

## The Science of Curiosity

Perhaps it was a bolt of lightning that piqued the early human's curiosity; perhaps it was a raging wildfire. But once upon a time, an early human channeled inspiration into pure ingenuity and figured out how to start a fire. The control of fire supplemented humankind's first invention, the stone tool. Next came boats, and then spears; then language, glue, clothing, and even the flute.

Each of these incredible inventions came to fruition in the mind of early humans many tens of thousands of years ago. Some sort of special spark drove humans to explore, discover, and later, to invent. That special spark lives within each of us, too. It makes us eager to learn things and to solve problems. Whenever you're listening to music, reading a book, or watching TV, it's there, helping your imagination soar. This special spark is curiosity, the desire to seek out new knowledge and learn how things work.



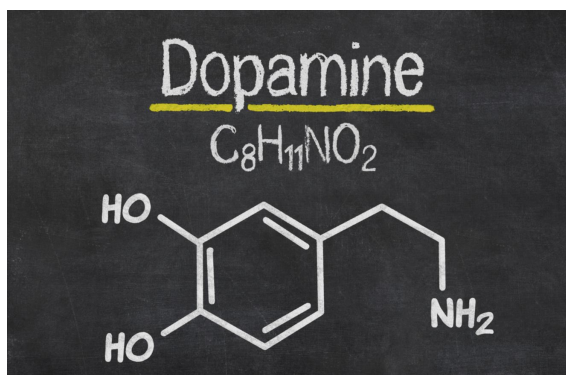
Why are we curious? How does curiosity 'work' in the brain? If there's one thing that stimulates our curiosity most, it's a complex topic shrouded in mystery. So where do we start?

One way to begin exploring curiosity is to understand 'information seeking'. This behavior is observable across the entire animal kingdom – from apes and dolphins all the way down to crabs and tiny nematode worms. 'Information seeking' means that every animal seeks information about their environment. This is so they know how to navigate it. In fact, it's why sensory organs exist – to supply the brain with information that helps you understand your environment and make better choices.

## The Science of Curiosity

But when does information seeking qualify as curiosity? The difference, we now believe, is in the motivation. If you're seeking knowledge because of an external motivation, like school or work, then it does not qualify as curiosity. But if you're seeking knowledge because you're internally motivated – because you just want to know the answer – that's curiosity. Think about the early human, 35,000 years ago, who made the first flute. They were not driven by a need to stay warm or eat food; instead, they were internally motivated to make an instrument that could make a beautiful sound.

When something piques your curiosity – say, an interesting fact, or an unexpected noise in the other room – your brain enters into what's called the “curiosity state.” First, the parts of the brain that are sensitive to unpleasant conditions light up. This shows that you are slightly uncomfortable, because you recognize you are lacking certain knowledge. Then, the parts of your brain responsible for learning and memory kick into high gear, so that you can learn, and remember what you've learned, more efficiently. It is at this point that you are primed to begin your search for answers. And when you actually begin learning new facts in your curiosity state, something even more interesting than heightened memory happens: your reward circuitry kicks in.



That's right – your brain rewards you for being curious, and for pursuing that curiosity. Researchers have determined that dopamine, the brain's reward chemical, is intricately linked to the brain's curiosity state <sup>1</sup>. When you explore and satisfy your curiosity, your brain floods your body

with dopamine, which makes you feel happier. This reward mechanism increases the likelihood that you'll try and satisfy your curiosity again in the future.

## The Science of Curiosity

The idea that our brains reward us for learning actually lines up with the hypothesis that curiosity helped our early human ancestors survive, too. Think about the usefulness of a stone tool or a boat. Humans needed to understand the environment, and manipulate it, in order to survive. Whether it meant knowing the best routes to flank animals on a hunt, where the best caves were for shelter, or how to find edible plants and berries, curiosity about the environment led to better survival. Our most curious ancestors had an advantage over those who weren't curious. Over thousands of years, only the most curious people reproduced, leading to the characteristic curiosity of modern-day humans.

Today, our curiosity isn't so useful in terms of survival. But it is useful when we think about education, or even what makes us happy. And when it comes to education or satisfying your curiosity, scientists say there are two distinct types of curiosity that we can express.



The first is called epistemic curiosity. Have you ever gone down a rabbit hole of link-clicking on the Internet? Or gotten so obsessed with a favorite book series or TV show that you had to research everything you could about it? That's epistemic curiosity: the drive to eliminate information gaps and learn new explicit information. When you feel that thirst to acquire new knowledge, your brain actually responds as if you are actually thirsty or hungry – that's where the areas sensitive to unpleasant conditions light up. And that's why it feels so great to satisfy your curiosity (thanks, dopamine)!

The second type of curiosity you might find yourself expressing is empathic curiosity. Human life is built on relationships and interactions between people, and empathic curiosity is the drive to know more

## The Science of Curiosity



about what other people think and feel. When you are in comfortable social situations, your 'curiosity state' is especially pleasurable, according to research, and again, that's when your dopamine releases in high levels.

Encouraging both types of curiosity in yourself is an important step in becoming a well-rounded learner. Greater knowledge about yourself and how you express your curiosity can help you with that process. This is why Britannica has developed a quiz about curiosity (that you can take right now!) and a whole host of information and resources on the subject.

In today's world, being curious can enrich your life massively. Pursuing your passions is satisfying both in the short term and in the long term. Whether you go exploring your curiosity through social events or study, and whether you dive into biology, philosophy, psychology, your environment, or beyond, remember that different approaches will suit different people – and that it's what each of us does with the information that matters.