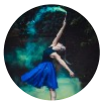
How Programming Affects Your Brain? 3 Big Truths Backed by Science

According to scientists, programming not only activate brain centers — but changes how you think, and here is exactly how



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> *"A son asked his father (a programmer) why the sun rises in the east, and sets in the west. His response? It works, don't touch!"*

Well, it has been already said that when it comes to programmers, they really do think differently from other people — stating the fact there is a whole book written about it "Think Like a Programmer: An Introduction to Creative Problem Solving" *(affiliate link)*

And not to mention that even Apple's creator Steve Jobs said it himself, "Programming teaches you how to think."

When it comes to programmers their job isn't only about writing a bunch of lines of code or developing something, it is far more than that — it includes logical thinking, problem-solving, and thinking outside of the box.

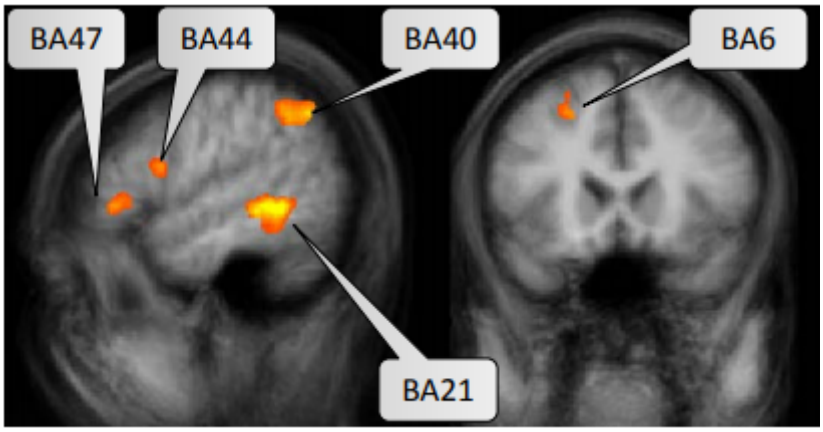
> "Programming is like sex: one mistake and you're providing support for a lifetime." — Michael Sinz

To find out what goes inside the brain of the programmer or how their brain differs from non-programmer ones, scientists have been studying the brains of programmers for many years.

Eventually, they found that engaging in programming — which is an intellectually engaging activity — not only affects the brain but also affects the way a person thinks.

1. Activates Brain's Learning Centers

According to a study done by Dr. Janet Siegmund, one of the world's driving experts in observational PC program building — coding activates five obvious mind regions which are related to language processing, working memory, and problem-solving, which is in line with the current understanding of program comprehension.



Five brain regions activated during programming, according to Dr. Janet's study.

Coding initiates different regions within the brain, it reinforces the monotonous movement that builds up the muscle memory and makes the brain's ability to become more proficient within the process of learning.

There is another study led by Yun-Fei Liua, a Ph.D. student at Johns Hopkin University, where 15 experienced programmers had gone through an fMRI scanner.

> *"Because there are so many ways people learn programming, everything from do-it-yourself tutorials to formal courses, it's surprising that we find such a consistent brain activation pattern across people who code," said Yun-Fei.*

Brain-stimulating activities like programming basically act as a great workout for the brain and strengthen its ability to memorize and perform tasks.

Since programmer's tasks include a complex and multifaceted ability, coding offers assistance reinforce associations between the distinctive parts of the brain. It increases creativity, analyzing problems, and logical thinking of solving problems and boosts the brain's capacity to learn.

2. It Changes How You Think

> “The tools we use have a profound (and devious) influence on our thinking habits, and, therefore, on our thinking abilities.” — EDsger Dijkstra

There is no denying the fact that the design of a programming language shapes how you think.

It isn’t just about writing a bunch lines of code — but it’s about thinking differently. To think in a certain way so that one can take vague concepts and put them into concrete to tackle the problem.

You might want to check these lines out to see if you’re able to read them:

```
“Aoccdrnig to a rscheearch at Cmabrigde Uinervtisy, it deosn’t
mttaer in waht oredr the ltteers in a wrod are, the olny iprmoetnt
tihng is taht the frist and lsat ltteer be at the rghit pclae. The
rset can be a toatl mses and you can sitll raed it wouthit porbelm.
Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef,
but the wrod as a wlohe.”
```

So how did it go? Of course, you were able to read it even though it was a total mess. *Why?* Because our brain doesn’t read every letter but the word as a whole — but this can’t happen in programming.

You can’t write `string` as `srting` even though your brain understands what does it mean.

My point is that the approach to how one way these lines of words work and another way they don’t — forces you to develop a different kind of thinking while reading **characters** over **words and sentences.**

This same theory applies to high-level thinking as well.

When a programmer programs, he/she then needs to work in specific and contextually correct ways — starting from writing correct syntax to performing commands, one

mistake and the program fails.

Programming doesn't only involve applying some maths and logic, but it also requires a creative mindset, one that requires a person to think outside of the box — and that's exactly how the brain thinking process develops.

3. Give Push to Memory And Cognitive Skills

As we began to age, our ability to remember things declines, but in one of the studies, it is found that "intellectually engaging activities serve to buffer individuals against [cognitive] decline."

In simple words: Engaging in cognitive intensive skills such as coding helps to fight back against memory loss.

The human brain basically consists of two hemispheres: *left* and *right*. The *right* hemisphere is responsible for **intuitive thinking and imagination**, whereas the *left* hemisphere is responsible for all **analytical and logical thinking.**

Engaging in programming improves the functions of both hemispheres which in turn, develops the brain as a whole.

Programming is basically a mental engagement that actually leads to sharper brains, constructs cognitive aptitudes that involve learning and intellectual difficulty, and moves forward a person's memory.

According to Alan Perlis, a turing award winner, and writer of the Algol language: learning a programming language can change the way a person thinks. He also stated that ***"A language that doesn't affect the way you think about programming, is not worth knowing."***

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Thanks to Anupam Chugh.