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Refining Assessments in the ChatGPT Era



Professor Hong Yang

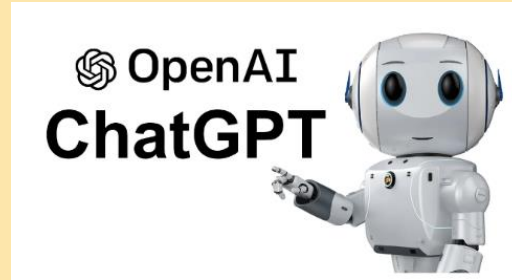
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Rise of ChatGPT



- The evolution of AI has brought us ChatGPT, a cutting-edge language model developed by OpenAI. It represents the forefront of AI technology and its potential applications in various domains.
- AI tools have rapidly gained traction within educational settings, transforming student learning practices.

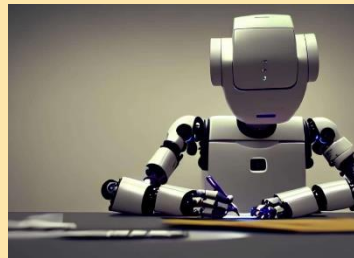


Impact of ChatGPT on Assessment

Opportunities



- **Enhanced Personalized Learning:** ChatGPT enables tailored assistance to cater to diverse learning needs, fostering a more inclusive and effective learning process.
- **Innovative Teaching Tools:** AI-powered dynamic instructional materials and virtual assistants ensure round-the-clock support, empowering students and educators.



Challenges



- **Integrity Concerns:** The rise of AI tools for assignment completion presents challenges in authenticating original work, increasing the risk of academic dishonesty.
- **Hallucinations:** ChatGPT can sometimes generate confident-sounding but incorrect answers—which poses significant challenges for student assessments by potentially providing misleading information.
- **Dependence on Technology:** Overreliance on AI tools may hinder independent critical thinking and problem-solving skills, creating a need for balance in technology integration.

Challenges for Traditional Assessment

Adapting Traditional Methods

Evolving assessments to stay relevant in an AI-augmented landscape requires new approaches that value original thought and problem-solving skills.

Overcoming Challenges

We need clear strategies to tell apart AI-generated content and improve our assessment methods. Assessments should also focus on evaluating critical thinking, analytical skills, and the ability to synthesize information to ensure deep understanding.



Authentic Assessment

Integration of Practical Tasks

Authentic assessment integrates practical tasks with academic standards, allowing students to apply their knowledge in real-world contexts.

Higher-Order Thinking

Authentic assessment challenges student to engage in higher-order thinking and complex problem-solving, fostering cognitive development.

Demonstration of Skills

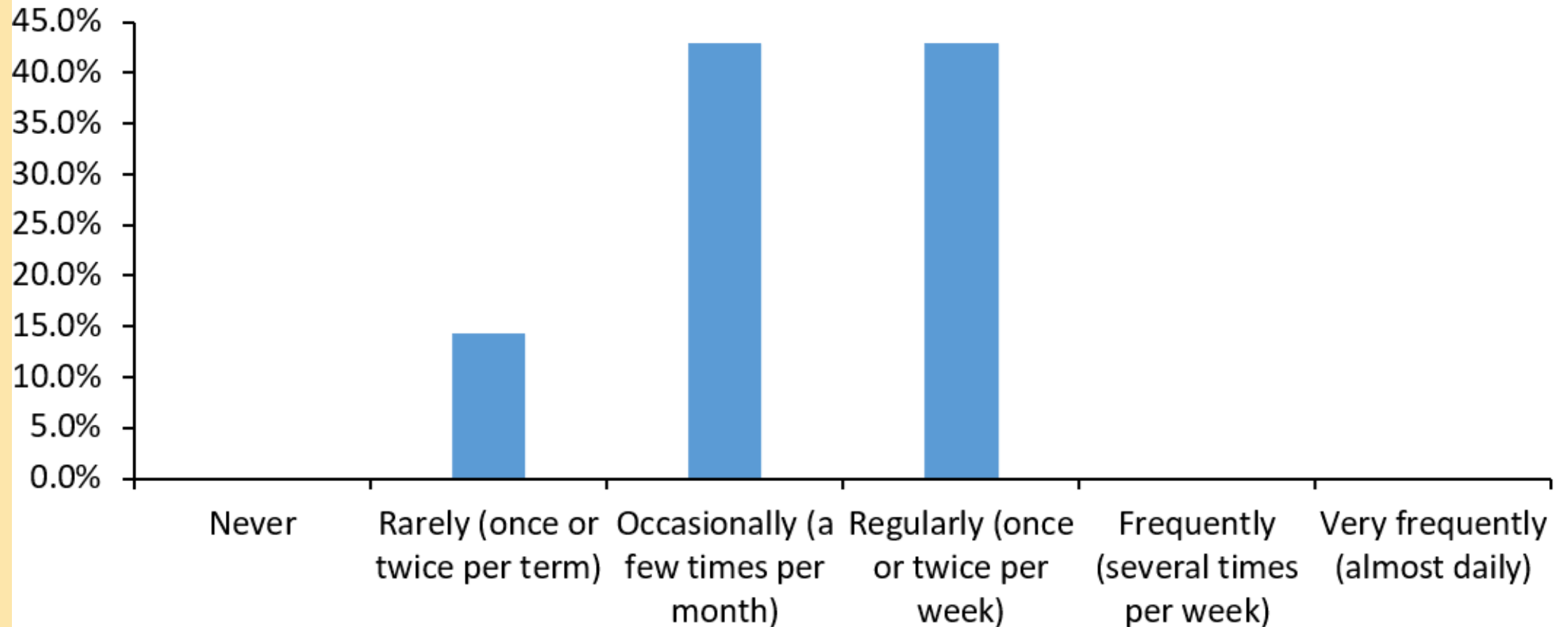
It provides opportunities for students to demonstrate their skills in various contexts, enhancing their ability.

Reflective Component

Authentic assessment often includes a reflective component, encouraging students to engage in self-assessment and promote continuous learning.

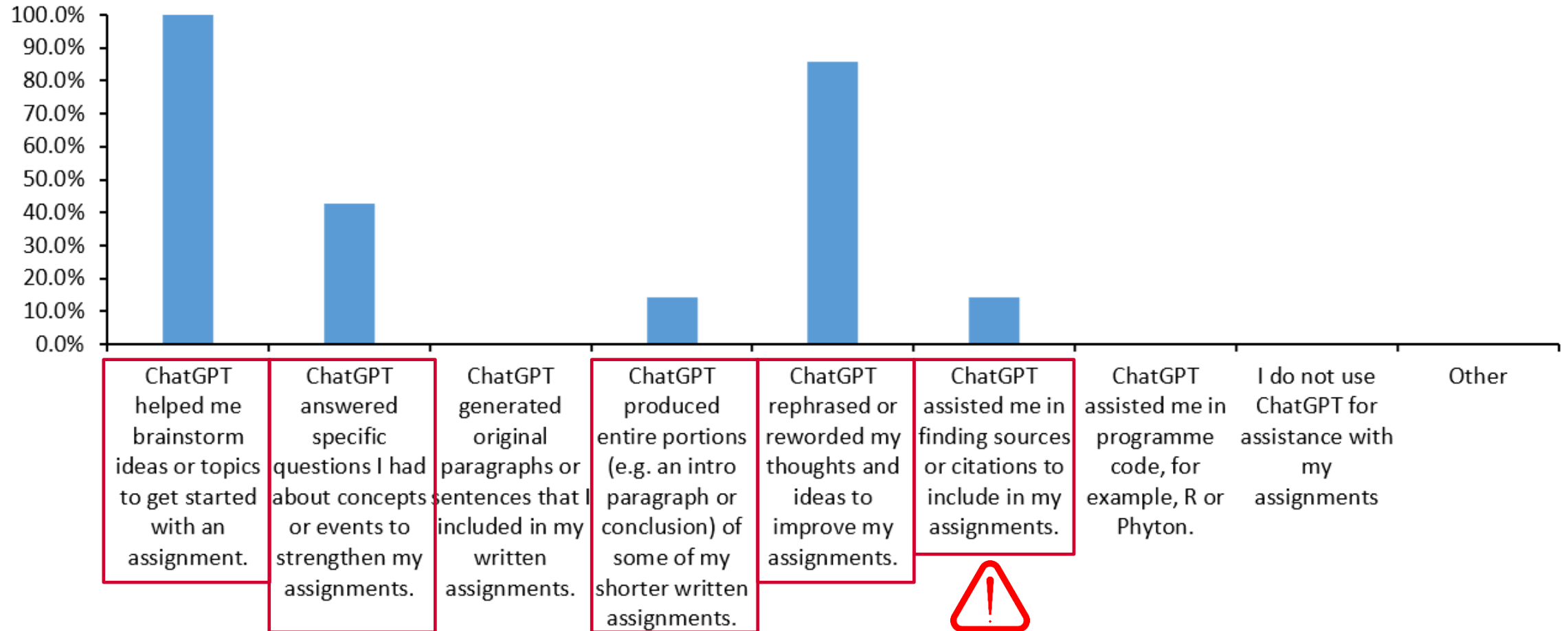
Student Survey (preliminary results)

How frequently do you use ChatGPT for your academic assignments?



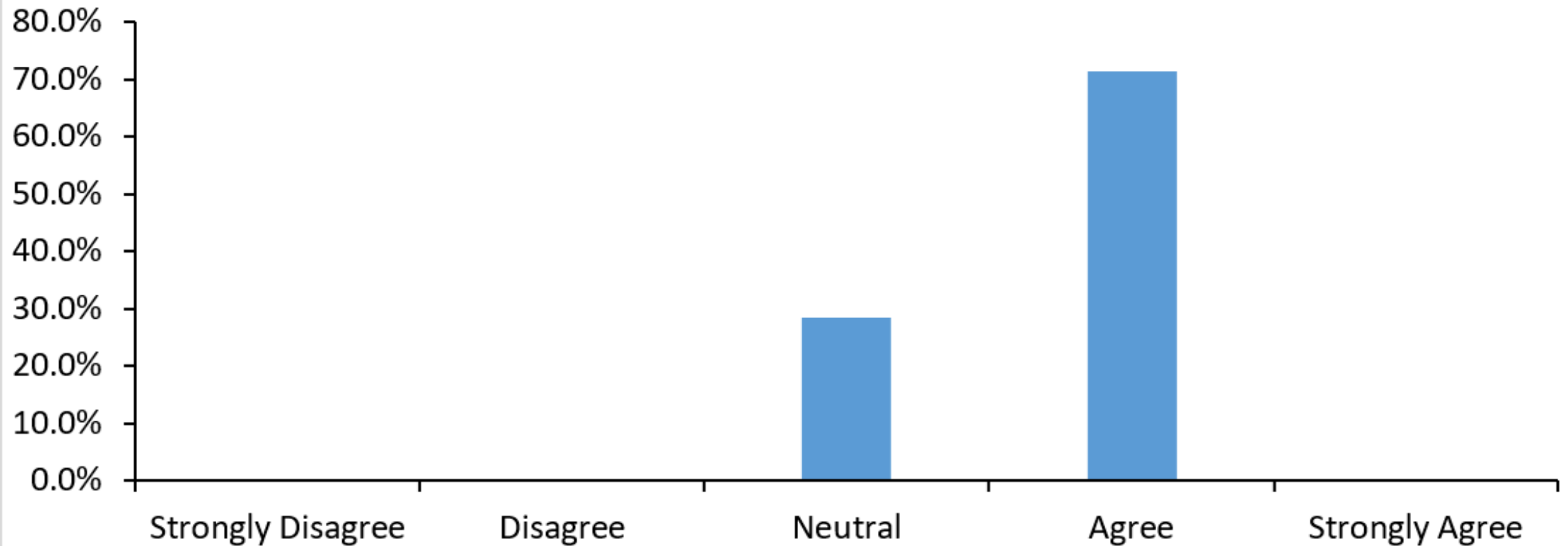
Student Survey (preliminary results)

In what ways has ChatGPT been helpful to you in completing your assignments?



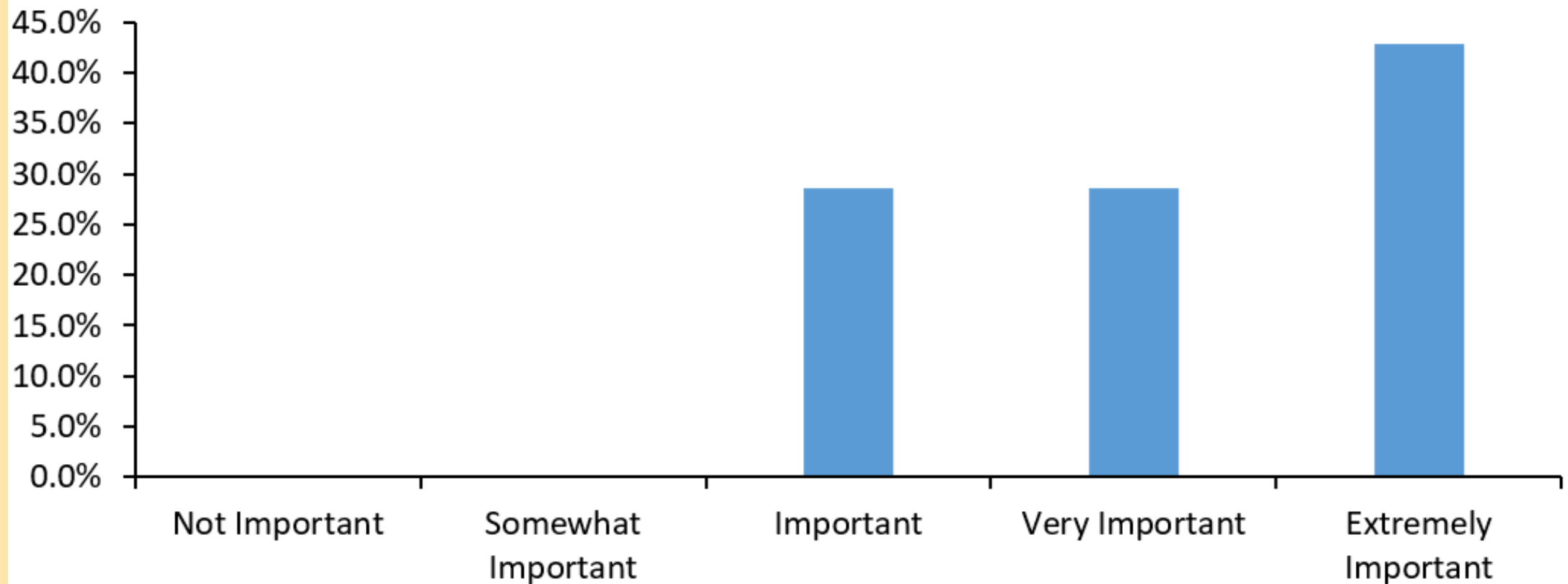
Student Survey (preliminary results)

Do you agree that ChatGPT could potentially be used to "cheat" on assessments by generating plagiarized or dishonest work?



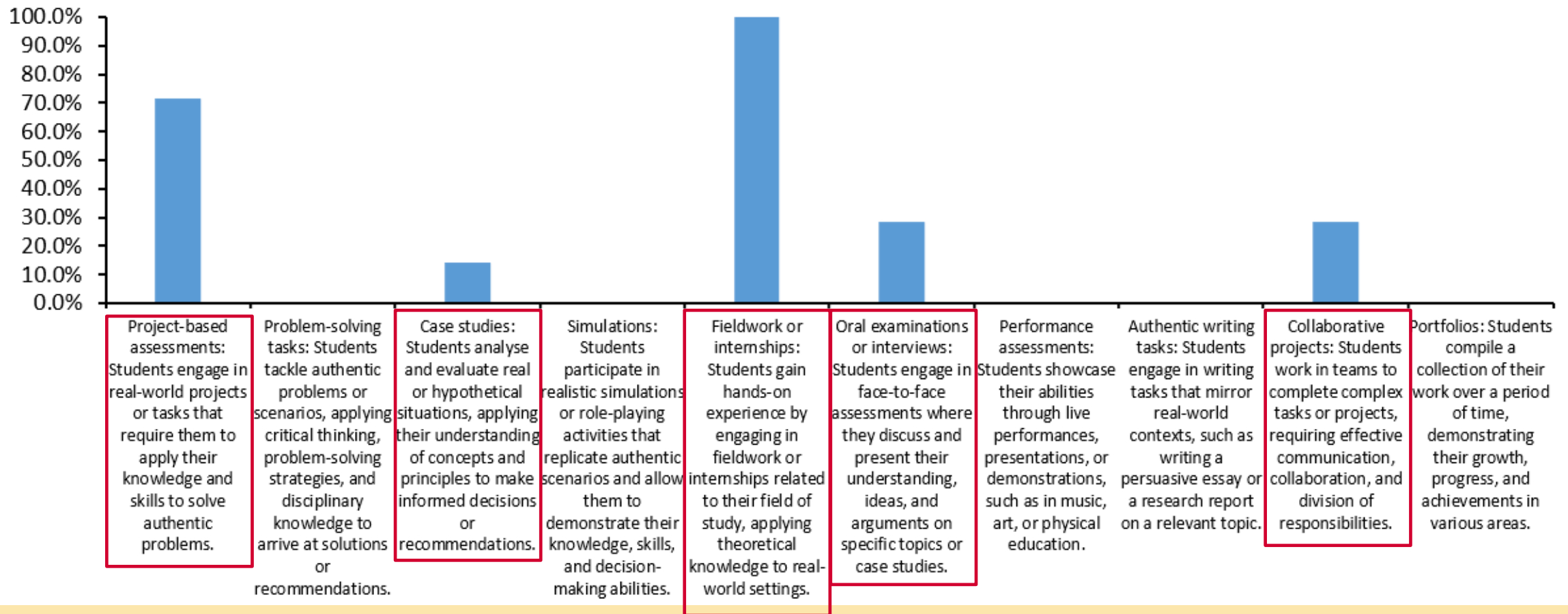
Student Survey (preliminary results)

How important do you think it is for educators and institutions to address the challenges and impact of ChatGPT on student assessment?



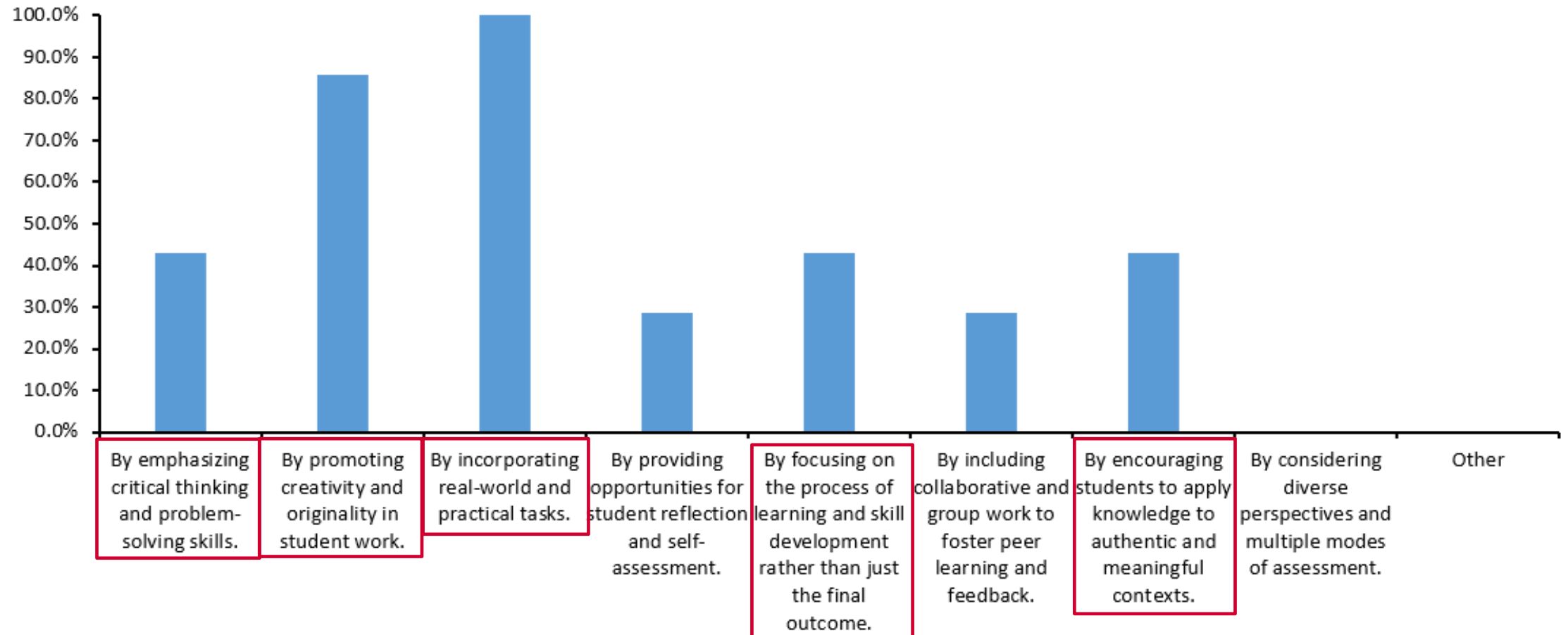
Student Survey (preliminary results)

To minimise the negative impacts of ChatGPT, you prefer which authentic assessment?



Student Survey (preliminary results)

How do you think authentic assessment methods can minimize the negative impact of ChatGPT on student assessment?








Teaching practice

- Field work learning (on Whiteknights campus)
- Collaborative project-based learning (air quality on campus)
- Case study (Carbon concentrations at Edith Morley building)
- Oral examination
- Incorporating Peer Review (Padlet, formative)
- Improving data analysis skills using Open-Source Software R



Teaching practice

 I would like to run a small practical project on air quality on my university campus. Please provide 5 ideas.

 Certainly! Running a practical project on air quality can be an engaging way for students to apply their knowledge and contribute to the campus community. Here are five project ideas:   

- Campus Air Quality Monitoring:**
 - Set up air quality monitoring stations at various locations around the campus to collect data on pollutants like PM2.5, PM10, NO2, and O3.
 - Students can analyze the data to identify pollution hotspots and times of high pollution levels.
- Green Space Impact Study:**
 - Investigate the impact of campus green spaces on air quality by measuring air pollutants before and after planting new vegetation.
 - Compare data from areas with dense vegetation against areas with less or no vegetation.
- Transportation Emissions Assessment:**
 - Assess the contribution of different modes of transportation to campus air quality by surveying vehicle types and frequency.
 - Propose a sustainable campus transportation plan that could reduce emissions.
- Indoor Air Quality (IAQ) Project:**
 - Evaluate the air quality within campus buildings, focusing on factors such as ventilation, types of materials used within the buildings, and occupancy.
 - Suggest improvements or preventive measures to ensure healthy IAQ standards are maintained.
- Awareness and Behavior Change Campaign:**
 - Develop and implement an awareness campaign about the importance of air quality, including educational materials and workshops.
 - Monitor changes in behavior, such as reduced car usage, and measure the impact of these changes on campus air quality.



Each of these projects can not only provide valuable hands-on experience for students but also contribute to a healthier, more sustainable campus environment.

Teaching practice



Design a project to measure CO2 on the university campus



To measure CO2 levels on the university campus, a project can be designed as follows:  

1. Identify the location: Choose a few representative areas on the campus, such as classrooms, offices, and outdoor spaces, to measure CO2 levels.
2. Choose a CO2 monitoring device: Select a CO2 monitoring device that is easy to use, accurate, and portable. There are many commercially available CO2 monitors that can be purchased or rented.
3. Prepare the equipment: Charge the CO2 monitoring device and make sure it is calibrated correctly.
4. Collect the data: Visit each location at different times of the day and take readings of the CO2 levels. Repeat this process for a week or more to get a representative sample of CO2 levels on the campus.
5. Analyze the data: Use statistical software, such as R or SAS, to analyze the CO2 data. Look for patterns in the data and compare CO2 levels between different locations and times of day.
6. Present the results: Present the results of the CO2 measurements in a clear and concise manner, using graphs, tables, and maps. Discuss the implications of the findings and make recommendations for reducing CO2 levels on the university campus.
7. Disseminate the results: Share the results of the project with the university community, such as students, staff, and faculty, to raise awareness of the importance of reducing CO2 emissions.

Overall, this project can provide valuable information about CO2 levels on the university campus and help to promote sustainability and environmental awareness.

Teaching practice



Provide R code to conduct t-test to analyse the difference in CO2 levels between natural site and human sites on the university campus



```
bash Copy code 👍 🗨  
  
# Load required libraries  
library(tidyverse)  
  
# Load the data for CO2 levels at natural and human sites  
co2_data <- read.csv("co2_data.csv")  
  
# Conduct t-test to compare the mean CO2 levels between natural and human sites  
t.test(co2_data$natural_site_co2 ~ co2_data$human_site_co2)  
  
# Output the results  
print(t.test(co2_data$natural_site_co2 ~ co2_data$human_site_co2))
```

Note: This code assumes that you have a `.csv` file called `co2_data.csv` with two columns, `natural_site_co2` and `human_site_co2`, containing the CO2 levels at natural and human sites respectively. You also need to install the `tidyverse` library in R if you haven't done so already.



How I use ChatGPT responsibly in my teaching

Large language models are here to stay. Here's how I'm incorporating them, writes Hong Yang.

[Hong Yang](#)



Credit: Gabby Jones/Bloomberg/Getty

In late November 2022, my university teaching was suddenly disrupted by an unexpected visitor – ChatGPT, a type of large language model (LLM) algorithm that is trained on an enormous data set of language and can summarize, translate and create text.

Like many teachers, my biggest concern with the tool is students using it to cheat when writing their essays. I understand the importance of ensuring that student work is original and avoiding academic dishonesty. Some US universities, for example Washington University in St Louis, Missouri, specify that the use of ChatGPT-generated text must be authorized and appropriate acknowledged, and several Asian universities, such as the University of Hong Kong, have its use of ChatGPT entirely, but there are no clear guidelines at many institutions – including the University of Reading in the United Kingdom, where I teach courses on air pollution.

Conclusion

- **Widespread Usage Among Students:** Preliminary surveys indicate a high utilization rate of ChatGPT by students for assistance in various aspects of their coursework.
- **Common Ways of Using ChatGPT:** Students predominantly employ ChatGPT for generating ideas, rewording text, and obtaining answers to specific questions.
- **Preference for Authentic Assessment:** There is a clear preference among students for more applied forms of assessment, such as fieldwork/internships, project-based tasks, oral exams, collaborative projects, and case studies, which align better with authentic assessment principles.

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