

Your friendly neighborhood chatbot

Using ChatGPT in university
teaching

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Overview



Why is this important?



What is ChatGPT?



How can ChatGPT and LLMs improve teaching?



Teaching with ChatGPT - Preparation



Teaching with ChatGPT – Student Homework



Teaching with ChatGPT - Supervision



Implications

ChatGPT Sprints to One Million Users

Time it took for selected online services to reach one million users



ChatGPT currently has over 100 million users
Openai.com gets approximately 1 billion visits per month

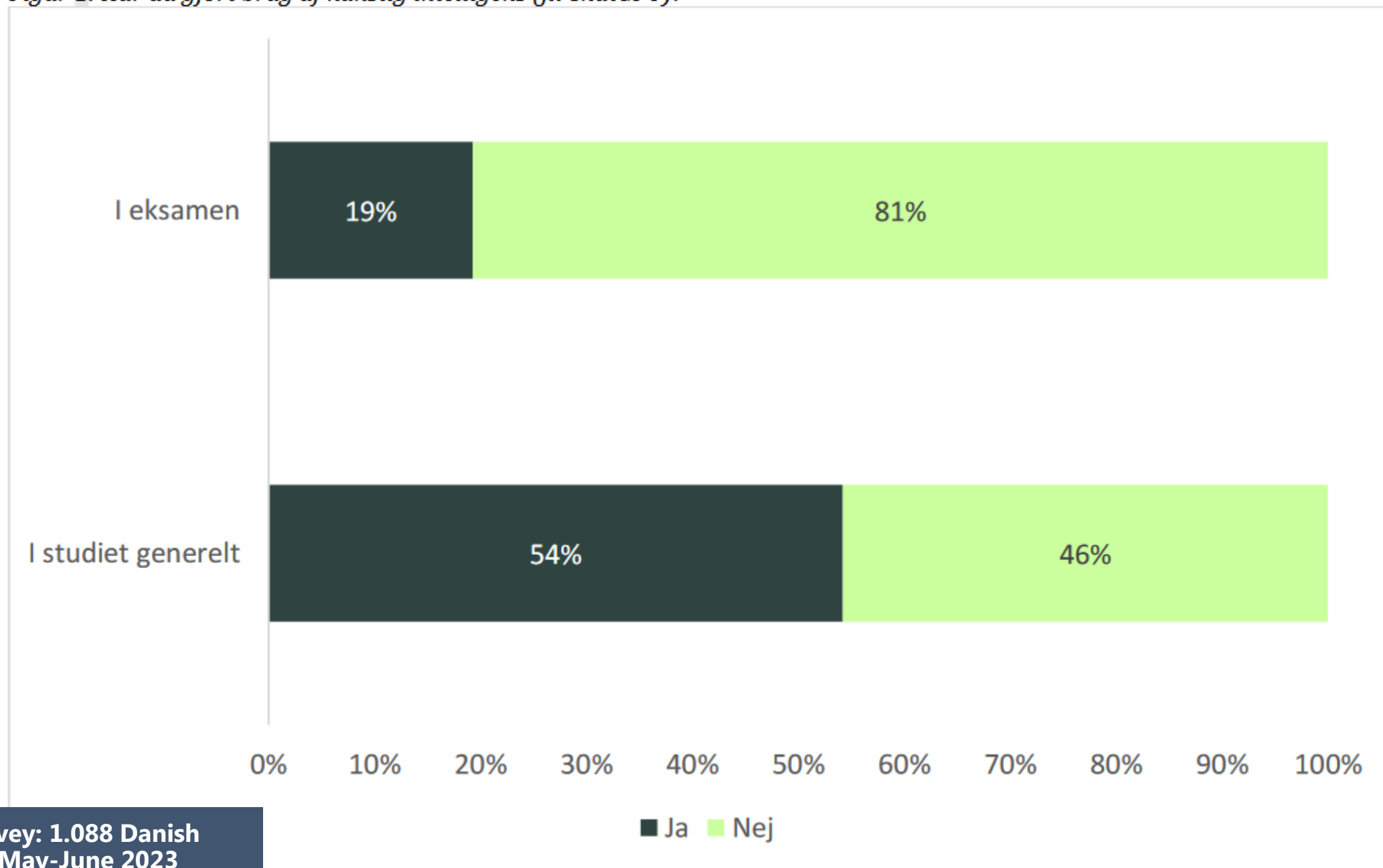


* one million backers ** one million nights booked *** one million downloads

Source: Company announcements via Business Insider/LinkedIn



Figur 1: Har du gjort brug af kunstig intelligens (fx ChatGPT)?



How smart is ChatGPT?

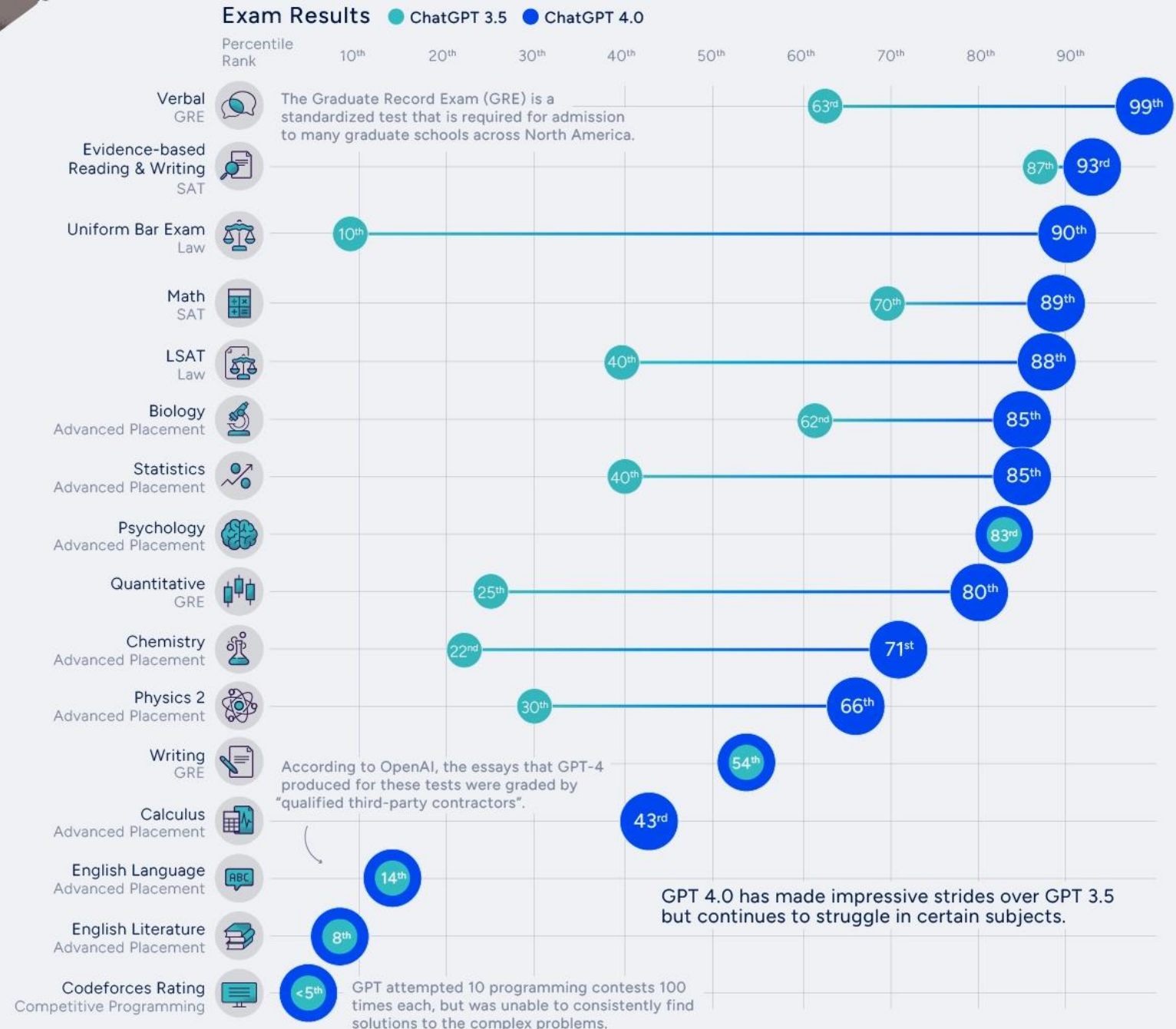
A percentile describes how an examinee's score ranks in comparison to others.

For example

60th Percentile

60% of examinees scored lower than ChatGPT

40% scored higher than ChatGPT



Capabilities

- ChatGPT can pass the bar exam in every US state, scoring in the 90th percentile (Katz et al., 2023)
- Significantly outperforms Harvard medical students with 'higher quality and more empathetic' patient answers (Ayers et al., 2023).
- Excels in summarizing texts, surpassing humans (Adams et al., 2023).
- Requires domain experts for best performance (Adesso, 2023; Tian et al., 2023)
- Capable of creating plausible research studies for top journals (Dowling and Lucey, 2023).
- Matches/exceeds human reviewers in scientific manuscript feedback (Liang et al., 2023).

State of the art

- Integration of LLMs into academia holds great promise for both research and teaching (Alasadi and Baiz, 2023; Chiu, 2023; Dogru et al., 2023; Berg, 2023).
- Particularly useful for students to develop communication skills (Chiu et al., 2023)
- Struggles with critical thought and original research idea generation (Lozić and Štular, 2023).
- Requires domain experts for best performance (Adesso, 2023; Tian et al., 2023)
- With expert oversight, can create papers suitable for high-ranking journals (Dowling and Lucey, 2023)

What is ChatGPT?

- *Not* Google
- Generative language model developed by OpenAI and Microsoft
- Trained on huge amounts of text data - 300 billion words
- Responses reflect biases in training data
- Generates contextually relevant, natural responses based on probability
- Reads, writes, creates tables, edits text, gives feedback and paraphrases
- Knowledge updated to ~~September 2021~~ April 2023
- Input structures output – garbage in, garbage out

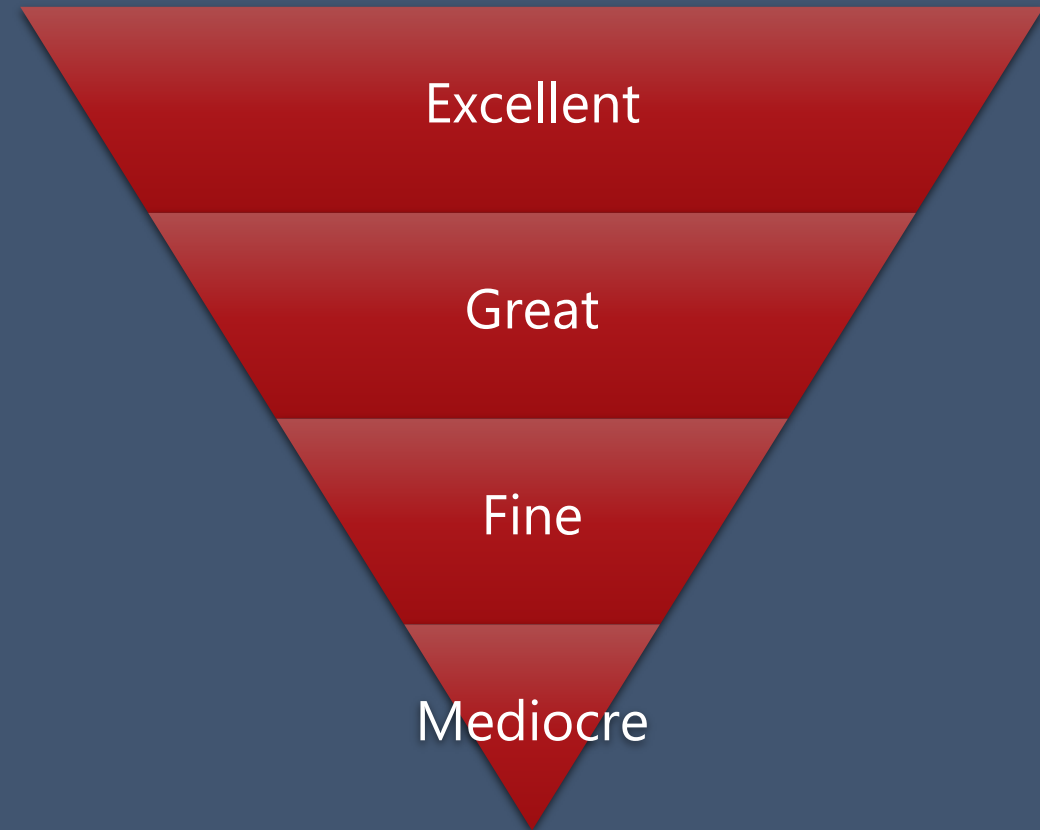
ChatGPT's "Knowledge Funnel" (Hau, 2023)

General Knowledge: Highly proficient with broad topics and general facts.

Intermediate Topics: Tackles complex subjects with reliability but may require occasional verification.

Specialized Areas: Addresses field-specific queries with some limitations; may offer generalized insights.

Highly Specialized Knowledge: Best used as a supplementary tool; increased likelihood of inaccuracies.



ChatGPT

- **Stateless Interaction:** Responds without retaining or recalling past user interactions.
- **Real-time Processing:** Generates answers based solely on current input and extensive training data.
- **Consistent & Non-adaptive:** Doesn't "learn" from or "adapt" to user-specific queries over time.

Advantages of ChatGPT

Adaptable

ChatGPT can be tailored to a variety of teaching styles, from lecture-based formats to Socratic questioning,

Interactive

The conversational nature of ChatGPT can enhance student engagement by allowing for real-time feedback and interactive learning experiences.

Supplementary

ChatGPT can serve as an additional resource for students to practice skills, clarification, or explore topics in greater depth.



Types of tasks

According to OpenAI

1.

Summarization

Making long texts shorter or easier to understand.

2.

Inference

Sorting and analyzing information

3.

Transformation

Changing the style of writing or translating languages

4.

Expansion

Creating longer texts based on notes or keywords

5.

Generation

Making entirely new content, like essays

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Content Generation

- **Pros:** ChatGPT can quickly generate content like summaries, questions, and assignments, reducing prep time for educators.
- It can also suggest additional readings, empirical examples, or contextual knowledge, supplementing course materials.
- **Cons:** Recommendations, while vast, might not always align with the exact educational goals or be up-to-date with the latest research. The model may *hallucinate*. Refinement might be required.

Efficiency

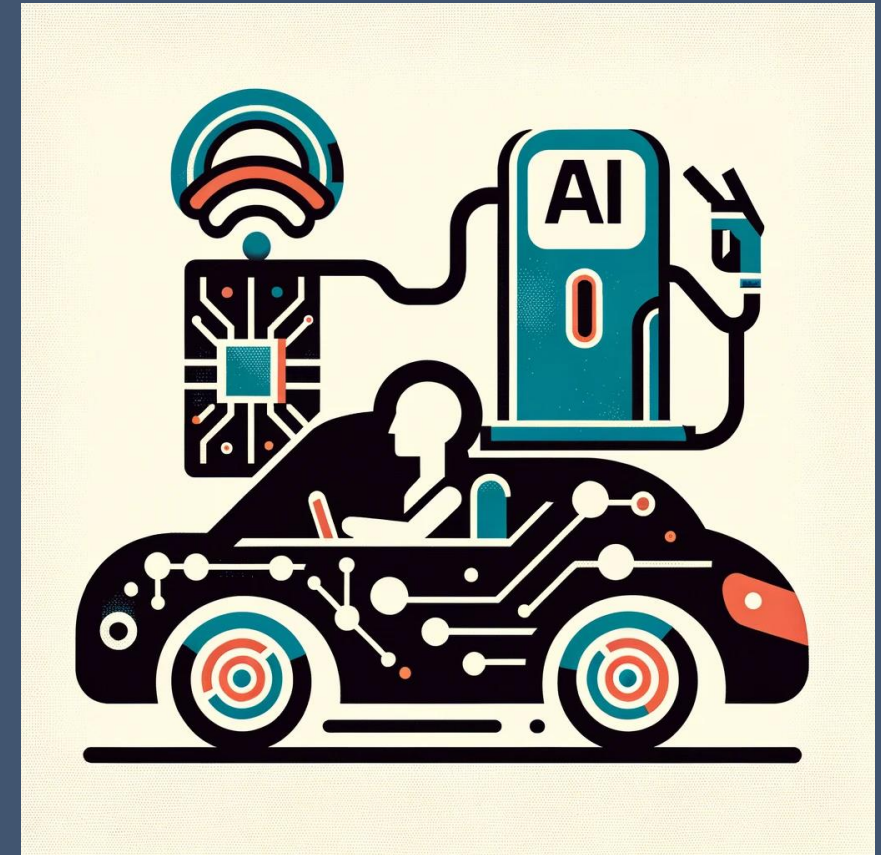
- **Pros:** ChatGPT can act as a teacher's aide, streamlining tasks, and significantly cutting down on prep time.
- **Cons:** Over-reliance may reduce personal touch in teaching; best used as a complementary tool or for automating low-level tasks.

Play & Game-based Learning

- **Pros:** Promotes playful learning through scenario-based interactions and game-like Q&A, enhancing student engagement.
- **Cons:** Game-based outputs need to be cross-checked for educational relevance and accuracy.

Key take away

- AI-assisted teaching is not 'good teaching' in itself – but can offer a host of supplementary resources
- While LLMs can augment our ideas, we need to maintain oversight – it's extra fuel but it can't drive the car (yet?)



Teacher Preparation

- Cheat sheets with key concepts, word explanations, theorists etc.
- Preparing student exercises
- Discussion questions or quizzes
- Find quotes from the text
- Outlining or storyboarding of lecture
- Tables
- Practical examples (beware of hallucinations)

Example: Cheat sheet

Author	Lifespan	Main Ideas	Relation to Orthodox Marxism	Main work
Rosa Luxemburg	1871-1919	General, mass strike as a revolutionary tactic; Opposed the SPD's support for WWI; Criticized Lenin's vanguard party concept - revolutionary change must come from the masses rather than a small elite	Critic of Orthodox Marxism	"Reform or Revolution?"
Karl Kautsky	1854-1938	Advocated for a peaceful, democratic transition to socialism; Emphasized the role of the working class in the revolution.	Defender of Orthodox Marxism	"The Class Struggle"
Eduard Bernstein	1850-1932	Emphasized the importance of parliamentary politics; socialism through gradual reforms using existing democratic institutions.	Critic of Orthodox Marxism	"Evolutionary Socialism"
Georges Sorel	1847-1922	Advocated for a revolutionary general strike to overthrow capitalism; Emphasized the importance of myths and symbols in inspiring action; moral foundations more important for socialism than economic interests	Critic of Orthodox Marxism	"Reflections on Violence"
Antonio Gramsci	1891-1937	Developed the concept of cultural hegemony; Emphasized the importance of intellectuals and culture in the struggle for power. Proponent of the 'organic intellectual' arising from the working class itself	Critic of Orthodox Marxism	"Prison Notebooks"; "Selections from Cultural Writings"
Ernesto Laclau	1935-2014	Developed the concept of "populism" as a political strategy; Emphasized the importance of discourse and the creation of political identities	Critic of Orthodox Marxism	"Hegemony and Socialist Strategy"
Chantal Mouffe	1943-present	Emphasized the importance of agonism, or the recognition of legitimate conflict, in democratic politics; Advocated for a radical democracy beyond traditional liberal democracy	Critic of Orthodox Marxism	"The Democratic Paradox"

Storification and ChatGPT

- Storification is highly engaging and appears to enhance the academic performance of at-risk students (Aura et al., 2021)
- Allows students to attach *meaning* to new learning (Piipponen & Karlsson, 2019)
- Very easy to try out with ChatGPT

For example...

Sociology

To understand the concept of social stratification, ChatGPT tells a story about a multi-level building where each floor represents a different social class - and the elevators are broken.

Psychology

To understand cognitive dissonance, ChatGPT tells a story about a character who has to reconcile their environmental beliefs with their job in a polluting industry.

Economics

To grasp the concept of supply and demand, ChatGPT tells a story about a lemonade stand in a small town experiencing a heatwave, and how the prices and sales fluctuate.

Anthropology

To understand ethnographic fieldwork, ChatGPT tells a story about a painter who can only complete their masterpiece by wearing the colors on their palette, symbolizing the immersive and participatory nature of ethnographic research.

Student homework

ChatGPT can create summaries and provide reading instructions for difficult texts

Helps to identify key concepts and put them in a theoretical or empirical context

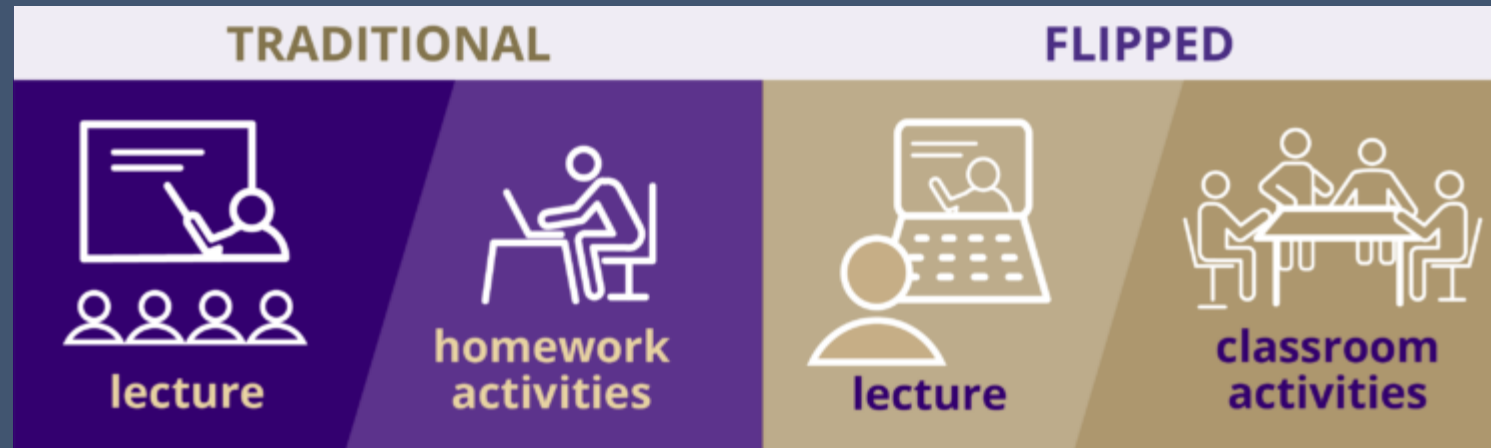
Provides examples from the students' own lives

Useful for students who have difficulties reading texts

Facilitates discussion in plenary and active learning (self-tutoring)

Promotes *play*; students can create role-plays, fictional interviews with theorists, poems, and all sorts of other written experiments

Flipped classroom



1. Choose a topic from a recent or future lecture
2. Use ChatGPT to list 3-5 core concepts that students must understand before attending the class and refine
3. Use ChatGPT to formulate 2-3 questions that can guide students through the pre-class material and refine



What are the differences between Mudde/Kaltwasser's, Laclau's and Zizek's definitions on populism?



Before the reading I was just used to the definition of populism from Mudde and Kaltwasser. Having an overview on the differences between the definition I am used to and the two new ones, helped me to understand the papers quicker.

– Student 1



Have there been any critique of Žižek's critique of Laclau?



For me, the most interesting part in my conversation with the Chatbot was the way it was able to relay the contents of these complex works in an easily digestible way, and also offer broader perspectives, beyond what the texts themselves contain.

– Student 2

Supervision

ChatGPT as mentor - or perhaps 'overconfident peer'

Gives personal feedback and asks questions for exam ideas








Helps with structure, punctuation, grammar, etc.

Points out logical gaps and/or analytical deficiencies

Preparation for peer feedback and AI-assisted cluster guidance

The more input, the better output

Example: My own SocraticGPT www.poe.com/SocraticGPT

 Poe Sage > GPT-4
Limited Access > Claude+
Limited Access > Claude-instant > ChatGPT > SocraticGPT > NeevaAI > Dragonfly > SocraticGPT >**SocraticGPT**Operated by  @mfhau

SocraticGPT, a personal Socratic mentor for university students specifically designed to give exam essay feedback.

This bot uses a model that is powered by OpenAI. [Learn more](#)

Welcome to SocraticGPT! Share your essay idea or abstract with me and I'll do my best to improve it through challenging questions

Context cleared



Talk to SocraticGPT on Poe...



Feedback

- **Pros:** The platform can provide instant feedback on student essays or assignments, especially useful for large classes.
- **Cons:** Feedback might lack the nuanced understanding or context a human educator would provide. It's more suited for initial drafts or basic feedback

Implications

Students highlight access to additional resources, support outside of class, and playing with the material

Limitations in relation to language (Danish), subject-specific knowledge and updated information

Important ethical considerations regarding copyright, big tech interests, underpaid testers, privacy, environmental costs, plagiarism etc.

From a focus on *generation* to *transformation*

Constructing meaningful prompts key to useful output

Finding a middle road between prohibition and permission



Permission issues

Need to adapt education to AI-era
Aim is to assess students, not bots
Plagiarism



Prohibition issues

Enforcement impractical
Risk of harming student learning
Inaccurate detection