Student Sample: Grade 11, Informative/Explanatory

The essay that follows was written in response to an extra credit assignment in an anatomy and physiology class. Students were asked to summarize key points about a topic from given information and from their own research on the Internet and to explain how the topic was relevant to their future. A list of sources was not required in the assignment.

Summary of Key Points

For many years, scientists and researchers weren't able to examine normal, healthy brains. They only got brain data from autopsies and surgeries. Even so, they were able to learn a lot about how the brain functioned because when people suffered brain damage to parts of the brain, they could see what functions were impaired and know the parts of the brain that were responsible for that function. MRI technology has changed that because now scientists can examine healthy brains at all stages of development, including getting functional results that show areas of the brain that "light up" while performing tasks. Therefore, scientists are now able to measure how the brain works.

95% of the brain has been formed by age 6, but through MRI studies researchers now know that changes in the brain structure continue to occur late in child development. 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. 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.

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, and the cerebellum helps physical coordination and is also used to process mental tasks and higher thought such as math, philosophy, decision-making, etc.

This recent research has confirmed what scientists have known for many years . . . that different parts of the brain mature at different times. However, the brain is much more changeable 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.

Conclusion:

MRI technology has enabled researchers to learn much more about the brain's growth and development. They have learned that parts of the brain, such as the pre-frontal 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 that some brain characteristics are genetic, and others are affected by environmental factors. 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.

How is this article relevant to my future?

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, one of the researchers, Giedd believed 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." This is the time when music or academic development could be "hardwired." This theory puts more emphasis on parents to make sure their teens have the right focus and guidance. Most parents already believe in a basic approach to raising and educating their children, but this research could lead to a very specific timetable and a do and don't guide to child development, making sure that their child is exposed to the appropriate factors at the right time.

Annotation

The writer of this piece

- **introduces a topic.**
    - *For many years, scientists and researchers weren't able to examine normal, healthy brains. They only got brain data from autopsies and surgeries. Even so, they were able to learn a lot about how the brain functioned because when people suffered brain damage to parts of the brain, they could see what functions were impaired and know the parts of the brain that were responsible for that function. MRI technology has changed that because now scientists can examine healthy brains at all stages of development, including getting functional results that show areas of the brain that "light up" while performing tasks. Therefore, scientists are now able to measure how the brain works.*
- **organizes complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole.**
    - *95% of the brain has been formed by age 6, but through MRI studies researchers now know that changes in the brain structure continue to occur late in child development. The prefrontal cortex has a growth spurt just before puberty and then prunes back in adolescence . . . Researchers have found waves of growth and change in other parts of the brain as well, . . . This recent research has confirmed what scientists have known for many years . . . that different parts of the brain mature at different times.*
- **develops the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.**
    - Details: *95% of the brain has been formed by age 6 . . .*
    - Facts: *The corpus callosum influences language learning, and the cerebellum helps physical coordination and is also used to process mental tasks and higher thought . . .*
    - Examples: *They have learned that parts of the brain, such as the pre-frontal cortex, . . .*
- **uses appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.**
    - *For many years . . . Even so . . . Therefore . . . other parts of the brain as well . . . This recent research . . . However, . . . Knowing more about the brain's structure . . . Additionally, . . . Confirming that different parts of the brain mature at different times and that the brain has structural changes through adolescence is very important, but . . . .For example . . . This theory . . .*
- **uses precise language, domain-specific vocabulary (when appropriate), and techniques such as metaphor, simile, and analogy to manage the complexity of the topic (though sometimes important concepts, notably *pruning*, go undefined).**
    - *. . . data . . . autopsies . . . surgeries . . . MRI technology . . . prefrontal cortex . . . growth spurt . . . corpus callosum . . . cerebellum . . . puberty . . .*
    - *This is the time when music or academic development could be "hardwired."*
- **establishes and maintains a formal style and objective tone while attending to the norms and conventions of the discipline in which the student is writing.**
    - *For many years, scientists and researchers weren't able to examine normal, healthy brains . . . Most parents already believe in a basic approach to raising and educating their children, but this research could lead to a very specific timetable and a do and don't guide to child development, making sure that their child is exposed to the appropriate factors at the right time.*
- **provides a concluding section that follows from and supports the information or explanations presented (e.g., articulating implications or the signifigance of the topic).**
    - *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, one of the researchers, Giedd believed 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." This is the time when music or academic development could be "hardwired." This theory puts more emphasis on parents to make sure their teens have the right focus and guidance. Most parents already believe in a basic approach to raising and educating their children, but this research could lead to a very specific timetable and a do and don't guide to child development, making sure that their child is exposed to the appropriate factors at the right time.

- **demonstrates good command of the conventions of standard written English.**