**Research Simulation Task**

**Prompt:**

The brain has perplexed scientists, psychiatrists and the general public for centuries. With recent developments in Magnetic Resonance Imaging, scientists and researchers know more than ever.

You have read four sources regarding the development of the human brain. These four texts provide information to begin drafting your own material.

Write an informative piece in which you support your research regarding the development of the brain as well as future implications for this research. Provide evidence from at least three of the four sources. Be sure to acknowledge competing views. You may give examples from past and current events or issues to illustrate and clarify your position. Be sure to maintain the conventions of Standard English.

**Sample Essay:**

For many years, scientists and researchers were unable to examine normal, healthy brains. Data was only able to be obtained from autopsies, surgeries and studying victims with brain damage. For instance, when people suffered brain damage to parts of the brain, researchers were able to determine what functions were impaired and ascertain the parts of the brain that were responsible for the function. Magnetic Resonance Imaging (MRI) technology, however, has allowed scientists to examine healthy brains at all stages of development as well as during functional task performance. Essentially, with the invention of the MRI, scientists are able to accurately measure how the brain matures throughout stages of development.

One part of the brain that proves particularly interesting in the growth and development of human beings is the prefrontal cortex. According to an article in the *Washington Post*, “95% of the brain has been formed by age 6,” however researchers now know through MRI studies that changes in the brain structure continue to occur late in child development (Suplee 2000). It has been determined that the prefrontal cortex has a growth spurt just before puberty and then prunes back in adolescence. This part of the brain is responsible for reasoning, controlling impulses, and making judgments (Spinks 2000). The growth and pruning is a very important stage of brain development, so when this second wave is happening teen’s activities can affect how their brain responds for the rest of their lives.

Furthermore, researchers have found waves of growth and change in other parts of the brain as well, including the corpus callosum and the cerebellum. The corpus callosum influences language learning, while the cerebellum aids in physical coordination as well as higher order thinking skills needed in math, philosophy, decision-making, etc. (Knierim 1997). This recent research confirms what scientists have postulated for many years: different parts of the brain mature at different times. However, the brain changes significantly more than previously thought, with structural changes taking place into adolescence and beyond. Knowing more about the brain’s structure is only one piece of the puzzle. Much more research is needed to draw conclusions about how the brain structure and function directly cause behavior and how this information can be applied to everyday life.

Some researchers argue that the information gathered thus far is inconclusive in terms of applying the data to real-world issues; however, they are mistaken. For instance, knowing more about the brain and how it influences behavior will have a major impact on how children and teenagers are raised and educated. For example, Dr. Jay Giedd believes that the growth and pruning can happen at a time of brain development when the actions of teenagers can affect them the rest of their lives, his “use it or lose it principle” (2002). Therefore, this is the time when music or academic development could be “hardwired.” This theory puts more emphasis on parents to ensure their teens have the right focus and guidance. This research could lead to a very specific timetable and guide to child development, making sure that their child is exposed to the appropriate factors at the right time.

Ultimately, MRI technology has enabled researchers to learn exponentially more about the brain’s growth and development. They have learned that parts of the brain, such as the prefrontal cortex, an area of the brain that controls reasoning and judgment, goes through a second growth spurt just before puberty, and that this helps to explain why teenagers begin to have more control over their impulses and are able to make better judgments. Additionally, scientists have been able to confirm confirming that different parts of the brain mature at different times and that the brain has structural changes through adolescence is very important, but there is a great deal more research that needs to be done to learn about how brain structure and function relate to behavior.