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The Effects of the Internet on Cognition

The Internet is a place people go to do almost anything in society today. One can order movie tickets, shop for clothes, transfer money into or out of their bank account, buy a pizza, or even find their husband or wife online. This all seems very exciting and beneficial; however, society must take a step back and look at how this exposure to the Internet is affecting people. Eric Jaffe, author of articles published in various newspapers and magazines including *The Atlantic* and *Observer*, discusses some of the cognitive issues that come along with the Internet in his article “Rewired: Cognition in the Digital Age.” Jaffe talks about how the brain is very plastic; in other words, the brain is heavily influenced by outside sources and is always changing. He also discusses how multi-tasking and Google are affecting the mind and memory. Nicholas Carr is a *New York Times* bestseller who has written for *The Atlantic*, the *Wall Street Journal*, the *New York Times*, and *MIT Technology Review*. In his article “Is Google Making Us Stupid?” Carr also discusses the plasticity of the brain and the effect of the Internet on memory. Due to its plasticity, the brain is heavily influenced by external stimuli such as the Internet. Because of this, there are many cognitive abilities such as deep thinking and memory capabilities that are lost or limited as a result of Internet use. With the combination of the loss of deep thinking, memory loss, and an increased amount of time spent multitasking, the Internet is causing people in society to have poor critical thinking and problem solving skills, which can lead to a deficiency in wisdom within society.

The human brain is very plastic and is consequently adapting due its exposure to the Internet. Jaffe describes how people have been studying the plasticity of the brain since at least the 1890s. Even though the Internet was not around then, people like the American psychologist and philosopher, William James, predicted how information technology could affect cognition and behavior. Jaffe says, “Since the days of William James, neuroscientists have confirmed the existence of neural plasticity. The very act of processing external stimuli adjusts our internal circuitry. Because these adjustments increase with exposure, and because we’re exposed to the Internet each passing day, digital technology stands to impact cognition unlike any other ‘outward agents’ that have come before it” (Jaffe). It seems as if the predictions made by James and Jaffe are coming true. The Internet has a huge influence on people today, and that influence is just continuing to grow. Young and old alike can be seen spending massive amounts of time on the Internet. It only makes sense that this continuous exposure to the Internet would have a huge impact on how people think, understand, and learn information. Carr also reflects on the way that humans change and become more like the technology that they are exposed to. He says, “As we use what the sociologist Daniel Bell has called our ‘intellectual technologies’ – the tools that extend our mental rather than our physical capacities—we inevitably begin to take on the qualities of those technologies” (Carr). These intellectual technologies have such an influence because people’s minds are plastic and are influenced heavily by external stimuli. Carr provides the example of the invention of the clock. This invention modified men into scientific beings. Rather than relying on the senses, people began to depend on the clock to know when to eat, sleep, and work. People started to picture their brains as functioning like clockwork and now, years later, as operating like computers (Carr). This example of clockwork is particularly relevant in a discussion about brain plasticity. In today’s society, everyone is running around constantly with errands and work to do. They feel that they are wasting time if they are not doing something every second of the day, and people always want to know what time it is. They create tight schedules with allotted times for certain tasks, rather than relying on how they feel to know when they should do something. People’s brains have definitely shifted from sensing to scientific in this sense because they would rather trust a clock than their own feelings. This is a big change in the way people think. Now, with the invention of the Internet, a person may sort through and filter information almost as if their brain is a search engine. They use the computer in order to obtain speed and efficiency. Their mind has adapted and reprogrammed itself due to the influence of the external stimulus. This modified way of thinking shows just how plastic and easily influenced the brain really is when exposed to external agents such as the Internet.

The Internet has a large influence on cognition because of the brain’s plasticity and because the Internet’s structure demands that everything be done quickly and efficiently, which causes a shift from deep thinking to horizontal thinking. This shift can prevent wisdom and the development of new ways of thinking . Instead of reading for depth or meaning, it is common for people to skim through many articles in order to gain as much information as fast as possible. The problem with this is people may not think deeply about the topics and make connections between the new information that they read and old information that they already knew. They are not analyzing patterns and laws that they discover as they read. Sometimes it is better to have a deeper understanding of a few subjects rather than a very limited understanding about many topics. Sven Birkerts examines this way of thinking and how it affects what people are willing to read in his article “The Owl Has Flown.” Birkerts is an American author and literary critic who has taught writing at Harvard University, Emerson College, Amherst College, and Mount Holyoke College. He says, “Instead of carrying on the ancient project of philosophy – attempting to discover the ‘truth’ of things – we direct our energies to managing information. The computer […] increasingly determines what kind of information we are willing to traffic in; if something cannot be written in code and transmitted, it cannot be important” (Birkerts 75). Birkerts is discussing the signs that people are switching from a more philosophical way of reading and learning to a more analytical way. People are constantly filtering what they read because they feel that certain pieces are too long or unimportant. Sometimes, they just want the basic information from the article without reading the surrounding explanation. This seems like an understandable way to gain information because it does take a large amount of time to read in depth; however, if no one read in depth, the world would be missing a lot of wisdom and knowledge. Birkerts goes on to say, “Wisdom has nothing to do with the gathering or organizing of facts—this is basic. Wisdom is seeing through facts, a penetration to the underlying laws and patterns. It relates the immediate to something larger” (75). Knowing a fact is very different than having wisdom. Wisdom is more than just speedy memorization. It is looking at how a number of facts relate and building connections between those facts. It is taking those small facts and using them to understand the “bigger picture” of things or of life. Society needs wisdom in order to have a better understanding or insight into humanity. Society may be losing this wisdom with the loss of deep thinking about topics. There needs to be a balance between simply reading facts and developing one’s own unique ideas about those facts. People today are very good at gathering data and organizing facts because their plastic minds have been influenced by the Internet. The issue is that people are not as good at analyzing those facts in depth. Four neuroscientists from UCLA did an experiment to examine how people’s brains have responded to the Internet. The experiment involved two groups, Net Savvy and Net Naïve people, and asked those individuals to read in both traditional and a web-based settings. During the web-based reading task, the Net Savvy people activated additional brain regions and the Net Naïve people used the same regions that they used during the traditional reading test. This shows that browsing and reading on the web prepares people’s brains to for web-based reading. As a result of this experiment, the lead author, Gary Smalls, said, “We develop a better ability to sift through large amounts of information rapidly and decide what’s important and what isn’t – our mental filters basically learn how to shift into overdrive” (Jaffe). This experiment showed just how much using the Internet can affect people’s ability to think deeply. The results displayed that, with increased use of the Internet, people are not learning how to read more information more quickly; they are simply learning to filter information. Repeated use of the Internet causes the formation of “mental filters” which help people decide what is important to them and what is probably not important. People’s brains are adapting and forming these filters due to neural plasticity and external stimuli like the Internet. This can prevent people from attaining wisdom. Individuals need to have these mental filters when reading on the Internet because of the endless amount of information; however, having the mental filters can prevent people from picking up and reading some of the more profound information and developing deeper ways of thinking.

Since the Internet provides easy access to information, peoples’ memory capabilities are also lessening due to the brain’s plasticity; having to rely on one’s own mind for remembering information causes individuals to adapt and develop new memory techniques. Conversely, knowing that one has access to information quickly causes individuals to forget more information and lack deep thinking skills. Mike Rose, current professor of social research methodology at the UCLA Graduate School of Education and Information Studies, wrote an article titled “The Working Life of a Waitress” which discusses the skills and demands that waitressing requires. Rose talks specifically about the role of memory in a waitressing position. Waitressing requires a person to remember large amounts of detailed information. Rose discusses how, because of this, waitresses “have developed various visual, spatial, and linguistic techniques to aid memory” (20). Because of the plasticity of the brain, waitresses have been able to develop new ways of remembering the huge amounts of information that they are constantly required to know. Visual, spatial, and linguistic techniques work very well for waitresses, and they are able to build on these techniques because they use them frequently. Other people that do not often depend on their own memories have a harder time recalling information because they lack the ability to think deeply. Carr discussed this when he wrote about a series of experiments done by psychologists from Harvard, Columbia, and the University of Wisconsin. They did these experiments to test participants’ reliance on computer memory. Participants typed forty facts into a computer. Some people thought that the computer would save the items, whereas some believed that the information would be deleted. The people who thought the information would be saved recalled significantly fewer items. They also did another experiment in which a third group was added. The third group saw the exact folder that the information would be saved in; however, the group of people that recalled the most was still the group who thought the information on the computer was going to be deleted (Jaffe). This experiment shows just how reliant people are when they know that information will be available to them. The same idea can be applied to the Internet. If people know that certain information can be found quite easily on the Internet, they may be less likely to actually remember the information. If a person had to search in a library through multiple books to find one fact that they were looking for, they would probably be more motivated to remember that information because it took more time and effort to find. If they know that they can simply type it into a Google search bar and have the fact in moments, it would not seem very pressing to remember that fact. The experiment further shows that using one’s memory often will make it easier to recall information because the plastic brain will develop new ways of remembering. In contrast, knowing that that information is easily accessible through a search engine will cause peoples’ memory and deep thinking abilities to weaken.

Multitasking is another way the Internet is decreasing individual’s cognitive skills because it is lessening their problem solving skills and their ability to learn and remember knowledge. Neural plasticity causes the brain to adjust during multitasking situations which makes deep thinking difficult to achieve. Alina Tugend, author and award-winning *New York Times* columnist, discusses the effects that multitasking can have in her essay “Multitasking Can Make You Lose... Um … Focus.” Tugend expresses the idea that multitasking is making people less efficient and more stressed rather than actually saving time. Tugend says, “Multitasking is shifting focus from one task to another in rapid succession. It gives the illusion that we’re simultaneously tasking, but we’re really not. It’s like playing tennis with three balls” (Tugend). Tugend is saying that if a person were to play tennis with three balls, they could not actually watch all three balls at the same time. In reality, the person would be constantly switching their attention and focusing on one specific ball. This is what people are doing when they multitask. They are not focusing fully on both tasks that they are undertaking, whether they believe they are or not. The question is whether this is actually a bad thing and if it affects performance. Psychologists at the University of California did an experiment to see if multitasking impairs learning. The experiment involved participants carrying out a single task in which they predicted the weather based on clues they were given. The researchers scanned the participants’ brains as they made these predications and found that they were activating regions of the brain that allow people to apply knowledge to other situations later. The next experiment was similar, except the participants had to do a secondary task while predicting the weather. When faced with a secondary task, or a multitasking situation, participants activated the portion of the brain associated with habit learning. The authors of the experiment close by saying: “The results suggest that when we do two things at once, our brain conserves some strength by shutting down the advanced learning centers and reverting back to the basic ones. In multi-tasking situations, ‘even if distraction does not decrease the overall level of learning, it can result in the acquisition of knowledge that can be applied less flexibly in new situations’” (Jaffe). If someone is learning something while they are distracted, it may be difficult to apply that information to a situation later on. The brain’s plasticity is again affecting the individual’s ability to learn because the brain is switching from using advanced learning to habitual learning due to the influence of the multiple tasks that are taking place. This set of experiments further demonstrates that it is impossible to focus simultaneously on two tasks unless one is so habitual that requires no thought. People are not able to apply deep thinking when there are too many tasks involved. This information means that, while multitasking is not necessarily harmful to the level of learning, an individual’s brain cannot fully function and think critically when trying to complete too many tasks at one time. This indeed seems to be a negative side effect due to multitasking because it is decreasing people’s cognitive abilities including problem solving, deep thinking, and their ability to learn and remember knowledge.

While there are numerous benefits such as increased collaboration and access to infinite amounts of information because of the Internet, it is necessary to be aware of the negative side effects as well. The brain’s plasticity causes it to be easily influenced by outside stimuli especially commonly used factors like the Internet. This means that there are many cognitive abilities that are lost or limited because the Internet. The Internet is limiting deep thinking which is causing wisdom to be lost. It is also decreasing memory capabilities due to dependence on technological objects. The increased time spent multitasking is preventing people from focusing on one specific task, which is making it difficult to apply knowledge and think critically later on. All of these things may seem minor alone, but together it is a very negative exchange. Though it is too late to get rid of or reverse the effects of technology, it is not too late to be aware of the changes that are occurring. As a society, people need to realize, understand, and recognize that these changes are happening to prevent a large of an impact on themselves and those around them. Individuals need to increase their knowledge with technological advancements such as the Internet, not take steps backwards and reduce their own intelligence and wisdom.

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