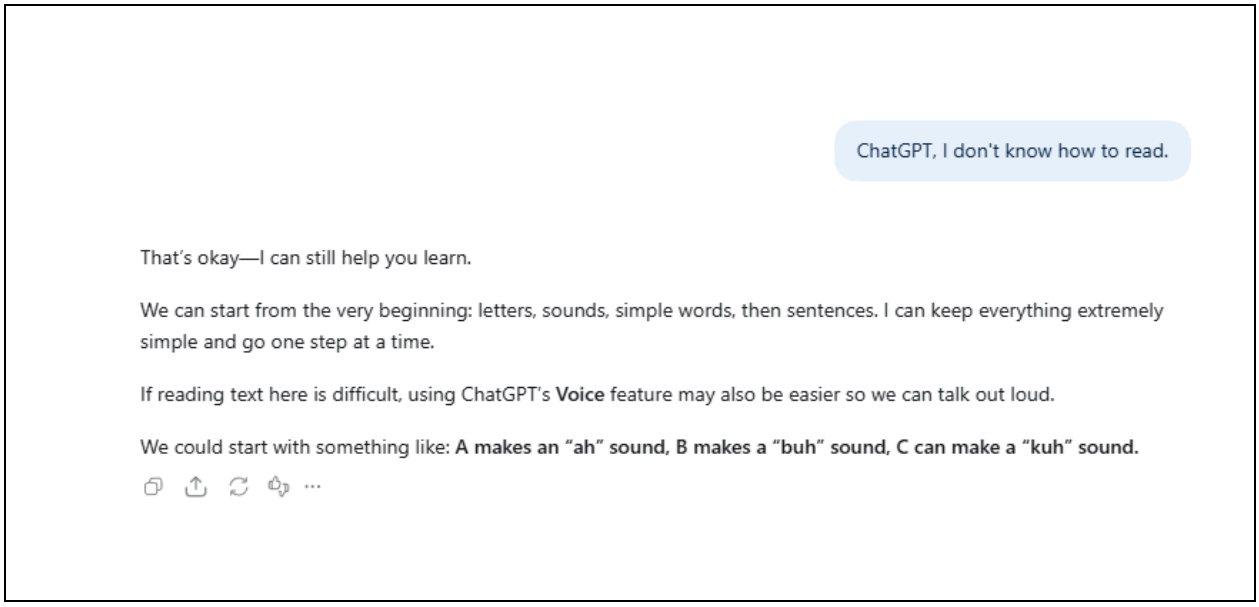


Photo Credit: Jayson Bradley

The Effects of AI: Education

The relatively recent advent and mainstreamization of AI in the form of LLM's (ChatGPT, Claude, etc) has inundated many facets of the modern world with this fascinating new technology.

This powerful new software has broadly affected many sectors and industries across the world, for better or for worse. Chat models have some benefits when used appropriately, however recent data and professional analyses indicate that overreliance on such tools can have a hugely adverse effect on developing minds and the efficacy of the U.S. education system.

So what is an LLM? An LLM stands for Large Language Model. These models interpret, consume, and process data that is sourced from the Internet and then deliver it back to the user upon request. Although powerful, the methodology of information consumption and distribution by which these LLM's operate acts as a double-edged sword. This is because the information that it accrues on the Internet could be true, partially inaccurate, or completely false in every sense. It does not know right from wrong, it aggregates data but is unable to distinguish true from false by its own assessment. If a Reddit thread has 2 million upvotes but the data within is false, the model only takes into account that it is a popular post, therefore it must be correct. As sophisticated and advanced as these models may appear, they are still very primitive in their ability to distinguish between reality and fiction; oftentimes hallucinating false information, miscalculating simple mathematics, and confidently presenting incorrect information as factual.

Rebecca Winthrop, a senior fellow and director of the Center for Universal Education at the Brookings Institution co-authored an analysis on the effects of AI in relation to youth education. The findings of the report reinforce many experts' beliefs that the overuse of this

technology is very negatively affecting developing minds' ability to absorb information and think critically, "When kids use generative AI that tells them what the answer is … they are not thinking for themselves. They're not learning to parse truth from fiction. They're not learning to understand what makes a good argument. They're not learning about different perspectives in the world because they're actually not engaging in the material."

This problem is further exacerbated by the fact that schools are trying to implement this technology into the curriculum instead of refuting and admonishing it. According to a report released by the Center for Democracy and Technology, 85% of teachers and 86% of students were found to be using AI in the 2024-2025 school year. It isn't all doom and gloom though, as AI does have potentially very positive effects on students; stimulating an interest in technology, coding, or helping with writer's block and organizational skills. The report also found that proper implementation of the software has increased student engagement and professional development. According to the report, 59% of teachers said AI allowed them to deliver more personalized learning to their students and 55% said it allowed them to have more time for direct interaction with students.

An overreliance on this technology by kids who have not fully developed literacy skills and reading comprehension only serves to stunt their academic growth and cognition. Jared Cooney Horvath, a neuroscientist presented his findings in a written testimony before the U.S. Senate Committee on Commerce, Science, and Transportation. His research found that Gen Z is "less cognitively capable than previous generations, despite its unprecedented access to technology… Gen Z is the first generation in modern history to score lower on standardized tests than the previous one." Horvath's report also states that, "multiple indicators show decline in literacy, numeracy, problem solving, creativity, and general cognitive performance among adolescents." This coincides with a correlation of children spending more than four hours on screens during a normal school day while only using said technology for school work less than half of that time. This is not an isolated event contained within the United States. An international assessment reviewing a dozen other countries showed data that parallels that of our own: an extreme decline in literacy, numeracy, and cognition among adolescents. The data indicates that, "frequent in-class computer [usage] correlates with significantly lower math and science performance across both high-income and middle-income countries."

Nick Pesek, 34, a secondary teacher at Barton Middle School had this to say in an interview, "A majority will use it [AI] when possible. A major reason why most schools are going away from homework is because none of it is the students' authentic work. It turns out to be a waste of time."

Pesek's sentiment aligns with the research concluded by Horvath and Winthrop's analyses, "They are losing critical thinking skills.I worry more about the future of under qualified people getting jobs over much more deserving people because of the use of AI. Authenticity is going to be very difficult to filter for."

To combat this, some teachers have begun a transition back to using less technology for certain assignments.

"We transitioned back to paper," Pesek said. "My classroom is 50/50 with use of technology and paper copies."

He also admits that AI is not going away and that students need to be taught how to use it and use it appropriately.

“I also believe the school day is way too long for students now, especially when we have this type of technology that can be used to cater to individual needs,” Pesek said.

One of those students who uses AI in her studies is 14-year-old Aubrey, a student at Barton Middle School.

“Whenever I have homework,I use it to explain and summarize,”she said. “It can give me the same answer as, like, the thing [textbook], but it's easier to find the answer quicker.”

Aubrey admitted that she is less likely to remember information she attains through the chat model as opposed to classic textbook research, “I probably remember less because when I get the answer, like, I just, like, put it down quicker. I don’t have to do the work to find the solutions. I wrote about this too. It can take away creativity or something like that. Like, it takes away your creativity by having it generate it for you.”

“I think it's important not to replace the critical thinking in the core kind of mastery of skills that you may have and outsource it to our products so I think what I mean by that is it's great to use these tools to save you time or to make you more efficient or more productive,” Mitchell Bradley, an account director at OpenAI said. “At the end of the day; overreliance, I think, ultimately strips the ability to be able to think or act or maintain these sorts of skills for yourself.”

When asked about the potential pros and cons, Bradley responded, “It can really amplify your impact or magnify your impact in that you can delegate research to these tools, you can delegate writing first drafts, you can use it as a peer of yours to take a first look or a second pass on work that you've done I think it really can allow people who are trying to be creative, the ability to spend their time doing the highest leverage things or doing the things that make them the most creative and using it as an as a tool and kind of supplement the process. The other thing that's really wonderful is that maybe– just to give a parallel; before the Internet, the only way you could learn about things is from books. What if you don't live near a library? What if you don't have parents who can drive you to the library? What if the library near you doesn't carry the books. Then the Internet came out and it democratized access to information. I think these models have done even more that, democratized it in a way that is hyper personal, relevant and instantaneous. And so in the split of the staff of your fingers and across the world has access to intelligence in their pocket, and so I think the barrier to entry to being able to make meaningful contributions has never been easier. The negatives or the downside again, is that I think it's never been more important to be human and what I mean by that is when anyone has access to intelligence, everyone has access to intelligence, and therefore the ability to differentiate to distinguish yourself having taste has never been more important, especially in things that are inherently creative Writing mixed media right these things are very important and they're deeply human. And so being able to express yourself being able to express your emotions being able to express your personal experience. I will never be able to do this and it will never be as authentic as human beings, so it's very important that you know like they say in Spider-Man, ‘with great power comes responsibility.’ You need to be able to use these tools effectively, and not ultimately let them cannibalize your ability to be human.”

In relation to young students specifically and their utilization of AI chat models, Bradley emphasized the importance of not introducing this tech too early to developing minds, “It's important to set your kids up for success and part of that is teaching them how to responsibly use these tools. I think the verdict is still out there on is just general safety or guidelines about how and when and where these products should be consumed, and that's not for me to decide

we can use science and I'm sure like government will have a role on this but for example, like you know, it's not great to give a young kid an iPad all day every day and I think in similar ways how we allow kids to leverage this technology is important so that you're striking the right balance between allowing them to learn and apply critical thinking to their studies, but not becoming overly reliant at such a young age that they can't cultivate these sorts of skills for themselves. Maintaining critical thinking and being able to learn and think for yourself is super important and I think that these tools may conflict with kids' ability to build those strong connections in their heads early on and it's probably not something that they should be relying on until they're old enough to know better."

LLM's are a developing technology, and Winthrop, Horvath, Pesek, and Bradley all agree that this tech and the usage of it isn't going away; its usage is only accelerating; and it is more important than ever that it is used responsibly and appropriately to ensure that developing minds don't lose their ability to think for themselves.



Photo Credit: Jayson Bradley

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