can improve vision and attention if played in reasonable doses. Includes reading, coloring and graphing.

Name: _____ Date: _____

THE EFFECT OF VIDEO GAMES ON YOUR BRAIN

The fact is, 90% of school aged children play video games, but did you know that the age of the average gamer today is 34 years old? Video games are found in nearly all households; in fact after the one-month release of popular video games, there is an average of 68,000 years worth of game time played within homes across the U.S. It looks like they are here to stay.



First and foremost, video games are not good for your health. But, they are not necessarily bad for your health in *reasonable doses*. A reasonable dose is game time played anywhere from 5-15 hours a week.

1. What is the average age of a gamer these days? _____
2. What is considered a "reasonable dose" of video games? _____

If you play action games within the 5-15 hours weekly range, the effect of video games on your brain can actually be positive. First of all, it can help to improve your vision in a number of ways. It has been proven in a laboratory setting that action gamers are better able to resolve small detail in the context of clutter. In addition, action gamers can differentiate between different levels of gray. The eyes working to coordinate with the brain lead to overall better vision. Video games that contain high levels of action, such as Unreal Tournament, can actually improve your vision. Researchers at the University of Rochester have shown that people who played action video games for a couple hours a day over the course of a month improved by about 20 percent in their ability to identify letters presented in clutter—a visual test similar to ones used in eye clinics. In essence, playing video game improves your bottom line on a standard eye chart.

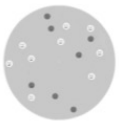
3. Describe ways in which your vision can improve from playing action video games:

_____
_____
_____
_____



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TESTING ATTENTION: DO VIDEO GAMES INCREASE ATTENTION SPAN?



In another experiment, subjects were asked to track the colors of the "sad faces" (the happy faces remained yellow). The faces were constantly moving around on the screen.

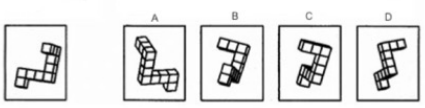
Experimental Results	
Number of hours played per week	Number of moving objects tracked
0-2	3
3-5	5
6-8	6
9-11	7
12-14	7
15-17	7

4. Review the information and chart above. Given this information, what were the results of the experiment? Does this support the idea that video games may lead to a better attention span?

_____
_____
_____
_____

BRAIN PLASTICITY

The results encouraged scientists to test if the brain can actually improve, or learn, from using video games. This is called "brain plasticity". To do this, scientists decided to use something called mental rotation.



Look at the very first image on the far left. Can you tell which of the following images (A, B, C or D) is the rotated version of the first image? After a while does your brain start to cringe a little bit? That's because it's doing work! This was also tested in a laboratory. Scientists wanted to test if the results of video games could be long lasting, if the brain could actually learn from them.

Test subjects came into the lab and were tested with their mental rotation skills (similar to the one above). Then, they played action video games for one hour a day for two weeks. After the two weeks their mental rotation skills were retested. This went on for 4 months. The results are found on the following chart:

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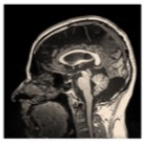
Week	Number of Correct Tries (Mental Rotation)
0	1
2	2
4	4
6	7
8	11
10	16

DIRECTIONS: Review the information in the chart. Using the template below, create a line graph (time as the x-axis; number of correct tries as the y-axis) to depict the results. Remember to title your graph appropriately!

GRAPH TITLE: _____

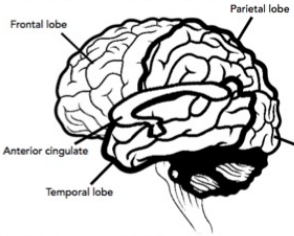
Let's look at how the brain works while playing video games, using brain imagery. First, review what the colors mean (refer to these as necessary):

Color	Indication
Red	The most active area(s) of the brain
Orange	Active
Yellow	Somewhat active
Green	Mostly inactive
Blue	Inactive
Red	The most active area(s) of the brain



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GENERAL BRAIN IMAGE DURING TETRIS



- Color the frontal lobe red
- Color the parietal lobe orange
- Color the occipital lobe green
- Color the temporal lobe blue
- Color the anterior cingulated red

Brain Part	Function
Frontal lobe	Associated with reasoning, planning, maintaining attention, and problem solving
Parietal lobe	Associated with movement, orientation, recognition, perception of stimuli, and orienting attention
Occipital lobe	Associated with visual processing
Temporal lobe	Associated with perception and recognition of auditory stimuli, memory, and speech
Anterior cingulate	Associated with award-anticipation, decision-making, and controlling/regulating attention.

5. What are the most active parts of the brain during gaming?

_____

6. What are the least active parts of the brain during gaming?

_____

7. Using the table above, explain how brain imagery achieved in the lab (similar to the one you have just created) suggests that gaming can improve attention:

_____
_____
_____

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THE NEGATIVE EFFECTS OF VIDEO GAMES

The studies above were all tested with subjects who played 5-15 hours a week, the "reasonable dose" of video games. However, devoting time to more than 15-20 hours a week of video games, puts health at risk. Here's how:

- **Weight gain**- not being active enough (also, poor circulation and sleep deprivation can contribute to weight gain).
- **Poor circulation**- sitting too much without stretching or moving can lead to poor circulation **Sleep depravation**- not having enough energy throughout the day.
- **Spine and neck problems**- sitting for long periods of time can lead to poor posture. You may not be worried about it now, but poor posture can have severe and permanent affects on your neck and spine. It can also lead to kyphosis (hunchback).
- **Isolation**- in severe cases, gamers do not get enough "face time" or social interaction with friends. This can lead to depression if for any reason they had to part with their video games and gaming network. This may lead to obsession.

There is much debate as to whether or not video games should be banned from young people, because of many reasons including childhood obesity, and that violent video games could cause violence in real life. Then, there are others, including many scientists that think video games can be good for learning, but in moderation and without extreme violence. No person claims that lots of game time is good for you. Nor do people claim that violent video games are optimal. How do I feel about video games? What is one solution I can offer?

What is your stance? Do you think that video games should be banned? Yes or no? Suggest reasons for your decision. Also, provide a compromise, or a solution, that would make both sides of the debate satisfied.

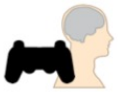
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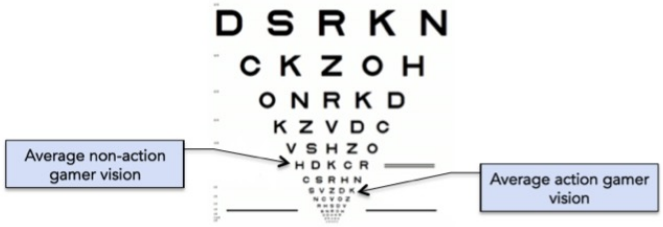


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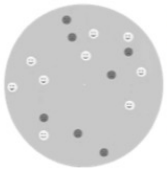
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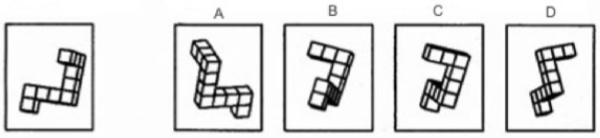
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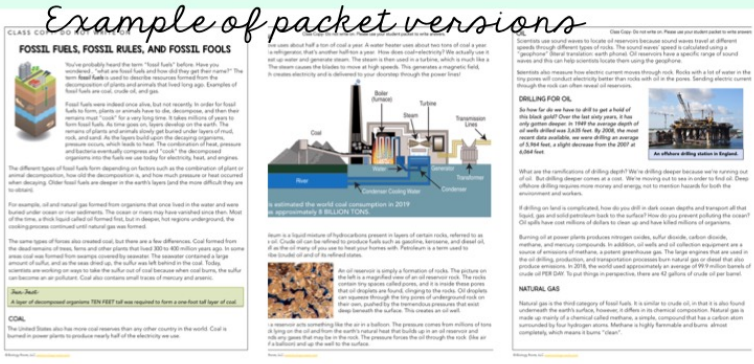
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5 pages- fifth page is optional (can be reduced to 4 pages)

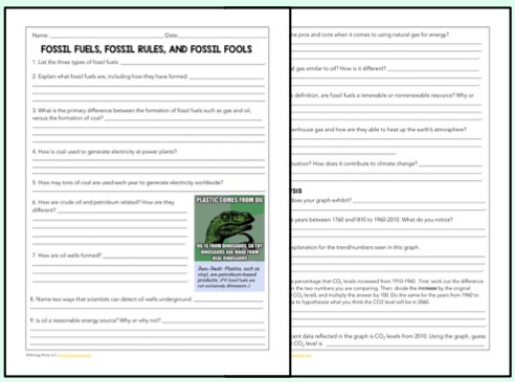
This is a fun one! Students get to analyze diagrams, color parts of the brain, and do a short graphing segment.

ANSWER KEY AND CLASS PACKET VERSION INCLUDED

Example of packet versions



Classroom set (print once)



Student answer sheets

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Classroom resources to promote *scientific literacy* and curiosity.

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I am so excited that you will be using my resources to *benefit* your classroom. Listed below are some categories of products that I offer in my TpT store:

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Captivating Presentations	Terrific Task Cards

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