

Brain Parts  
Tim McGinn (Washington State University)  
3-31-2003

**Abstract:** This model was used to teach 5<sup>th</sup> graders about different functions of the brain. We wanted to teach the children about the importance of the brain and get them interested in neuroscience as well. We decided to teach about the idea that certain parts of the brain control certain behaviors (for example a function of the pons is to control sleep). Martin (1996) and Gray (1999) talk about this in their textbooks. We decided that this was an easy concept for 5<sup>th</sup> graders to understand and could be easily represented. We did this by showing pictures of the brains and matching pictures showing the functions of the different brain regions. For example we had a picture of a crescent moon that matched up with the pons to represent sleep. We represented each major region of the brain by two pictures. This was overall well received by the kids. To make sure the kids understood the concept we tested them at the end by asking them to match up the pictures with the corresponding brain region. We did not get them as excited about neuroscience as some of the other models, but they showed an interest and demonstrated an understanding of our model. This model was shown to be a good teaching and learning tool but could have been more colorful and had computer animations to further gain interest.

**Introduction:** At its most basic, the nervous system receives sensory information, integrates it with other stored information, and sends that integrated information to muscles and glands to produce movements and adaptive secretions. Groups of nuclei often have the same function; this is also true for even larger brain regions (Gray, 1999). This model explains the functions of some of the larger divisions of the brain.

Martin (1996) talks about how particular brain regions are affected differently by different drugs, and that these different regions produce different neurological and psychiatric effects.

Freeman (1991) demonstrated this when he found that certain areas responded to certain sensory inputs. He measured the responses by using an EEG. They never performed the same way twice but this still allowed for mapping of pathways.

The purpose of our model was to get the kids interested in neuroscience and have them learn about the brain. Our model demonstrated the different purposes of the main divisions of the brain. This was to teach the kids that they need to protect their heads because damaging even part of the brain can have detrimental effects. The model was made up of two poster boards one with a midsagittal view of the brain and the other with a view of the cerebral cortex. The pictures of the brains were divided up into sections by a black marker. There were also note cards with pictures on them depicting what each of the major areas of the brain does. We began the demonstration by explaining to the kids what exactly they were looking at. They were allowed to compare this with a 3-d plastic model of the brain. Then we told them the name of each part and showed them the card that went with the particular area. Lastly we showed them a random

note card and asked them to match it up with the correct part of the brain. This was repeated several times, usually until time ran out.

**Methods:** The model consisted of 2 poster boards (of about 4 feet by 4 feet) and several note cards. The first poster board was a drawing of the midsagittal view of the brain. The second poster board was a drawing of the cerebral cortex and cerebellum. We made these posters by tracing overheads that were projected onto them. The overheads were made by photocopying pictures from *Neuroanatomy: Text and Atlas* (Martin, 1996). We divided the brain up in a way similar to that in *Psychology* (Gray, 1999). We assigned two functions to each part. For each function we made a picture note card. These pictures were clip art found in Microsoft Office 2000.

**Results:** I would say that our model overall was well received. The quiz at the end turned out to be a bigger success than I thought. Most of the kids as a group were able to match the note cards with the correct structures. This showed a basic understanding of what we taught them. Our fears were that our model contained too much and the kids would simply become uninterested. This did not seem to be the case as shown by the evaluations and overall enthusiasm demonstrated by the kids. Many of the kids did ask questions and for the most part they were good questions. I did anticipate more questions that would be more insightful. Many of the kids asked questions related to what I had said. For example I said memory for motor functions (like a sport or instrument) are stored in the cerebellum. Some of the kids asked if the sport they

played was stored in the cerebellum. I was expecting more conceptual questions like if sleepwalking was because the pons was not working correctly.

Overall we ranked 5 out of 5. The four categories that we were evaluated on (on a scale from 1 to 5 with 1 as the lowest) were the following with the averages: understanding 4.23, friendliness 4.61, was it fun 3.35, and desire to learn more about topic 3.32. Our total average for all four categories was 3.9, which was the lowest of the 5 groups. Overall our evaluation rankings matched our vote ranking. Most of the kids left comments on the evaluation sheets. Most of the time the comments were only short sentences. There is no consistent pattern to what the kids claimed they learned the most or liked the most. These two things lead me to believe that the model did not excite them but they did learn something and found some interest in it.

**Discussion:** The data leads me to believe that the model did not excite the kids but they did learn something and found some interest in it. This shows that we met our goal of educating the kids about the brain. We did not get them as excited about neuroscience as we had hoped. We felt confident that they were able to understand the model because the overall average for understanding was 4.23. The kids demonstrated an understanding by how well they did on the matching quiz. The fact that the kids did ask questions does show an understanding and interest because if they did not then they simply could just have sat there and waited to go to the next model.

We had difficulty finding pictures of the brain that were simple yet not crude sketches. The drawings we choose were chosen because they were entirely outlines and nothing was colored or shaded. Our model could have been improved by color in the poster and using

different colors for each area. We chose not to do this because we felt that it might confuse the kids but after seeing how well the kids understood our presentation adding color would probably not have confused the kids. Another difficulty was finding pictures to match the brain areas. Finally we used clip art from Microsoft Office 2000. The disadvantage was that these pictures were black and white. Adding color or finding color pictures would have added to the model. This model could have also been made on a computer. This would have allowed for animations and better pictures. It would have allowed for the model to be more interactive. This was not done due to lack of resources. The posters were very clear and good representations of the actual brain. They were very easy to teach off of and clearly represented different areas of the brain. The posters were also large enough for the note card to be placed over its corresponding part of the brain. In other words we sacrificed aesthetics for function. Overall I think the model was a good teaching and learning tool.

## References

Gray, P. (1999). *Psychology* (3<sup>rd</sup> ed.). New York: Worth Publishing, Inc.

Martin J.H. (1996). *Neuroanatomy: Text and Atlas* (2<sup>nd</sup> ed.). New York: McGraw Hill Health Professions Division.

Freeman, W.J. (1991, February). The psychology of perception. *Scientific American*, 264, 78-85.