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## Don't Panic! ChatGPT Doesn't Have All the Answers.

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## **“Don’t Panic:” ChatGPT Doesn’t Have All the Answers**

### **Introduction**

The rapid advancement of technology has led to the integration of artificial intelligence in various industries, including education. One of the most notable examples of AI in education is the use of language models, such as OpenAI’s ChatGPT (ChatGPT, n.d.; OpenAI, n.d.). ChatGPT can be used for a variety of tasks, including text completion, question answering, and language translation. However, its ability to mimic human writing raises concerns about the potential for plagiarism and the loss of critical thinking skills among students. Additionally, ethical issues surrounding the use of ChatGPT, such as the potential for bias and the impact of employment opportunities for human writers, exist. Despite these concerns, ChatGPT can be utilized as a valuable educational tool. For example, it can be used to assist in the grading of written assignments, to provide feedback on student writing, and as an aid for language learners. ChatGPT can be useful for creating educational content and to generate personalized learning experiences. The integration of ChatGPT in management education can serve as a foundational step in preparing students for AI’s border applications in the professional workplace. Educators can provide students with hands-on exposure to tools they may use in their future careers, equipping students with tool proficiency and enabling them to make informed decisions regarding AI’s role in professional scenarios.

### **Literature Review**

#### **The Post-Pandemic Classroom**

The COVID-19 pandemic required institutions of higher education to rapidly develop solutions to deliver courses while accommodating physical distancing and quarantine mandates. In 2020, universities across the US were forced to shift from their current face-to-face classes to an online learning model. The delivery of educational content and instruction via the internet and related applications and technologies (Adedoyin & Soykan, 2020) is not new. However, the pandemic increased the scope of online delivery both in practice and in the number of educators required to quickly become proficient. Almost overnight, instructors adopted a new vernacular with educators-across the country struggling to differentiate between terms like “distance learning,” “online,” “hybrid,” and “remote.”

The migration to digital delivery within higher education is not a new phenomenon. COVID 19 simply served as a catalyst which accelerated the migration (Kopp et al., 2019). When executed correctly, the adoption of online platforms can enhance the quality of education offered by institutions and promote individual student success. Investment in and implementation of digital instructional methods undoubtedly offers benefits by increasing accessibility and lowering education costs, increasing overall quality of learning, and equipping students with the practical skills necessary to compete in increasingly virtual global markets (Appana, 2008). Many online learning opportunities designed as emergency responses to the pandemic, having demonstrated their value, are continuing to be offered post-pandemic.

While the digital transformation occurring in many higher education settings proposes great potential benefit, increased use of technology within classrooms (be they virtual or live) poses concerns for educators and students. When exams began to be administered online during

the pandemic, instances of cheating increased (Bilen & Matros, 2021). Definitions of plagiarism within secondary and higher education have been challenged by the digital revolution, as increased access to information makes attribution of ideas more difficult (Evering & Moorman, 2012). Within this already turbulent landscape, a potential new disruptor has arrived in the form of ChatGPT. ChatGPT is not the only disrupting technological tool on the market. Other, similar models, such as Google's Bard AI, are quickly carving out their own niches in the market. The rapid circulation and adoption of AI models underscores the importance of understanding these models to harness their potential responsibly and effectively. Collectively, these tools provoke concerns about academic integrity and apprehension about the future of higher education.

## **What is ChatGPT?**

Chatbots are simple artificial intelligence systems which are designed to emulate human conversations with human users. Users may engage with chatbots for purposes of entertainment, customer support, educational application, and collection of information (Adamopoulou & Moussiades, 2020). ChatGPT has gained popularity for its startling ability to mimic human writing in response to user-generated prompts. ChatGPT is a relatively advanced chatbot, able to produce text in a variety of languages and styles (Deng & Lin, 2022). ChatGPT can process natural language queries and create conversational, human-like replies using information it has "learned." Both the abstract and a large part of the general introduction sections of this manuscript were written by ChatGPT. We entered the text of this paper and a prompt such as "Write an introduction to this paper," and in a matter of seconds, the introduction was generated. We hope you were not too impressed by the introduction.

Both ChatGPT and GPT3, an earlier model which provides the conceptual basis for ChatGPT, are natural language processing models (NLPs) (Deng & Lin, 2022). Based upon the neural communication process used by the human brain, NLP systems are designed to understand the language of documents which are provided to the program and to make human-like, relevant conversational responses (Deng & Lin, 2022). ChatGPT and its parent model are autoregressive NLPs. Autoregressive (AR) language models generate language by estimating, based upon what they have "learned" from the data provided to them, the statistical likelihood that a word will follow in sequence (Yang et al., 2020). AR models such as ChatGPT are AI systems which create predictive text.

AI systems which perform predictive tasks are often trained using supervised learning (Jiang et al., 2020). Machines that learn through supervised learning are provided with sets of data, with which they are trained to make classifications (Lloyd et al., 2013). In 2017, researchers at OpenAI proposed that AI systems be trained using reinforcement learning supported by human feedback (Christiano et al., 2017). ChatGPT was trained in this manner. In its own words, "ChatGPT was trained using a process called machine learning. The basic idea is that the computer is given a large dataset of text, such as books and articles, and it learns patterns and relationships in the language. This training process is done using a type of machine learning called deep learning, which involves training large neural networks. The neural network is made of layers of interconnected nodes, called neurons, that are designed to process and analyze the input data. During the training process, the neural network is exposed to the dataset and it learns to make predictions about the next word in a sentence or the next character in a text, based on the patterns it has learned from the data. As the neural network makes more and more accurate predictions, it becomes better at understanding and generating human language" (OpenAI, n.d.).

ChatGPT users may also participate in providing the model feedback by thumbs-upping or thumbs-downing the output produced by the bot in response to the user's prompt.

The utility of ChatGPT has gone viral. On November 30, 2022, OpenAI, a San Francisco-based center for artificial intelligence research, launched a prototypical model of its latest chatbot, ChatGPT. Within one week, one million users created ChatGPT accounts, a growth rate outpacing that of tech giants such as Facebook and Netflix (Haque et al., 2022).

In a matter of months, the tool has been cited as the author of academic papers, adopted by professionals in the workplace (realtors have used ChatGPT to develop real estate descriptions and called the model indispensable) and heralded as the end to multiple occupations (ChatGPT Could Make These Jobs Obsolete: 'The Wolf Is at the Door' | AllSides, n.d.; Real Estate Agents Say They Can't Imagine Working without ChatGPT Now | CNN Business, n.d.; "Tools Such as ChatGPT Threaten Transparent Science; Here Are Our Ground Rules for Their Use," 2023). Though ChatGPT is astounding early adopters with its ability to perform a broad range of tasks and to generate language which reads as nearly human (Haque et al., 2022), ChatGPT is not without limitations. Because ChatGPT's datasets only include (at this time) information up to 2021, as opposed to obtaining additional information from the Internet, responses generated by ChatGPT may contain inaccurate or untimely information (Deng & Lin, 2022). It is possible that the provided datasets contained biases, which may be reflected in ChatGPT's outputs (Deng & Lin, 2022). As the data used to train ChatGPT may reflect problematic aspects of human discourse, ChatGPT may inadvertently perpetuate stereotypes or demonstrate unfair preferences. If enough training data has been sourced from a particular culture or region, ChatGPT may lean towards that culture's perspective. If a certain viewpoint or narrative is particularly prevalent in the training data, the model may favor it over less popular, but more accurate, information.

Additionally, ChatGPT is occasionally prone to hallucinating. In AI literature, a hallucination refers to an output which is illogical or irrelevant to the input (Ji et al., 2022). Narayanan and Kapoor (2022) describe ChatGPT as a "a bullshit generator. But it can still be amazingly useful," and paralleled philosopher Harry Frankfurt's essay "On Bullshit," in describing ChatGPT's attempt at legitimacy with little respect for the truth. In this regard, should it be any surprise that the next incarnation of Internet search should be a tool that is empathically capable of misinformation disguised as fact?

## **Use of ChatGPT in Academia**

Students, professors, and journalists alike were quick to realize the potential implications of ChatGPT on higher education upon the model's release. ChatGPT can, and has, written entire papers of publishable quality (Zhai, 2022). A student at Northern Michigan University used the AI to craft an essay which was deemed "the best paper in the class" (Huang, 2023). Christian Terwiesch, professor at the University of Pennsylvania, found that ChatGPT is capable of passing one of the university's MBA program exit examinations (Terwiesch, n.d.). In fact, ChatGPT itself can "devise critical questions, the very questions that educators in different disciplines would use for their students' evaluation of competencies" (Susnjak, 2022:P2). Author Stephen Marche says that "the college essay is dead," and that "nobody is prepared for how AI will transform academia" (Fowler, 2022). Academic researchers fear that ChatGPT threatens scientific integrity. The bot can generate convincing scientific abstracts (Gao et al., 2022). Scientists are concerned that researchers may present papers written by ChatGPT as written by

themselves, or that they may use ChatGPT to create factually incorrect work (“Tools Such as ChatGPT Threaten Transparent Science; Here Are Our Ground Rules for Their Use,” 2023).

Some question whether the bot may render the institution of higher education, as well as other creative institutions, obsolete (Wingard, n.d.). A study of early user perceptions of ChatGPT found that, while some believe the technology to be “disruptive,” others believe the AI could have positive implications for education (Haque et al., 2022). ChatGPT and related AI systems raise concerns about the utility of a college degree earned in accordance with current standards for higher education. If a student can obtain a degree by using ChatGPT to complete the majority of his or her major assignments, that student may not be truly qualified to work in the field to which their college degree pertains.

### **Suggestions for Implementation**

“Teachers adapted to the calculator. They can certainly adapt to language models (Narayanan, 2022).” ChatGPT perhaps illuminates a fundamental flaw with our education: educators espouse “critical thinking” but in practice often require regurgitation in the form of monotonous writing assignments or repetitive questions (Narayanan, 2022; Wyse, 2021). ChatGPT and NLPs are only as good as the depth of their prompt.

Because they filter and categorize data not human insight, the average conglomeration of the existing conclusions from the information it “learns” is limited. From a pedagogical standpoint, this technology has the potential to proliferate throughout personal and professional lives as a crutch for the weak and a tool for the mentally adroit. In instruction, the use of practical, experiential, and thought problems that underpin philosophy to hone minds to use the technology and create new leaps in human learning can be employed. A proactive approach by educators can provide acknowledgement and exposure to this disruptive technology preparing students for the realities of the modern world and harnessing the potential of available tools. The modern professional sphere increasingly relies on technology and values adaptability, problem-solving, and creative thinking. Utilizing ChatGPT as a teaching tool could provide students with a competitive edge. As industries evolve in the wake of AI, students who are equipped with the ability to utilize these tools will differentiate themselves.

As management educators, we should recognize the utility of ChatGPT and integrate it within the classroom. Doing so will allow us to equip students with the skills and knowledge relevant to the increasingly digitized professional landscape and give a nod to the advice specialists have stated for decades: traditional instructional methods such as lectures, multiple choice, and rote memorization are not the most effective for learning. Our educational future will inevitably involve sophisticated tools that mimic truth, and these tools will necessitate a greater level of expertise to determine when AI’s emphatic statements do not represent reality.

### **Classroom Implementation**

To begin learning about effective methods to implement ChatGPT into classroom exercises to reinforce originality and critical thinking, we started with a basic discussion board assignment (students must create a discussion post and reply to three peers’ posts). We first needed to familiarize students with the chatbot, so we asked ChatGPT to generate a step by-step lesson plan for demonstrating effective use of ChatGPT within the classroom. Below (see Table 1) is the lesson plan ChatGPT generated:

Table 1: ChatGPT Generated Lesson

<p><b>Objective: Students will be able to use ChatGPT to improve their research and writing skills.</b></p>
<p>Materials Needed:</p> <ul style="list-style-type: none"> <li>Internet access</li> <li>Access to ChatGPT API</li> <li>Writing prompts or research topics</li> </ul>
<p>Step 1: Introduction (10 minutes)</p> <ul style="list-style-type: none"> <li>Introduce the concept of GPT-3 and its capabilities</li> <li>Explain how ChatGPT can be used in the classroom</li> <li>Provide examples of how ChatGPT can assist with research and writing tasks</li> </ul>
<p>Step 2: Demonstration (20 minutes)</p> <ul style="list-style-type: none"> <li>Show students how to access ChatGPT</li> <li>Provide a demonstration of how to use ChatGPT to generate text on a topic</li> <li>Have students practice using ChatGPT to generate text on a given topic</li> </ul>
<p>Step 3: Class Activity (30 minutes)</p> <ul style="list-style-type: none"> <li>Divide the class into small groups</li> <li>Provide each group with a writing prompt or research topic</li> <li>Have each group use ChatGPT to generate text on their given topic</li> <li>Have each group present their findings to the class</li> </ul>
<p>Step 4: Conclusion (10 minutes)</p> <ul style="list-style-type: none"> <li>Review the key takeaways from the lesson</li> <li>Encourage students to continue using ChatGPT to improve their research and writing skills</li> <li>Assign homework or in-class writing prompt that utilizes ChatGPT</li> </ul>
<p>Step 5: Follow-up (as needed)</p> <ul style="list-style-type: none"> <li>Review the work and provide feedback</li> <li>Address any questions or concerns that the students may have about using ChatGPT</li> <li>Encourage the students to continue using ChatGPT in their research and writing tasks</li> </ul>

After a review in the classroom and a general discussion of the merits, deficiencies, and prospects of ChatGPT, two classes were given a prompt (create a mission and vision statement for a local company or write a review of the difficulties involved in bureaucratic management as it applies to Weber). Students posted their ChatGPT responses on a message board and were then asked to respond, using ChatGPT to three of the posts. Their observations of the responses were expected. They showed little increasing insight, were prone to generalities, and converged on the mundane. However, the exercise did require students to review the material, critically evaluate the subject matter, and form informed conclusions. We also asked ChatGPT to generate a list of additional ideas for ChatGPT use within management classrooms. The bot proposed the following suggestions (see Table 2):

Table 2: ChatGPT Generated Lesson: Additional Suggestions

1. Research assistance: ChatGPT can be used to assist students with their research by generating text on a given topic. This can save students time and help them to focus on the analysis and interpretation of their research.
2. Essay writing: ChatGPT can be used to help students generate ideas and write essays on management-related topics. It can also be used to assist students with grammar, spelling, and structure of their essays.
3. Business plan development: ChatGPT can be used to help students develop their business plans by generating text on key aspects such as market analysis, financial projections, and management strategies.
4. Case study analysis: ChatGPT can be used to assist students with analyzing case studies by generating text on key issues and recommendations.
5. Simulation games: ChatGPT can be used to develop simulation games for students to practice decision making and problem solving in management scenarios.
6. Test preparation: ChatGPT can be used to help students prepare for exams by generating sample test questions and answers.
7. Group work assistance: ChatGPT can be used to help students generate ideas and develop group projects, presentations, and other team-based assignments.
8. Self-assessment: ChatGPT can be used to help students assess their own understanding of the material by generating text based on their own input.

## Discussion

“The calculator didn’t destroy math (A Conversation among Duke Thompson Writing Program Faculty about ChatGPT, n.d.).”

Researchers are working to develop methods to detect text generated by NLP models, but these methods may be flawed and may return false-positive identifications (Fröhling & Zubiaga, 2021). Some school districts, such as Seattle Public Schools, New York City Public Schools, and Los Angeles Unified School district, have banned ChatGPT outright from school servers (Nolan, n.d.). Even if higher education administrators ban ChatGPT and similar programs, crafty students may find ways to access the models. Rather than fear ChatGPT and related systems as dangerous threats to academic integrity, academics should embrace AI’s capabilities and seek to creatively utilize technology within their classrooms. If assignments are created such that students may complete them entirely with AI, and if this is a concern for instructors, professors should consider the functions ChatGPT and similar bots are able to perform as well as what classroom assessments are measuring.

Terwiesch (n.d.) believes that, as a graduate instructor, he has a responsibility to provide his students with assignments which are sufficiently challenging. Terwiesch advocates for the utilization of ChatGPT within graduate coursework, and for subsequently challenging students to produce works of greater quality. “To the extent that we believe that ChatGPT gives the students a head start on their homework,” he says, “it is my job to hold them accountable to a higher standard” (Terwiesch, n.d.). Ironically, we educators hold ourselves to a somewhat different standard than that which we impose upon our students. Pearson has offered AI-enabled grading of essays for quite some time (Writing Space, n.d.).

ChatGPT is a disruptive technology in management education. This disruptive innovation will require educators to adapt and innovate teaching, elevating the sophistication of what they do (Christensen, 2006). Ignoring or resisting this technology could be futile. Despite any efforts

to block its use, students will favor and will find ways to access the new technology because it offers students an opportunity to complete coursework effectively, imaginatively, and in less time than is possible without AI assistance. ChatGPT, then, provides academic institutions with an opportunity to engage in disruptive innovation by evaluating the state and goals of higher education. If open to new experiences, educators may find ways to leverage ChatGPT to develop capable, critical-thinking, creative minds.

ChatGPT is a very capable tool, but it has limits. The interpersonal and attitudinal skills which employers and graduates alike rank as more important than knowledge skills (Saunders & Zuzel, 2010) cannot yet be replicated by AI. Some contributions and capabilities are uniquely human. The advent of ChatGPT should not be cause for panic but for curiosity. Let us save our fear for the arrival of an AI capable of near-human consciousness. Instead, we should look to ChatGPT as a new variable that could provide a catalyst to fight grade inflation and the monotony of factory education. From this point forward, educators must learn to outwit the machine through creative methods. By requiring students to become more than the average sum of information from the Internet, prone to hallucinations and false data, we prepare better and more informed individuals. Let us challenge them to become critical thinkers forced to implement creativity over and above that of our machine overlords.

This is not a new conundrum. In 1980, Douglas Adams penned a tale about “Deep Thought,” a supercomputer created to find “the answer to the ultimate question of life, the universe and everything.” The computer’s answer was simply, “42.” The “seekers,” the group of hyper-intelligent beings who created “Deep Thought” discovered, after a millennium, that while they had the answer, they did not even know what the question was. Today, we are the seekers. We still have much to learn about how to best interact with ChatGPT and other artificially intelligent systems, until then, “DON’T PANIC” (Adams, 1980).



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