

Materials for each group of 3 students

- a stopwatch
- a deck of playing cards
- 3 copies of the student packet consisting of lab instructions, data sheet, questions, and brain anatomy handout pages

Terms

axon - the neuronal process that sends the signal or message away from the cell body toward target cells or neurons

axon terminal - the very end part of an axon that makes a synaptic contact with another cell; the point where neurotransmitters are released

dendrite - tree-like extension of the neuronal cell body; receives chemical neurotransmitter signals or messages from other neurons

neuron - a cell that is specialized for the transmission of information and characterized by long fibrous projections called axons, and shorter, branch-like projections called dendrites; the basic functional unit of the nervous system; also called a nerve cell

neurotransmitter - at a synapse, a chemical released by nerve terminals that binds to receptors on dendrites of neighboring neurons; neurotransmitters relay information across the space between one neuron's nerve terminal and another neuron's dendrites.

synapse / synaptic gap - the gap between two neurons forming the site of information transfer, via neurotransmitters, from one neuron to another, including the presynaptic nerve terminal and the post-synaptic dendritic site; at synapses, neurotransmitters released from pre-synaptic axon terminals bind to receptors on post-synaptic dendrites

I modified the traditional Card Sort Activity because I saw a great opportunity to teach my students about data and about what it “looks like” when you change your brain. As far as the data goes, I realized that we tend to get all caught up in the averages because they are more reliable numbers (you tend to smooth out the outliers in your data). What we fail to realize is that the results for each of the trials are valuable in themselves.

In this lab, the students will find that their times were faster for the later trials. This is what changing your brain looks like – you get better at doing something. So, one of my goals for this lab is to have my students make graphs of the data from this lab and then explain what they learned from it. Students tend to ignore the trials and just graph the averages. I use this as a starting point for a discussion about what other things are hidden in the data that they collected.

The 6th and last sorting activity involves one person in the group being the sorter and another person - the recorder - serving as feedback-giver. The timer continues to start and stop the stopwatch and tell the time to the recorder who writes it on the data sheet.

The feedback person has three rules -- s/he **doesn't tell** the sorter the rules -- and s/he just says “Yes” or “No” when the sorter places a card down. When the sorter has figured out the rule and has correctly placed five cards, the feedback person changes the rule without telling the sorter. The feedback person has three rules and s/he keeps rotating through them until the sorter has sorted the whole deck.

Card Sort Activity - Teacher Note

I set this activity up for three-person groups. The students number off (1, 2, 3) and then I place the following rules up on the chalkboard (I cover them with sheets of paper labeled Student 1, Student 2, and Student 3). I instruct my students that when they are the feedback giver, they need to come up front and read the rules under the sheet that matches their number.

Here are the rules that I use:

	Student 1	Student 2	Student 3
Rule 1	Odd/Even	Face Card/Not A Face Card	Color
Rule 2	Color	Hearts and Clubs/Diamonds and Spades	7 or Lower/Higher Than 7
Rule 3	Heart/Not Heart	Color	Club/Not Club