Exploring the Potential Benefits, Drawbacks, and Implications for Artificial Intelligence, including ChatGPT, in Virginia's Classrooms

VASCD's Position on AI's Impact on Teaching and Learning

May 2023

Virginia ASCD (Association for Supervision and Curriculum Development), an affiliate of ASCD, is a non-profit membership organization dedicated to advancing excellence in Virginia's schools. We have 1,800 members in Virginia who are teachers, superintendents, teacher educators, school leaders, students, and central office administrators. We represent a variety of roles and share a single purpose - ensuring a world-class education for every Virginia student.

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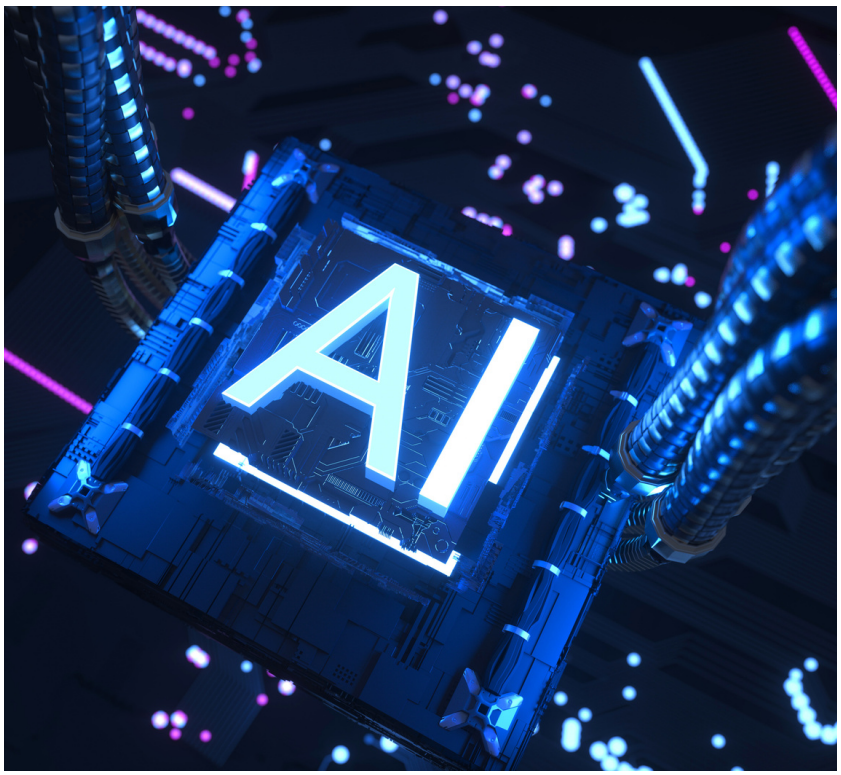
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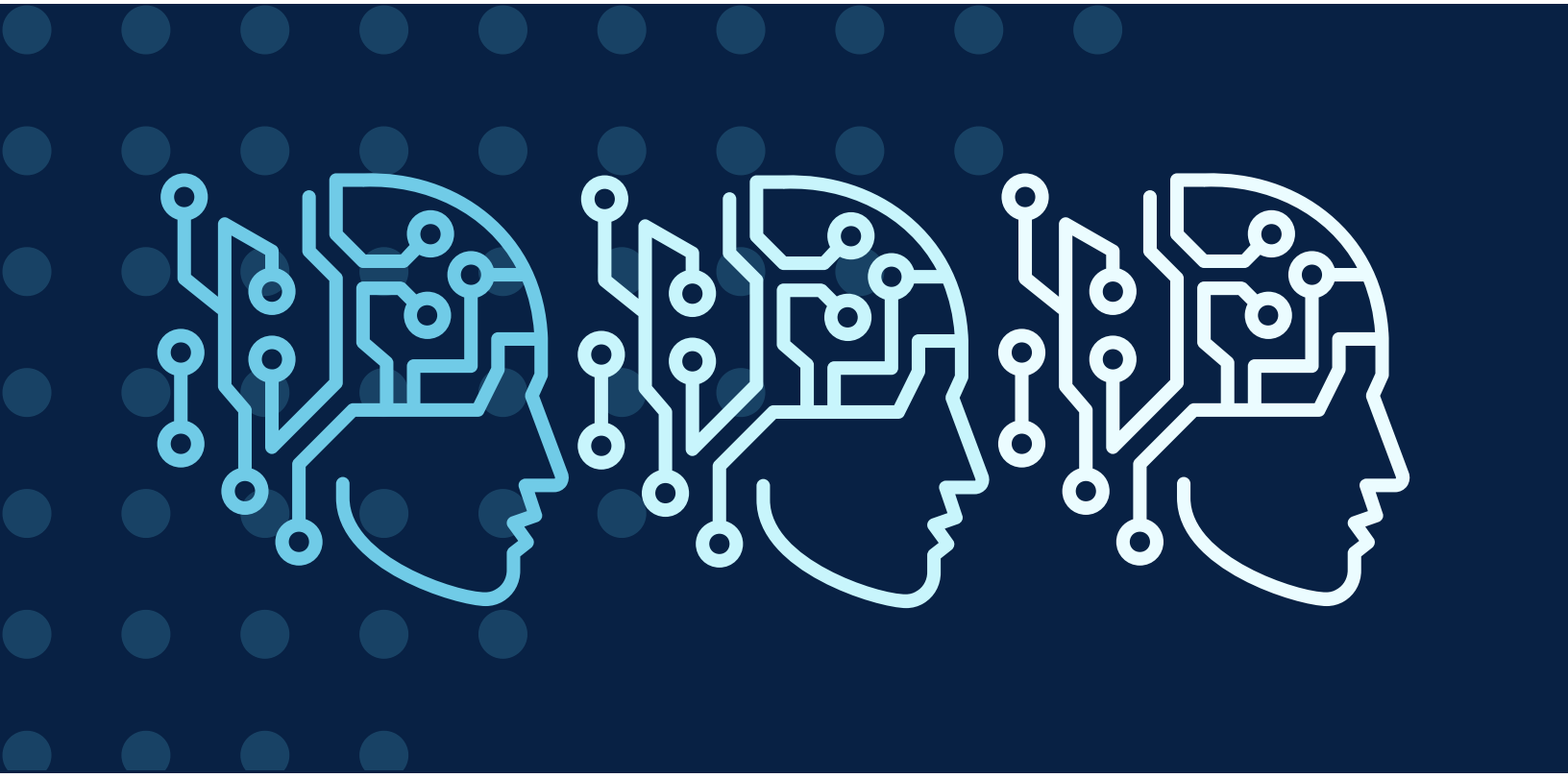
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Introduction

Artificial Intelligence (AI) is quickly becoming ubiquitous in all aspects of how we conduct business within our daily lives. Although AI shows up in many spaces, with many content generation outlets - and more created every day - the purpose of this position brief is to put a focus squarely on ChatGPT. Our aim is to provide information about ChatGPT, to unpack its advantages, potential, and aspects for which to be mindful, and to provide a position statement from VASCD, including implications and recommendations for the variety of stakeholders we support on a daily basis. This position brief will also explore ChatGPT primarily through the lens of teaching, learning, and leading.



In this position statement, we will explore what ChatGPT is and how it works, and we will conduct a SWOT analysis to evaluate its strengths, weaknesses, opportunities, and threats. We will begin by providing an overview of ChatGPT and its development, followed by an explanation of its architecture and functioning. We will then analyze the potential benefits and drawbacks of using ChatGPT in various contexts, including its impact on education and its potential to replace human workers in certain industries. Finally, we will conduct a SWOT analysis to assess ChatGPT's current position and identify areas for improvement or further development.



Overall, this position statement aims to provide a comprehensive understanding of ChatGPT and its potential implications for the future of AI technology in education with an emphasis on recommendations for our stakeholders.

What is ChatGPT?

ChatGPT is a large language model developed by OpenAI, which is an advanced type of artificial intelligence software. It is designed to understand natural language and generate responses that sound like they were written by a human. ChatGPT has been trained on a huge amount of text data, such as books and articles, so it has a lot of knowledge that it can draw on to answer questions and hold conversations with people. Its purpose is to provide users with helpful and informative responses to their queries, and to assist them with various tasks.

In other words, ChatGPT is like a really smart computer that can talk and have conversations with people; it can understand what they're saying and give them helpful answers. Its job is to give people information when they need it.



It uses its extensive knowledge base, which it acquired through reading a vast amount of text data, to generate a response that it "believes" is relevant and accurate.

How does ChatGPT generate its responses?

ChatGPT uses a process called natural language processing to generate its responses. Natural language processing is a way for computers to understand and interpret human language. When someone asks ChatGPT a question or inputs a prompt, the software analyzes the text and uses advanced algorithms to predict the next words, which often closely resembles writing expressing human thought. It then uses its extensive knowledge base, which it acquired through reading a vast amount of text data, to generate a response that is relevant and accurate. The response is designed to sound as natural and human-like as possible, even though it was generated by a machine.

In other words, ChatGPT uses a special way of communicating like humans called natural language processing. When someone asks ChatGPT a question or says something to it, the computer predicts what they mean by looking at the words they used. Then, it uses what it has learned from reading a lot of books and articles to come up with a good response. The response might sound like it was written by a person even though it was generated by a computer.

SWOT Analysis

SWOT analysis is a strategic planning tool used to evaluate the Strengths, Weaknesses, Opportunities, and Threats of a business or project. It involves identifying the internal and external factors that affect the success of the organization or project.

- **Strengths**: internal factors that give the organization or project an advantage over its competitors, such as a strong brand reputation, loyal customer base, or skilled workforce.
- **Weaknesses**: internal factors that place the organization or project at a disadvantage, such as outdated technology, high employee turnover, or a lack of funding.
- **Opportunities**: external factors that provide opportunities for growth and expansion, such as changes in consumer behavior or new market trends.
- **Threats**: external factors that pose a risk to the organization or project, such as economic downturns, increased competition, or changes in regulations.

By conducting a SWOT analysis, organizations and businesses can gain a better understanding of their current position and develop strategies to capitalize on their strengths, address their weaknesses, take advantage of opportunities, and mitigate potential threats

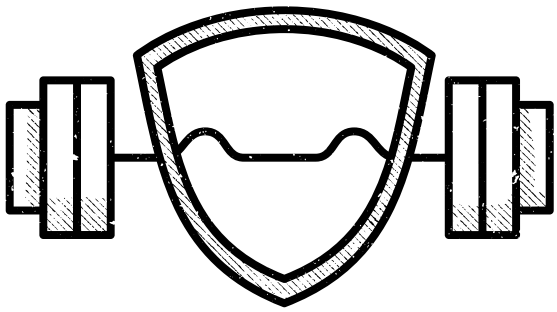
Strengths

ChatGPT has several strengths for education:

- **Access to a vast amount of knowledge**: ChatGPT has been trained on a huge amount of text data, which means it has access to a lot of information. This can be very helpful for students who need to research a particular topic or have a question about something they are learning.
- **Personalized learning**: ChatGPT can be customized to provide personalized learning experiences. By analyzing a student's previous interactions and learning history, ChatGPT can provide tailored responses and recommendations to help them learn more effectively. Additionally, ChatGPT can create model responses to nearly any given prompt for nearly any given audience. These can be used to look for patterns in what might be deemed "appropriate" responses.
- **Immediate feedback**: ChatGPT can provide immediate feedback to students, which can be very helpful for their learning process. If a student has a question or is struggling with a concept, they can ask ChatGPT and receive a response right away, emulating personalized tutorials from humans.
- **24/7 availability**: ChatGPT is available 24/7, which means students can access it at any time. This can be especially helpful for students who are working on projects or assignments outside of normal school hours.

Strengths

- **Engagement**: ChatGPT helps increase student engagement by providing interactive and engaging content that captures their attention. This can help students stay motivated and interested in learning.
- **Accessibility**: ChatGPT can make learning more accessible for students with disabilities or other learning challenges.
- **Efficiency**: ChatGPT can help educators save time and resources by automating routine tasks, such as grading and data analysis. This can free up time for educators to focus on more complex and high-value tasks, such as lesson planning and student engagement.
- **Fostering creativity**: ChatGPT opens new possibilities for student learning, such as interviewing fictional or historical characters that the chatbot can impersonate. We have only begun to understand the potential of this technology to bring new learning experiences into classrooms.



Overall, ChatGPT's strengths in accessing knowledge, providing personalized learning experiences, giving immediate feedback, and being available 24/7 can be very beneficial for education.

Weaknesses



Although ChatGPT has many strengths for education, it also has some potential weaknesses:

- **Lack of human interaction and a moral compass**: Although ChatGPT can provide helpful responses and recommendations, it cannot replace the benefits of human interaction. Human teachers and mentors can provide emotional support, guidance, and motivation that a computer program cannot. The absence of a moral compass has many implications, and users should have a full understanding of this limitation.
- **Limited understanding of context**: ChatGPT's responses are based solely on the words it has been trained on, which means it may not always understand the context of a question or prompt. This can lead to inaccurate or irrelevant responses.
- **Limited ability to teach complex concepts**: ChatGPT can provide information and explanations, but it may not be able to effectively teach complex concepts. It is important for students to have access to human teachers and resources to ensure they fully understand difficult topics.
- **Dependence on the quality of training data**: ChatGPT's responses are only as good as the quality of the data it has been trained on. If the training data are biased or contain inaccuracies, ChatGPT's responses may also be biased or inaccurate.

Weaknesses

- **Data Bias and "Hallucinations"**: AI algorithms are only as good as the data they are trained on, which means that if the data used to train an AI model are biased or incomplete, the model will produce biased and incomplete results. Additionally, it can/will give fake websites, wrong websites, or false citations. ChatGPT responses typically are authoritative and confident, even when they are inaccurate.
- **Data Security and Misuse of Personal Information**: ChatGPT relies on massive amounts of data, which makes them vulnerable to data breaches, hacking, and other security threats. If sensitive data are accessed by unauthorized individuals or entities, it can lead to significant privacy violations and other issues. If personal information is misused or falls into the wrong hands, it can lead to significant privacy violations and other issues.
- **Invasive Surveillance**: ChatGPT can be used for surveillance purposes. AI applications can pose a significant risk to personal privacy, especially if the data are misused or fall into the wrong hands.
- **Lack of Transparency**: Some AI models can be difficult to understand and interpret, which can make it challenging to identify how they arrived at their conclusions. This lack of transparency can make it difficult to identify and correct errors or biases in the data.

Overall, ChatGPT's weaknesses include its lack of human interaction, limited understanding of context, limited ability to teach complex concepts, and dependence on the quality of training data.

Opportunities

In addition to leveraging the strengths listed above, here are a few examples of how ChatGPT can be used in education:

- **For younger students**: ChatGPT can be used to help younger students learn to read by providing them with interactive reading experiences. For example, a student could practice reading a story to ChatGPT and receive feedback on their pronunciation and comprehension.
- **English Language Arts**: ChatGPT can be used to help students with their writing by providing them with feedback on their grammar, syntax, and word choice. For example, a student could ask ChatGPT to review their essay and provide suggestions for improvement.
- **English Language Learners**: ChatGPT can easily re-level texts or create new texts at lower reading levels that explain concepts taught at upper grade levels (e.g. an EL teacher created an article written at a 5th grade level explaining credit cards, interest rates, or other related concepts for a high school Personal Finance course).
- **Science**: ChatGPT can be used to help students learn about science concepts and phenomena. For example, a student could ask ChatGPT to explain the process of photosynthesis or provide examples of different types of rocks.

Opportunities

- **Math**: ChatGPT can be used to help students with math problems and concepts. For example, a student could ask ChatGPT to provide step-by-step instructions for solving a particular type of equation or to explain the concept of fractions.
- **History**: ChatGPT can be used to help students learn about historical events and figures. For example, a student could ask ChatGPT to provide information about a specific historical figure or to explain the causes and effects of a particular historical event.



A few more opportunities include supporting Universal Design for Learning, identifying patterns in data, providing immediate feedback for students, generating automated scoring for some assessments, and jump-starting instructional planning. Overall, ChatGPT can be used in a variety of ways to support student learning across different subject areas.

Threats



As an Artificial Intelligence model, ChatGPT is not intended to pose any threats to education. In fact, ChatGPT can be used as a tool to enhance and support education by providing access to information, answering questions, and facilitating learning through conversation.

There may be concerns about the potential misuse of AI technology in education, such as the use of AI-powered chatbots to replace human teachers or the potential for bias in AI algorithms that are used in educational decision making. There is also the threat of academic dishonesty. It is important for developers and educators to be aware of these potential risks and work to mitigate them through responsible development and implementation of AI technology in education. Additionally, current tools are already embedding AI, and some provide the option to the administrator to turn it on or keep it off, but it is not safe to assume all AI will operate this way.

Data privacy is always a concern, particularly to platforms as diverse as banking, online shopping, and email. AI is tested in beta versions - learning by doing - and is far from "perfect." Access to these types of chatbots is not guaranteed, and there is the distinct possibility that what is free now and easy to use may eventually come with a financial price tag.

Implications

The goal of this document has been to explore the implications of ChatGPT and other language models as they relate specifically to education. Clearly, ChatGPT has the potential to revolutionize the way we communicate, learn, and access information. Its ability to generate human-like responses has already shown promising results in chatbot applications, language translation, and text generation; however, this also raises concerns about the ethical implications of such advanced technology, including the potential misuse of ChatGPT by students and educators. Although the implications of ChatGPT are significant, it is crucial to proceed with caution and address the ethical considerations associated with this technology.

Although there are many potentially useful applications of AI-generated text as scaffolding for students and models for students, there are two types of situations in which we need students to do their own writing, without the aid of AI:

1. as they are developing their own writing skills (so that they can practice these skills and get specific feedback to improve their writing), and
2. when they are writing to demonstrate their understanding of ideas for assessment purposes.

Implications

The process of writing itself helps us make sense of new information, synthesize ideas, organize our thoughts, consider our purpose and audience, and make meaning of information; writing is evidence of thinking, learning, and mastery.

Decades of cognitive science have taught us that reading (decoding) and writing (encoding) are two sides of the same coin and are intrinsically connected in our brain functions. Clear writing is clear thinking, and learning to write is also about learning to think critically and clearly and conveying ideas to others effectively.

Although these AI programs will only get increasingly sophisticated and will undoubtedly become an ubiquitous part of students' lives in the future, adults who can still write on their own will continue to have a considerable advantage over those who can not.

Beyond preparing students for high-stakes assessments that involve writing (e.g. state assessments, AP exams, IB assessments, and SAT writing exams) and writing in college, the cognitive demands of the Information Age require adults who can synthesize ideas for themselves.

Implications

Although there are many productive uses of AI-generated text programs, we still need to find ways for students to develop their writing skills, demonstrate their writing skills, and demonstrate their understanding of concepts through writing without the support of these algorithms. Whether that involves students engaged in some writing by hand in class or the use of emerging technologies that either block the use of these programs in targeted ways or identify the use of AI-generated text, we will still need to carve out places for students to write independently.



ChatGPT has the potential to transform the way we approach education. Its ability to generate human-like responses and engage in meaningful conversations can enhance learning experiences and provide personalized support for students; however, the use of ChatGPT in education also raises concerns about the ethical implications of relying on AI for teaching and learning, and the potential for exacerbating existing inequalities in access to education.

VASCD POSITION STATEMENT

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We believe that students should think freely, cite sources, maximize technology, and learn to use AI as a partner and co-constructor of content. We believe that the process for students' learning, and the thinking involved throughout that process, are far more important than the product produced as evidence of that thinking and learning. We believe that AI is increasingly ubiquitous and contains a powerful potential that should be harnessed by educators. We also believe that AI, and ChatGPT in particular, is not a replacement for high-quality instruction and assessment.

We recognize that AI will assist this and future generations with learning, creating content, and communicating. Therefore, we recognize without hesitation that AI will have an impact on teaching and learning in Virginia's classrooms. With appropriate guardrails for protection, we position ourselves and our students to engage and co-exist with AI.

VASCD is the premier entity for teaching and learning in Virginia, and our focus on creating the conditions for the high-quality instruction our students deserve remains at the forefront. Our mission is to support the capacity of educators to deliver on that promise, regardless of the context, challenges, and opportunities that await. Our aim to see deeper learning, student engagement, and authentic assessment in all classrooms stays intact in the age of AI.

AI offers us an opportunity to enhance our ability to deliver on deeper learning, student engagement, and authentic assessment and should become a partner for us as we co-construct a reality with AI as part of it. It is not a tool to replace, nor should it be used as a tool for ineffective practices to be implemented more efficiently. Instead, we must use our collective experience and expertise to leverage this opportunity to improve our ability to create future-ready students through life-ready experiences, including how they interact with and build upon AI.

VASCD is committed to working collaboratively with educators throughout Virginia to answer the question: What do deeper learning, student engagement, and authentic assessment look like in the age of AI? Adults should take time to explore and understand AI to assist with developing appropriate guardrails for our youth that protect privacy and maintain academic integrity. Within these appropriate guardrails, stakeholders at all levels (including but not limited to teachers, students, caregivers, out of school time providers, school leaders, district and division administrators, employers, and legislators) should maximize the potential of AI.



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