

# Plagiarism Past, Present, Future

## Implications of for assessment

Mike Sharples

Institute of Educational Technology  
The Open University

[www.mikesharples.org](http://www.mikesharples.org)



@sharp1m

# Plagiarism Past

# Plagiarism as theft

Latin *plagiarius* "kidnapper, seducer, plunderer, one who kidnaps the child or slave of another,"

Martial: in the sense of "literary thief,"

Report says that you, Fidentinus, recite my compositions in public as if they were your own. If you allow them to be called mine, I will send you my verses for free; if you wish them to be called yours, pray buy them, that they may be mine no longer.

*Marcus Valerius Martialis*



**Marcus Valerius  
Martialis**  
(c. 38 – 103 CE)

# Plagiarism as failure of learning

“Passing off another’s work as your own is not only poor scholarship, but also means that you have failed to complete the learning process. ”

University of Oxford, <https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism>

# Plagiarism Present

# A critique of learning styles

The construct of "learning styles" is problematic because it oversimplifies the complex process of learning and has not been supported by empirical evidence. Learning styles are often defined as “characteristic cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment” (Keefe, 1979, p. 37). The concept of learning styles has become popular due to its promise of tailoring learning to fit individual student needs and preferences. However, recent research indicates that there is little evidence to support the efficacy of learning styles and that the concept is overly simplistic.

The idea of learning styles is based on the notion that individuals have distinct preferences for how they learn and process information. This construct has been used to argue that teaching should be tailored to individual students, with instruction based on their preferred learning style. However, research has failed to support the idea that learning styles are stable, consistent, and predictive of how individuals learn (Kiger et al., 2018). For example, a meta-analysis by Pashler et al. (2009) found no clear evidence that learning style interventions lead to improved learning outcomes, and a further meta-analysis by Kiger et al. (2018) found no reliable link between learning style preferences and performance.

In addition, the notion of learning styles is overly simplistic and fails to account for the complexity of learning. Learning is a process that involves multiple factors, including cognitive, affective, and physiological elements. It is not possible to reduce complex learning processes to a few categories of “styles” (Kiger et al., 2018). Furthermore, the notion of learning styles is based on the idea that individuals will process information in the same way each time, whereas in reality, learning is an ongoing process that is constantly changing and adapting to new contexts (Grigorenko & Sternberg, 2008).

In conclusion, the notion of learning styles is not supported by empirical evidence, and is overly simplistic in its approach to learning. Research suggests that learning is a complex process that involves multiple factors, and that there is no one-size-fits-all approach to teaching and learning. Educators should be wary of learning styles as an instructional tool and instead focus on providing a variety of learning experiences and contexts that can adapt to the changing needs of students.

## References

- Grigorenko, E.L., & Sternberg, R.J. (2008). *Dynamic testing: The nature and measurement of learning potential*. New York, NY: Cambridge University Press.
- Keefe, J.W. (1979). Learning styles: Implications for improving educational practices. *Review of Educational Research*, 49(3), pp. 375-409.
- Kiger, G., Lomax, R., & Ross, R. (2018). Learning styles: A comprehensive review of the literature. *Educational Research Review*, 24, pp. 1-36.
- Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2009). Learning styles: Concepts and evidence. *Psychological Science in the Public Interest*, 9(3), pp. 105-119.

That “student essay” was entirely generated by an AI program – GPT-3

# GPT-3 interface

<https://openai.com/api/>

The screenshot displays the OpenAI Playground interface. At the top, there are navigation links for Overview, Documentation, Examples, and Playground. The Playground section is active, showing a text input area with the prompt: "Write a high quality essay, with academic references and evidence from research studies, that critiques learning styles." Below the prompt, the model's response is visible: "The construct of 'learning styles' is problematic because".

On the right side, there is a configuration panel with the following settings:

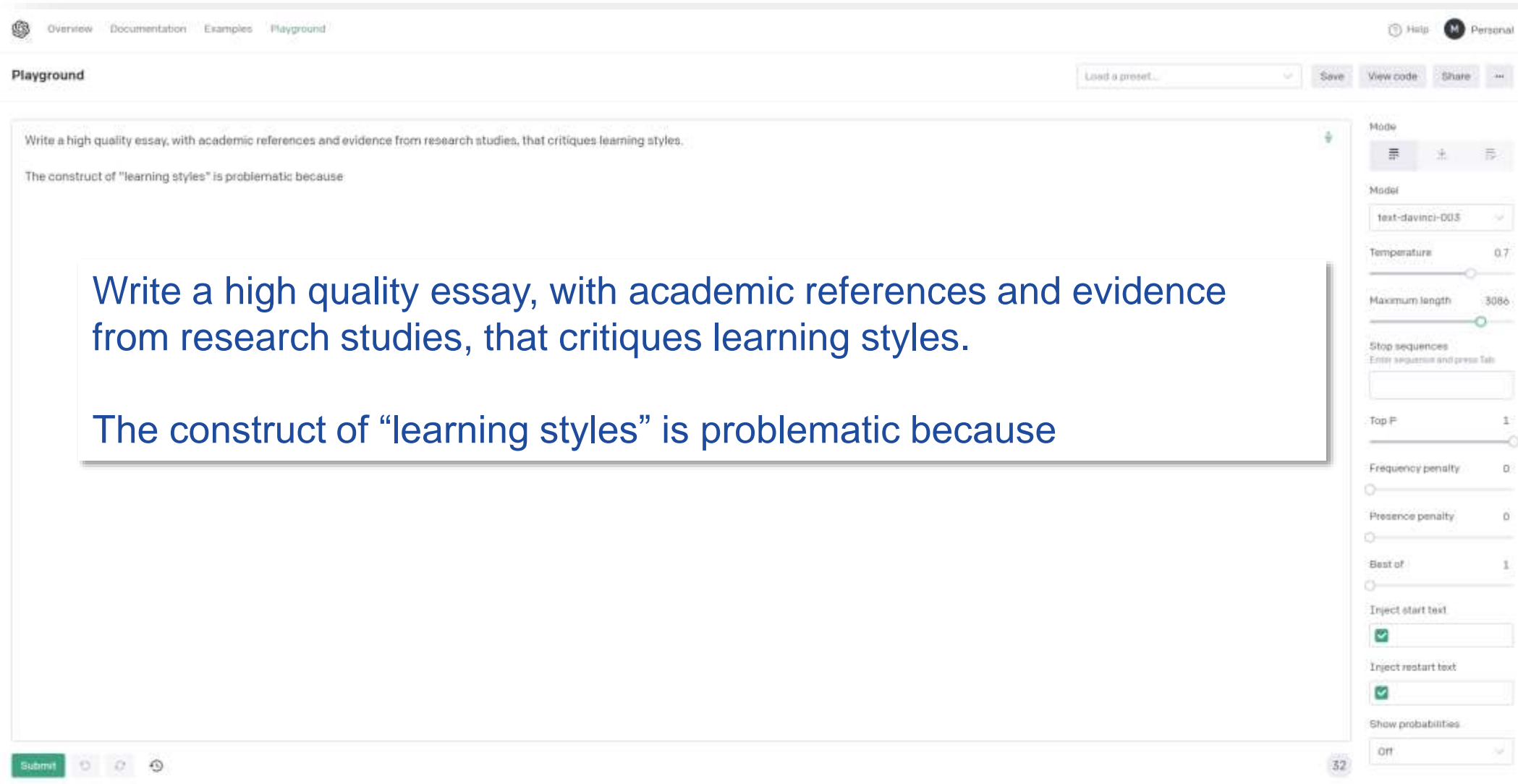
- Mode:
- Model: text-davinci-003
- Temperature: 0.7
- Maximum length: 3086
- Stop sequences:
- Top P: 1
- Frequency penalty: 0
- Presence penalty: 0
- Best of: 1
- Inject start text:
- Inject restart text:
- Show probabilities: Off

At the bottom left, there is a "Submit" button and a "32" badge.



# GPT-3 interface

<https://openai.com/api/>



The screenshot displays the OpenAI Playground interface. At the top, there are navigation links for Overview, Documentation, Examples, and Playground. The Playground title is on the left, and on the right, there are buttons for 'Load a preset...', 'Save', 'View code', and 'Share'. The main text area contains the prompt: 'Write a high quality essay, with academic references and evidence from research studies, that critiques learning styles.' Below this, the start of the model's response is visible: 'The construct of "learning styles" is problematic because'. A large white box highlights the prompt and the beginning of the response. On the right side, a settings sidebar is visible with various parameters: Mode (set to 'Text'), Model (set to 'text-davinci-003'), Temperature (0.7), Maximum length (3086), Stop sequences (empty), Top P (1), Frequency penalty (0), Presence penalty (0), Best of (1), Inject start text (checked), Inject restart text (checked), and Show probabilities (Off). At the bottom left, there is a 'Submit' button and a refresh icon. At the bottom right, a token count of '32' is shown.

# GPT-3 interface

<https://openai.com/api/>

The screenshot shows the OpenAI Playground interface. At the top, there are navigation links for Overview, Documentation, Examples, and Playground. On the right, there are links for Help and Personal. The main area is titled "Playground" and contains a text input field with the prompt: "Write a high quality essay, with academic references and evidence from research studies, that critiques learning styles." Below the prompt, the generated response is displayed, consisting of three paragraphs and a references section. The response critiques the concept of learning styles, arguing that it is oversimplified and not supported by empirical evidence. The references section lists four academic sources: Grigorenko & Sternberg (2008), Keefe (1979), Kiger et al. (2018), and Pashler et al. (2009). On the right side of the interface, there is a settings panel with various controls: Mode (set to text), Model (set to text-davinci-003), Temperature (set to 0.7), Maximum length (set to 1631), Stop sequences (empty), Top P (set to 1), Frequency penalty (set to 0), Presence penalty (set to 0), Best of (set to 1), Inject start text (checked), Inject restart text (checked), and Show probabilities (set to Off). At the bottom left, there is a "Submit" button and several icons for refreshing, undo, redo, and other actions. At the bottom right, there is a token count of 676.

Overview Documentation Examples Playground

Help Personal

Playground Load a preset... Save View code Share

Write a high quality essay, with academic references and evidence from research studies, that critiques learning styles.

The construct of "learning styles" is problematic because it oversimplifies the complex process of learning and has not been supported by empirical evidence. Learning styles are often defined as "characteristic cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (Keefe, 1979, p. 37). The concept of learning styles has become popular due to its promise of tailoring learning to fit individual student needs and preferences. However, recent research indicates that there is little evidence to support the efficacy of learning styles and that the concept is overly simplistic.

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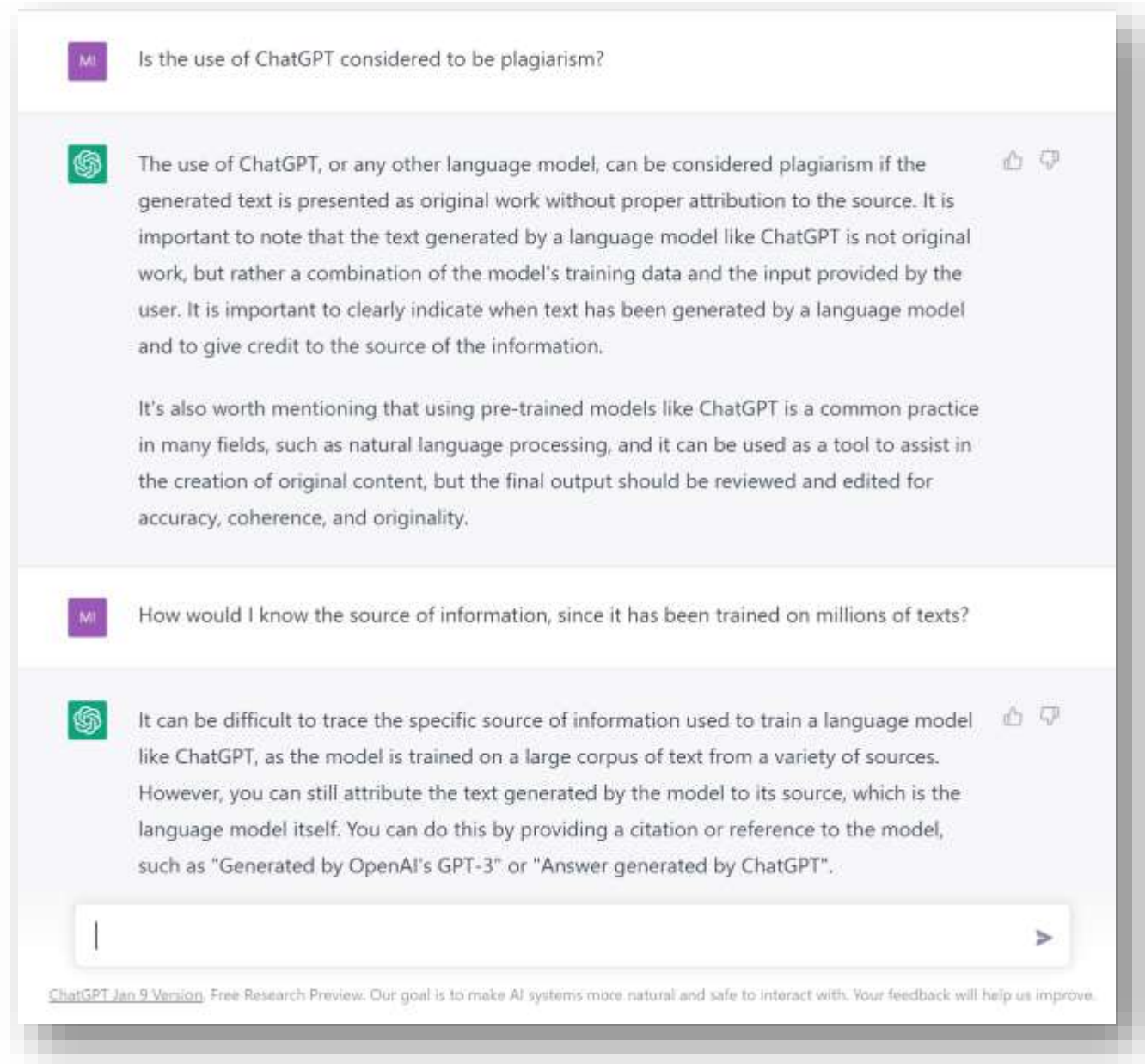
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Mode: text  
Model: text-davinci-003  
Temperature: 0.7  
Maximum length: 1631  
Stop sequences: Enter sequence and press Tab  
Top P: 1  
Frequency penalty: 0  
Presence penalty: 0  
Best of: 1  
Inject start text:   
Inject restart text:   
Show probabilities: Off

Submit Refresh Undo Redo Copy Paste 676

# ChatGPT – a conversational agent based on GPT-3

<https://openai.com/blog/chatgpt/>



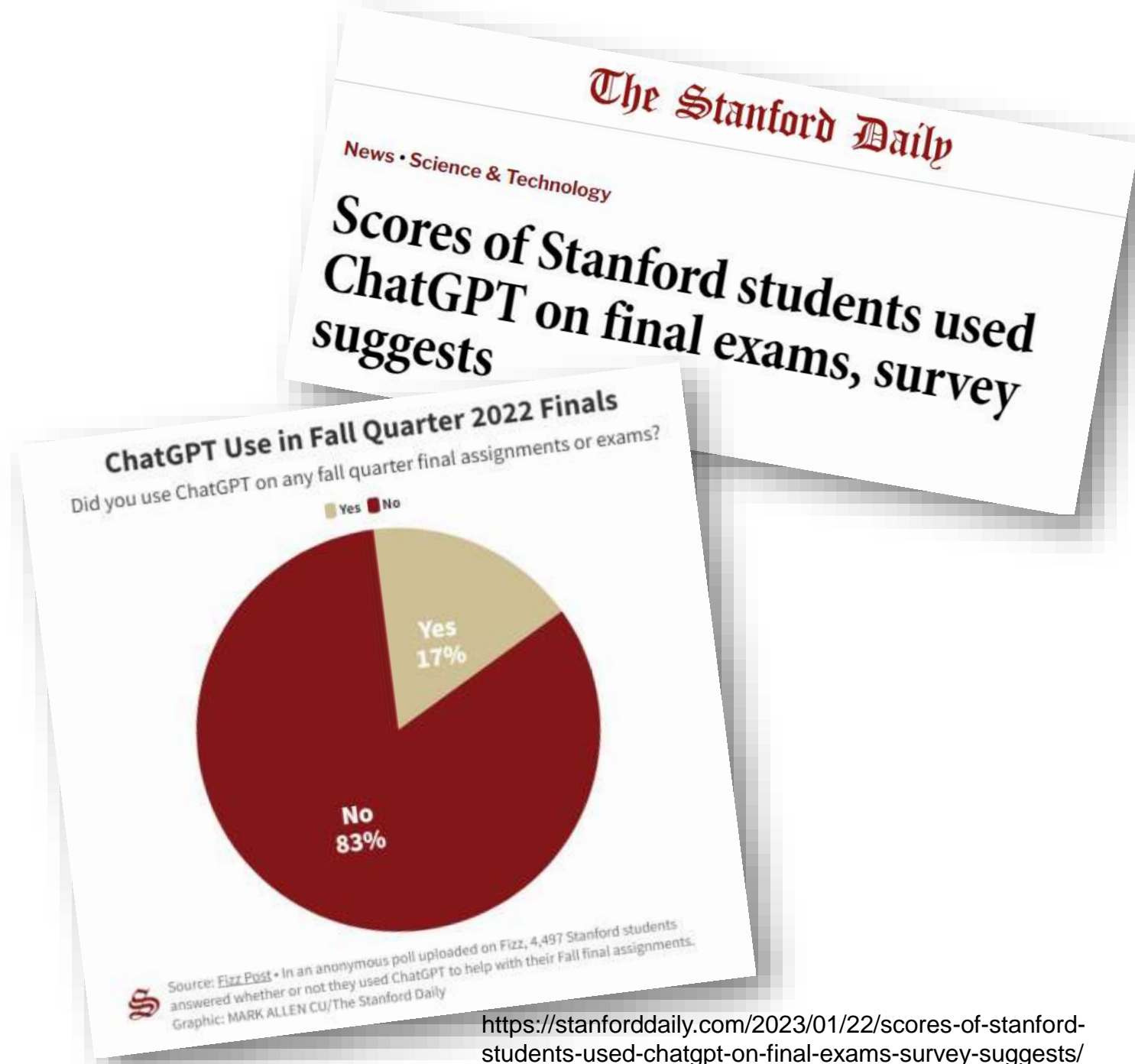
The screenshot shows a chat interface with a user asking a question and ChatGPT providing a detailed answer. The user's question is: "Is the use of ChatGPT considered to be plagiarism?". ChatGPT's response explains that the use of ChatGPT can be considered plagiarism if the generated text is presented as original work without proper attribution. It notes that the text generated by a language model like ChatGPT is not original work, but rather a combination of the model's training data and the input provided by the user. It is important to clearly indicate when text has been generated by a language model and to give credit to the source of the information. ChatGPT also mentions that using pre-trained models like ChatGPT is a common practice in many fields, such as natural language processing, and it can be used as a tool to assist in the creation of original content, but the final output should be reviewed and edited for accuracy, coherence, and originality.

The user then asks: "How would I know the source of information, since it has been trained on millions of texts?". ChatGPT's response explains that it can be difficult to trace the specific source of information used to train a language model like ChatGPT, as the model is trained on a large corpus of text from a variety of sources. However, you can still attribute the text generated by the model to its source, which is the language model itself. You can do this by providing a citation or reference to the model, such as "Generated by OpenAI's GPT-3" or "Answer generated by ChatGPT".

At the bottom of the chat interface, there is a text input field with a cursor and a send button. Below the input field, there is a footer text: "ChatGPT Jan 9 Version. Free Research Preview. Our goal is to make AI systems more natural and safe to interact with. Your feedback will help us improve."

Part of my dialogue with ChatGPT about plagiarism

Students are already using GPT-3 and ChatGPT to help them write essays and assignments



Not theft. In Europe, copyright does not apply to works generated by AI.

<https://www.gevers.eu/blog/artificial-intelligence/artificial-intelligence-ai-the-qualification-of-ai-creations-as-works-under-eu-copyright-law/>

(though need to consider the “fair use” policy of the company providing the software)

Is generating essays with AI a failure of learning?

How do Transformer AI systems work?

How can we detect whether an academic essay has been written by an AI?

Could any good come from widespread use of such technology?

How do Transformer AI systems work?



# Transformer AI system

(also known as a Large Language Model, e.g. GPT-3, ChatGPT)

Highly-trained text completer and style copier (trained on millions of texts).

Instead of predicting the next word or phrase, it attends to the previous 750 words, and can write an entire short story, blog, poem, or student essay.

It can be given a direct instruction, such as “Write a high quality essay, with academic references and evidence from research studies, that critiques learning styles.”

It can also summarise a scientific article in simpler language, write a review, translate languages, and answer questions.

A Transformer AI system is **not a database**. It is a general-purpose language machine.

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## A critique of learning styles

Novel text –  
not copied

Flawless  
grammar

Introduction

Headings &  
paragraphs

Examples

Progression

Citations

Conclusion

References

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Invented  
research  
study

Fake  
academic  
paper

GPT-3 invented a research study because I asked it to:

“Write a high quality essay, with academic references and evidence from research studies”

AI Transformer Networks are hugely capable generators of believable text

but...

can't access current information,

can't reflect on what they have written,

have no explicit model of how the world works,

and are amoral.

They are language machines, not reasoning systems

How can we detect whether an academic essay  
has been written by an AI?

# Can plagiarism software detect AI essays?

Plagiarism software will not detect AI-generated text

The text is generated, not copied

For the “learning styles” example, two plagiarism detectors each indicated over 90% unique text

<https://plagiarismdetector.net/> - 100%

<https://www.quetext.com/> - 91%

The screenshot displays the Quetext plagiarism detection interface. On the left, a text box contains the following paragraph: "The construct of 'learning styles' is problematic because it oversimplifies the complex process of learning and has not been supported by empirical evidence. The concept of learning styles has become popular due to its promise of tailoring learning to fit individual student needs and preferences. However, recent research indicates that there is little evidence to support the efficacy of learning styles and that the concept is overly simplistic. The idea of learning styles is based on the notion that individuals have distinct preferences for how they learn and process information. This construct has been used to argue that learning should be tailored to individual students, with instruction based on their preferred learning style. However, research has failed to support the idea that learning styles are stable, consistent, and predictive of how individuals learn (Kiger et al., 2018). For example, a meta-analysis by Foshier et al. (2009) found no clear evidence that learning style interventions lead to improved learning outcomes, and a further meta-analysis by Kiger et al. (2018) found no reliable link between learning style preferences and performance. In addition, the notion of learning styles is overly simplistic and fails to account for the complexity of learning. Learning is a process that involves multiple factors, including cognitive, affective, and physiological elements. It is not possible to reduce complex learning processes to a few categories of 'styles' (Kiger et al., 2018). Furthermore, the notion of learning styles is based on the idea that individuals will process information in the same way each time, whereas in reality, learning is an ongoing process that is constantly changing and adapting to new contexts (Engorenko & Sternberg, 2008). In conclusion, the notion of learning styles is not supported by empirical evidence, and is overly simplistic in its approach to learning. Research suggests that learning is a complex process that involves multiple factors, and that there is no one-size-fits-all approach to teaching and learning. Educators should be wary of learning styles as an instructional tool."

On the right, a sidebar shows a search bar with a 91% match indicator. Below the search bar, two search results are listed:

- 100% sbajournal.org
- 100% www.thefollows.org



# Can humans detect AI-generated essays?

Academics were asked to rate essay on four topics

Topic	Human-written essay: grade	GPT-3-generated essay: grade
Research methods	B & D	C
US History	B	B-
Creative Writing	A, B+, D+	F
Law	A-, C-, F	B-

None of the professors realised that the GPT-3 essays were generated by computer. “GPT-3’s assignments received more or less the same feedback as the human writers.”

<https://best-universities.net/features/what-grades-can-ai-get-in-college/>

# Can AI detect AI-generated essays?

**Giant Language model Test Room**

The GLTR demo enables forensic inspection of the visual footprint of a language model on input text to detect whether a text could be real or fake. It is a collaborative effort between [Haridh Strabell](#), [Sebastian Gehrmann](#), and [Alexander Rush](#) from the [MIT-IBM Watson AI Lab](#) and [Harvard NLP](#).

Please read the detailed [intro about GLTR](#).

Each text is analyzed by how likely each word would be the predicted word given the context to the left. If the actual used word would be in the Top 10 predicted words the background is colored green, for Top 100 in yellow, Top 1000 red, otherwise violet. Try some sample texts from below and see for yourself if you can spot the difference between machine generated text and human generated text or try your own. (Tip: hover over the words for more detail)

The histograms show some statistic about the text:  $Frac(p)$  describes the fraction of probability for the actual word divided by the maximum probability of any word at this position. The Top 10 entropy describes the entropy along the top 10 results for each word.

**Test-Model: gpt-2-small**

**Quick start - select a demo text:**

or enter a text:

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[Intro about GLTR](#)  
MIT-IBM Watson AI Lab and Harvard NLP

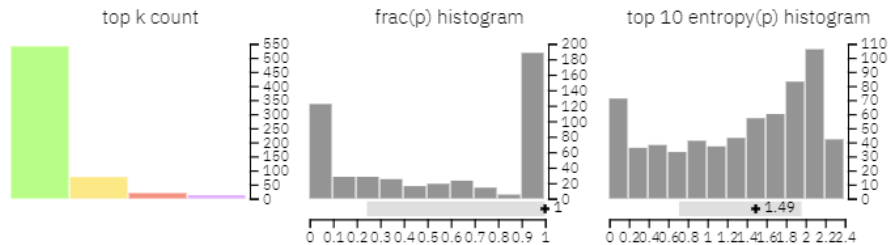
Giant Language Test Room: project with IBM and Harvard to detect whether a text is authored by human or AI.

Looks for unpredictable words in the text.

Assumption that an AI generates likely words, but a human frequently chooses less predictable words.

<http://gltr.io/dist/index.html>

# AI-generated learning styles essay vs university student essay – marginal difference



Top K: 10, 100, 1000, Colors (top k): 10, 100, 1000

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In addition, the notion of learning styles is overly simplistic and fails to account for the complexity of learning. Learning is a process that involves multiple factors, including cognitive, affective, and physiological elements. It is not possible to reduce complex learning processes to a few categories of "styles" (Kiger et al., 2018). Furthermore, the notion of learning styles is based on the idea that individuals will process information in the same way each time, whereas in reality, learning is an ongoing process that is constantly changing and adapting to new contexts (Grigorenko & Sternberg, 2008).

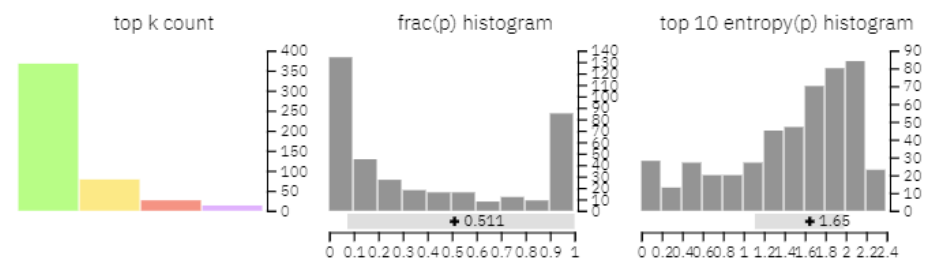
In conclusion, the notion of learning styles is not supported by empirical evidence, and is overly simplistic in its approach to learning. Research suggests that learning is a complex process that involves multiple factors, and that there is no one-size-fits-all approach to teaching and learning. Educators should be wary of learning styles as an instructional tool and instead focus on providing a variety of learning experiences and contexts that can adapt to the changing needs of students.

## References

- Grigorenko, E.L., & Sternberg, R.J. (2008). *Dynamic testing: The nature and measurement of learning potential*. New York, NY: Cambridge University Press.
- Keefe, J.W. (1979). Learning styles: Implications for improving educational practices. *Review of Educational Research*, 49(3), pp. 375-409.
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MIT-IBM Watson AI lab and Harvard NLP



Top K: 10, 100, 1000, Colors (top k): 10, 100, 1000

## Introduction

The aim of this essay is to examine whether the recently announced expansion of the grammar school system is likely to increase social mobility. As education is a devolved matter in the UK, this essay relates to the situation in England. Having contextualised the debate and introduced the key concepts used, the essay then proceeds to examine the issue from two opposing sides. The essay concludes by suggesting that perceptions on whether grammar schools can increase social mobility is highly dependent on political viewpoint.

## Context

The debate about grammar schools versus comprehensive schools is a highly emotive one which has again come to the fore. Since the mid-1960s, when almost a quarter of all secondary school pupils attended one of the 1,300 grammar schools available in England, there has been a vast reduction in the number of state-funded schools which select pupils on the basis of academic ability (Bolton, 2017). There are currently 163 grammar schools in England (Wright, 2018), compared to more than 3,300 secondary comprehensive schools (BBC News, 2018a), i.e. under 5% of schools are classified as grammar schools.

In May 2018, the Government announced an extra £50 million, as part of a "Selective Schools Expansion Fund" (DfE, 2018: 1) for the 2018/2019 academic year, to enable existing schools to create new grammar school places. This is a slimmed down version of the Conservative Party's 2017 election manifesto, which included a pledge to enable new grammar schools to be created (Conservative Party, 2017). However, as the Conservatives lost their overall majority in the June 2017 election, these plans were subsequently shelved (Busby, 2018).

On the one hand, the Government refers to this new policy as an opportunity for children from disadvantaged backgrounds to attend "good" schools (DfE, 2018: 1), as well as increasing "choice" (Millar, 2016: 1) for parents. It is suggested that these are highly value-laden terms, which are derived from the "neoliberal" ideology (Angus, 2015: 395) underpinning both the current and previous governments' educational policymaking. On the other hand, the National Education Union describes this expansion of selectivity within education as "the grammar school corpse" climbing "out of its coffin once again" (Courtney, 2018 quoted by Adams, 2018: 1).

<https://www.ukessays.com/services/samples/2-1-education-essay.php>

# Ask GPT-3

## Was that essay written by a human or a computer?

### A critique of learning styles

The construct of "learning styles" is problematic because it oversimplifies the complex process of learning and has not been supported by empirical evidence. Learning styles are often defined as "characteristic cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (Keefe, 1979, p. 37). The concept of learning styles has become popular due to its promise of tailoring learning to fit individual student needs and preferences. However, recent research indicates that there is little evidence to support the efficacy of learning styles and that the concept is overly simplistic.

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Was that essay written by a human or computer, and why?

This essay was written by a human. The writing style and sentence structure demonstrate a deep understanding of the topic, and the essay contains evidence-based analysis and references to support the argument. A computer would not be able to generate this level of sophisticated and nuanced writing]

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# How to detect AI-generated academic writing

Look for:

- Fake references
- Invented research studies
- Failure in knowledge of how the world works

Comprehensive study in 2021 of state-of-the art methods to detect whether an extended text is written by human or AI.

For human-based detection:

“humans detect machine-generated texts at chance level”

For AI-based detection:

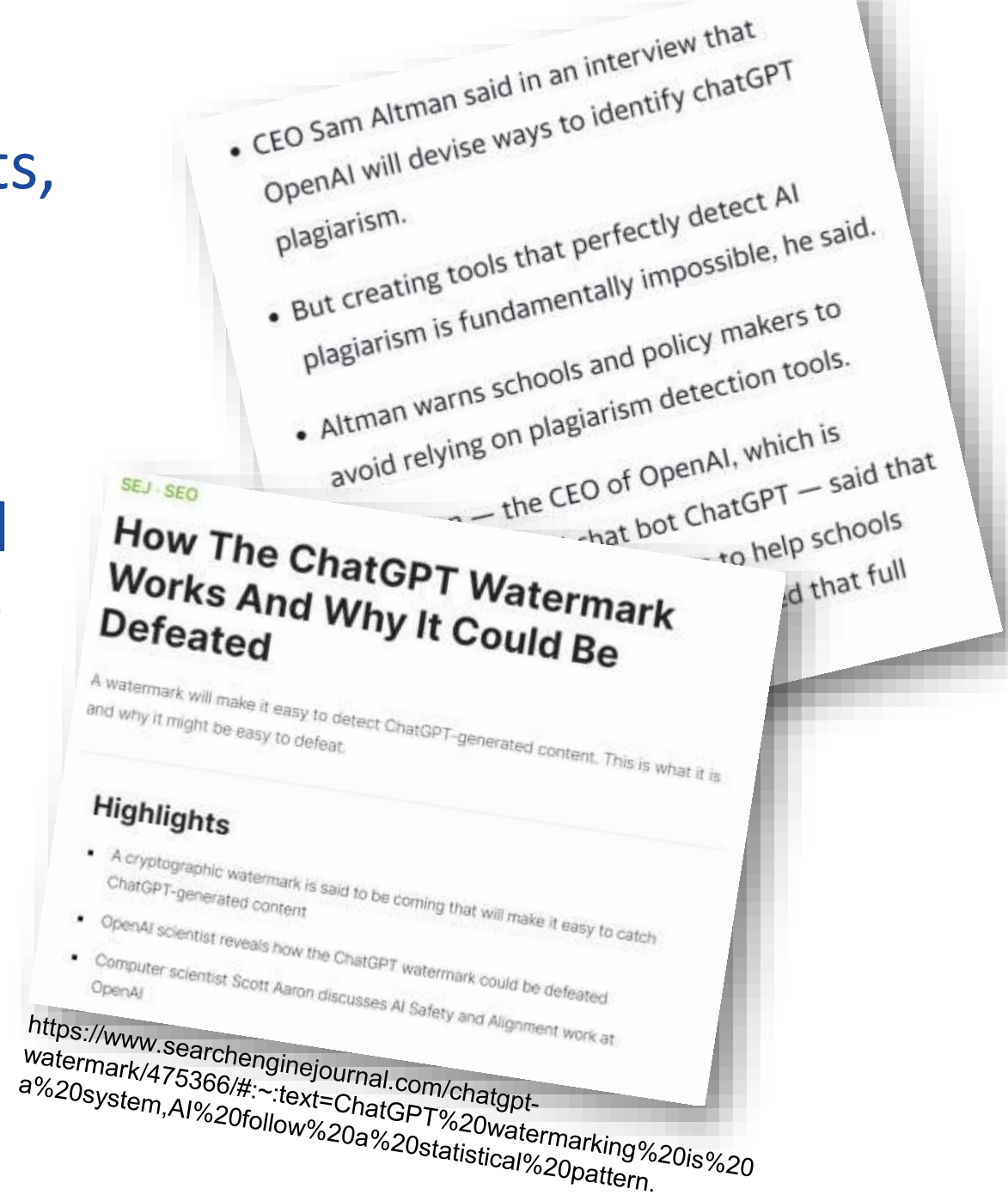
“overall, the community needs to research and develop better solutions for mission-critical applications”

Uchendu, A., Ma, Z., Le, T., Zhang, R., & Lee, D. (2021). TURINGBENCH: A Benchmark Environment for Turing Test in the Age of Neural Text Generation. *Findings of the Association for Computational Linguistics: EMNLP 2021*, pp. 2001–2016, Punta Cana, Dominican Republic, November. Association for Computational Linguistics.

Other methods, such as “digital watermarking” of AI-generated texts, can be overcome.

Any sufficiently advanced AI language detector will be outwitted by a similarly advanced AI language generator, in a futile “arms race”.

Students employ AI to write assignments. Teachers use AI to assess and review them. **Nobody learns, nobody gains.**





# Plagiarism Future

Could any good come from widespread use of such technology?

# Focus on higher-level aspects of writing

AI-assisted writing assignments could focus on skills of critical reading, accuracy, argumentation and structure.

Invigilated writing assignments where AI is not allowed could be assessed for style, expression, voice and personal reflection.

# AI as a playground to explore academic writing and thinking

Educator employs AI to generate alternative essays on a topic, then asks students to critique these and write better versions.

Educator sets a complex question, each student generates an AI response, then as a group the students assess these responses. Each student writes an integrative essay drawing on the AI text.

# AI as a playground to explore academic writing and thinking

Student employs AI as an opponent in forming an argument.

Q: What are learning styles?

A: Learning styles refer to a range of theories that aim to account for differences in individuals' learning.

Q: Should a teacher adjust teaching to match each student's learning style?

A: There is no consistent evidence that identifying an individual student's learning style and teaching for specific learning styles produces better student outcomes.

Q: Can a teacher discover a student's learning style?

A: Yes, a teacher can observe and assess a student's learning style by looking for patterns in the way they interact with the material, their preferences and working habits.

Q: What is the value of observing and assessing a student's learning style?

A: Observing and assessing a student's learning style can help a teacher customize their teaching approach to the individual student and make adjustments to their teaching strategy and materials to best suit the student's particular needs.

Q: But there is no consistent evidence that identifying a student's learning style leads to better outcomes, so what is the point of assessing a student's learning style?

A: Assessing a student's learning style can give the teacher insight into the student's individual needs, abilities, and preferences, which can aid in developing more effective teaching strategies and materials. While identifying a student's learning style may not lead to better outcomes in and of itself, it can help the teacher create an environment that encourages the student to engage in the material and learn more effectively.

Q:



# A tool for academic writing

Write an outline for an academic paper on the implications for educational assessment of students who employ AI text generators to write their assignments.

## I. Introduction

- A. Definition of Artificial Intelligence (AI)
- B. Brief overview of AI Text Generators
- C. Significance of the topic

## II. The Impact of AI Text Generators on Educational Assessment

- A. How AI Text Generators are used in the classroom
- B. The impact of AI Text Generators on the assessment process
- C. Challenges posed by AI Text Generators on educational assessment

## III. Strategies to Address the Implications of AI Text Generators in Educational Assessment

- A. Developing strategies to detect AI Text Generators
- B. Developing strategies to mitigate the potential misuse of AI Text Generators
- C. Developing strategies to ensure the validity of educational assessment

## IV. Conclusion

- A. Summary of key points
- B. Recommendations for further research

# A tool for creative writing

Write an outline plot for a novel about a man and a woman who discover true happiness by living together as fantasy characters.

## I. Introduction:

A. Meet the main characters: John and Sarah

B. Describe their current lives, which are unsatisfying and mundane

## II. Conflict:

A. John and Sarah decide to escape their mundane lives by creating two fantasy characters, "Prince John" and "Princess Sarah"

B. They move into a world of make-believe and live as their fantasy characters

## III. Rising Action:

A. John and Sarah discover new joys and happiness while living as their fantasy characters

B. They find themselves falling in love with each other and their new lives

## IV. Climax:

A. John and Sarah's fantasy lives are threatened when their true identities are discovered

B. Despite the danger, they decide to stay in their fantasy world

## V. Resolution:

A. John and Sarah find true happiness by living as their fantasy characters

B. They get married and live happily ever after in their fantasy world

# A tool for creative writing

**Half-closing her eyes, Gina could see a speck of black silhouetted against the bright sunshine. It grew slowly in size until she could make out the shape of a car coming down the dusty track towards the cabin.** Her stomach lurched and she stood up, brushing down her skirt. She looked at herself in the mirror and adjusted her short-sleeved shirt, which she'd put on over a thin vest. Her lips were dry and when she licked them they stuck together. She took a deep breath and went out onto the porch to wait for the visitor. The car slid to a halt and Gina could see that it was a Jeep. She was surprised to see that it was dark green, instead of the usual khaki that the army used. The door opened and a big man got out. He was dressed in civilian clothes and wore **a loose-fitting linen jacket over a crisp white shirt. He stood for a moment surveying the cabin, then walked up to Gina and held out a hand.**

**“Please accept our apologies,” he said. “We wouldn’t normally disturb you, but we need to talk to you.”**

“I’m sorry,” said Gina. “Who are you?”

“I’m Colonel Gunnar Olsen. I work for the Ministry of Defence in Oslo.”

Gina knew that he was lying, but she shook his hand anyway and invited him into the cabin. Olsen moved with a slow, rolling gait and he seemed to fill the room as he sat down on the couch. He turned to Gina and said, “Please forgive me for being abrupt, but we have no time to waste. We have a problem that we need your help with.

My contribution in **bold**, GPT-3 continuation in regular font



Students are using increasingly sophisticated generative AI tools.

We can't (easily) detect them.

We can't (easily) avoid them.

As educators and policy makers we must find creative ways to **engage them** to enhance the learning process.

Explores machines as authors of fiction, past, present and future.

From Ramon Llull to GPT-3

