



## Research from the Office of RIDIL

### The Educational Affordances and Challenges of ChatGPT

This white paper provides a summary of a section of the work from:

Crompton, H., & Burke, D. (in press). The educational affordances and challenges of ChatGPT: state of the field. *TechTrends*.

#### Research Authors Bios

Dr. Helen Crompton is a Professor of Instructional Technology in the Department of STEM and Professional Studies, and the Executive Director of the Research Institute for Digital Innovation in Learning at ODUGlobal at ODU. Dr. Diane Burke is a Senior Research Associate at the Research Institute for Digital Innovation in Learning at ODUGlobal at ODU.

#### Overview

On November 30<sup>th</sup>, 2023, ChatGPT was released to the public. ChatGPT quickly moved into educational settings. With a short prompt, ChatGPT can provide customized lesson plans, summarize text, and create test questions that can be used by educators and students to support learning. However, with this powerful tool, students could also use ChatGPT to cheat by having it do the work for them.

#### Purpose of the Research

The purpose of the research was to conduct a systematic review to examine extant publications on ChatGPT from November 2022 to August 2023 to determine how it can be used to support learning and to identify the misuse and limitations of ChatGPT. The main question of this study was: How can ChatGPT be used to promote learning and what are the challenges and limitations? Three sub-questions further refined this examination:

1. What are the ways educators can use ChatGPT to support teaching responsibilities?
2. What are the ways students can use ChatGPT to support their learning?
3. What are the limitations of ChatGPT and how can it be misused?

#### Method

The PRISMA systematic review methodology was used to determine the articles that would be included in this systematic review. Then a grounded coding approach revealed the trends in the use of ChatGPT in higher education.

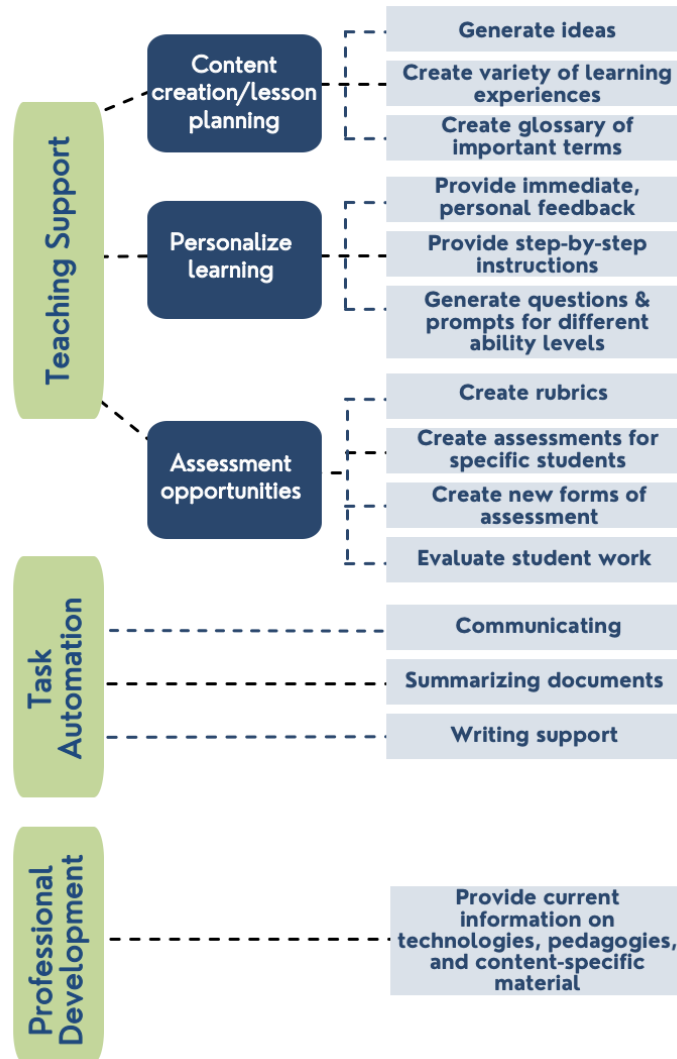
#### Findings and Discussion

In answering the main question of this study, “How can ChatGPT be used to promote learning and what are the challenges and limitations?”, three sub-questions were developed and the research regarding these three questions was analyzed.

## What are the ways educators can use ChatGPT to support teaching responsibilities?

The findings from the grounded coding revealed that ChatGPT can be used in a variety of ways to support teaching responsibilities. Three overarching codes emerged from the studies: 1) Teaching Support, 2) Task Automation, and 3) Professional Development, see Figure 1. These were extended further by axial codes providing more detail.

Figure 1. ChatGPT Uses to Support Teaching



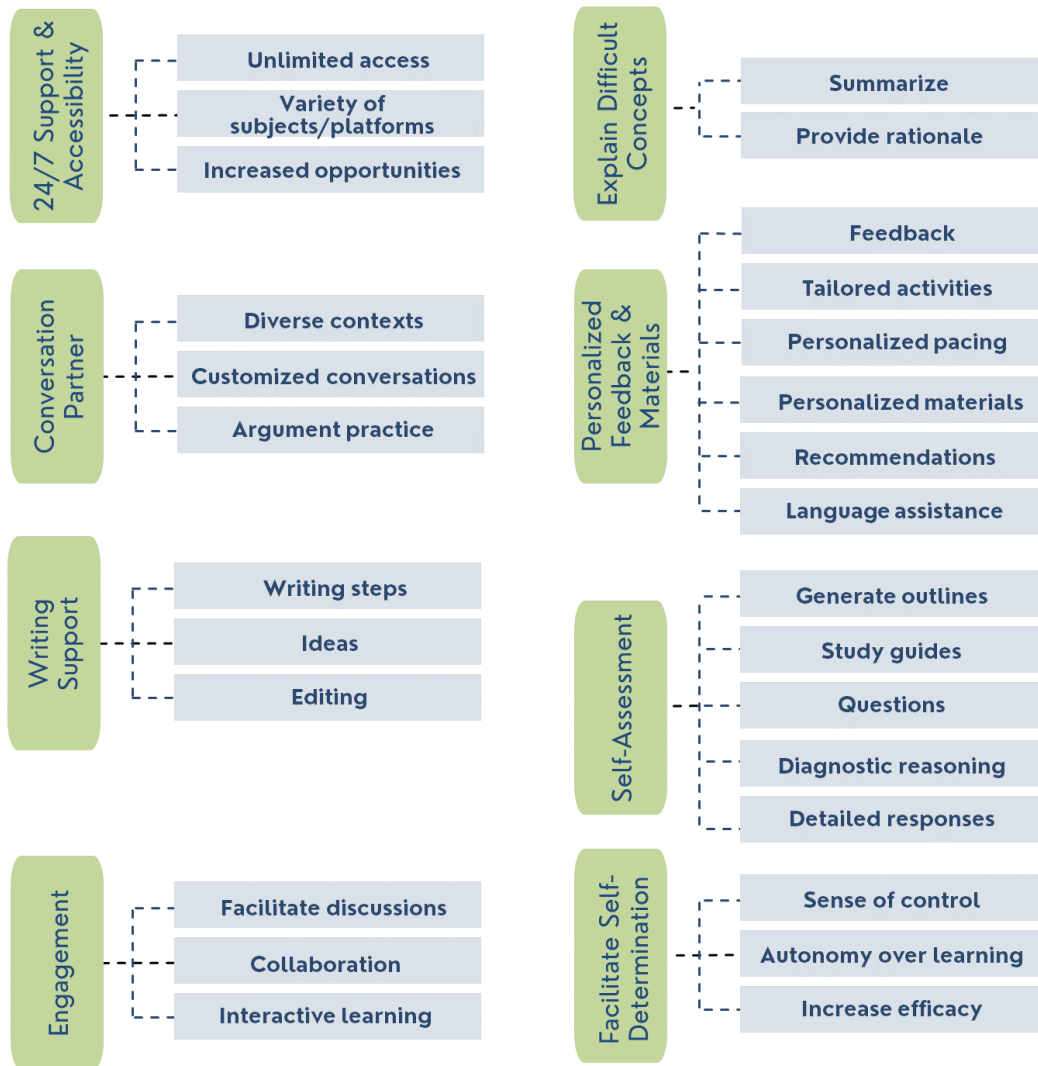
This study revealed a robust and rich variety of ways that ChatGPT can support teachers in their many responsibilities. Further explorations of these opportunities are explained in the complete paper.

## What are the ways students can use ChatGPT to support their learning?

The findings from the grounded coding revealed eight codes in ChatGPT can be used by students to support their learning: 1) provide 24/7 support and accessibility, 2) explain difficult concepts, 3) act as a

conversational partner, 4) provide personalized feedback and materials, 5) provide writing support, 6) allow self-assessment, 7) facilitate student engagement, and 8) facilitate self-determination See Figure 2. Furthermore, axial codes provided further specifics on the eight codes.

Figure 2. ChatGPT Uses to Support Students



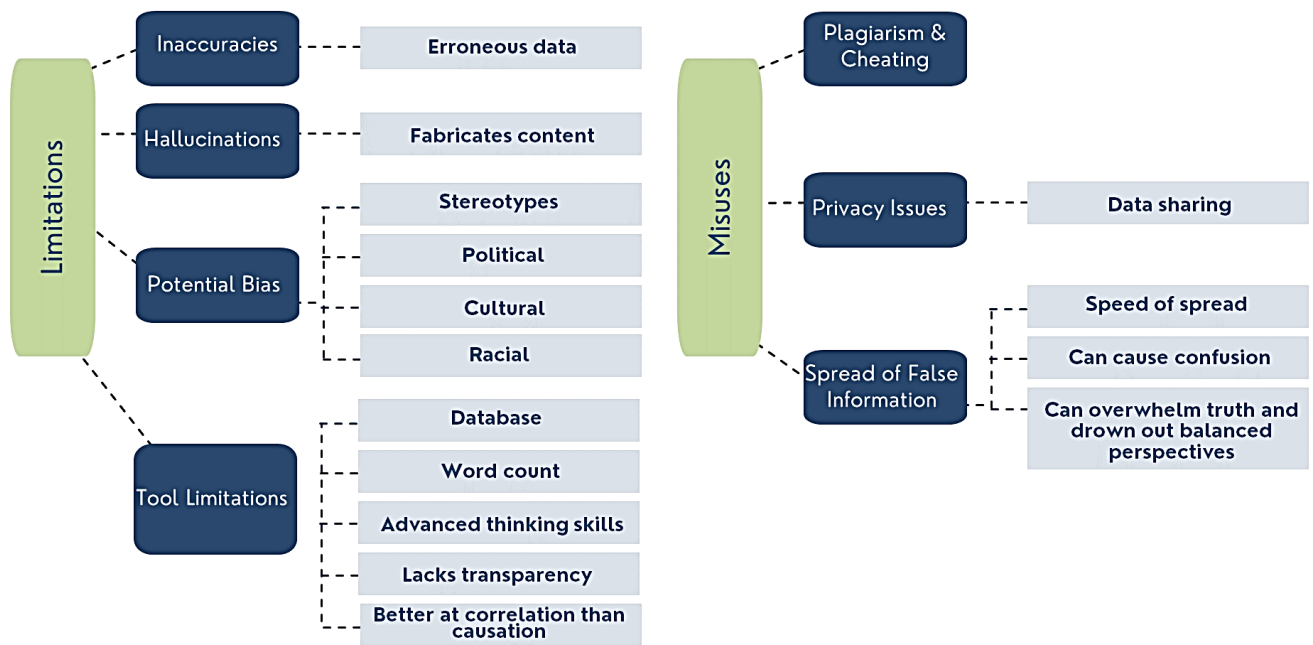
This study revealed two emerging uses of AI to support student learning: engagement and self-determination. In fostering engagement, Trust et al. (2023) note that ChatGPT can facilitate group discussions and debates by providing a discussion structure, real-time feedback, and personalized guidance for students during discussions. Yorio (2023) provides an example where ChatGPT can be used to create interactive learning experiences, such as virtual book clubs or author visits. The conversational style of ChatGPT can make the learning experience more engaging and enjoyable for students, reducing the boredom and disinterest that can arise in traditional lecture-style teaching.

ChatGPT can foster self-determination by supporting students' basic psychological needs of autonomy, competence, and relatedness (Geary, et al., 2023). and providing a sense of control and psychological autonomy by providing them with more control over their learning Crawford, et al. (2023).

**What are the limitations of ChatGPT and how can it be misused?**

Although ChatGPT is a powerful tool for learning, it has limitations and the potential for misuse. The grounded coding from this research study revealed the following limitations, 1) Inaccuracies and hallucinations, 2) Potential bias, and 3) Tool limitations. Misuses include 1) Plagiarism and cheating, 2) Privacy issues and 3) Spread of false information, see Figure 3.

Figure 3. Limitations and Misuses of ChatGPT



This study provides a robust look at the potential limitations and misuses of ChatGPT. The presence of concerns regarding the use of ChatGPT serves as a caution to both users and researchers. As with all technologies, humans need to be the primary determiners of practical and ethical applications. This is particularly true with ChatGPT, as its use is in the nascent stage and there is still much to be learned about its power and potential pitfalls.

**Conclusion**

This systematic review of the state of the field regarding the use of ChatGPT in higher education from November 2022 to August 2023 revealed how ChatGPT can be used to support teaching and learning and to identify possible limitations and misuses. The findings were categorized into three areas: supporting teachers, supporting students, and identifying limitations and possible misuses.

**References**

Crawford, J., Cowling, M., & Allen, K. (2023). Leadership is needed for ethical ChatGPT: Character, assessment, and learning using artificial intelligence (AI). *Journal of University Teaching & Learning Practice*, 20(3). DOI: 10.53761/1.20.3.02.

Geary, E., Allen, K. A., Gamble, N., & Pahlevansharif, S. (2023). Online learning during the COVID-19 pandemic: Does social connectedness and learning community predict self-determined needs and course satisfaction? *Journal of University Teaching & Learning Practice*, 20(1).

Trust, T., Whalen, J., & Mouza, C. (2023). Editorial: ChatGPT: Challenges, opportunities, and implications for teacher education. *Contemporary Issues in Technology and Teacher Education*, 23(1). <https://citejournal.org/volume-23/issue-1-23/editorial/editorial-chatgpt-challenges-opportunities-and-implications-for-teacher-education>.

Yorio, K. (2023). The ChatGPT Revolution. *School Library Journal*, 69(2), 10-12.