

Pedagogical approaches to ChatGPT and other large language models

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3 May 2023

Overview

“Artificial intelligence and academic integrity in political science education”

Large language models

Pedagogical approaches: mitigate, inform, adopt

Artificial intelligence literacy

Broad types of artificial intelligence

Artificial **narrow** intelligence (ANI) → task specific

Artificial **general** intelligence (AGI) → human level

Artificial **super** intelligence (ASI) → super-human level

Actually existing 'artificial intelligence' is a **marketing term** for a wide range of task-specific algorithmic systems

Machine learning

Advances in ANI over the past 10 years have been driven by:

1. Improved machine learning **algorithms**
2. **Big data**
3. Increased **computational capacity**

The most influential machine learning method is '**deep neural networks**', which are very good at pattern-matching

Large language models

LLMs are a type of 'natural language processing' and most primarily use deep neural networks to generate text ('generative AI')

'Trained' on huge amounts of text from the Internet (ChatGPT is based on about 45 terabytes of text, from books to Reddit posts)

Outputs are based on **pattern matches** with both the user's prompt and previously generated text and constrained by **guidelines**

Pedagogical approaches to LLMs

Mitigate

Regulate large language model use and change assessment design

Inform

Teach students what large language models are, what they can do, and when their use is appropriate

Adopt

Incorporate large language models into the curriculum

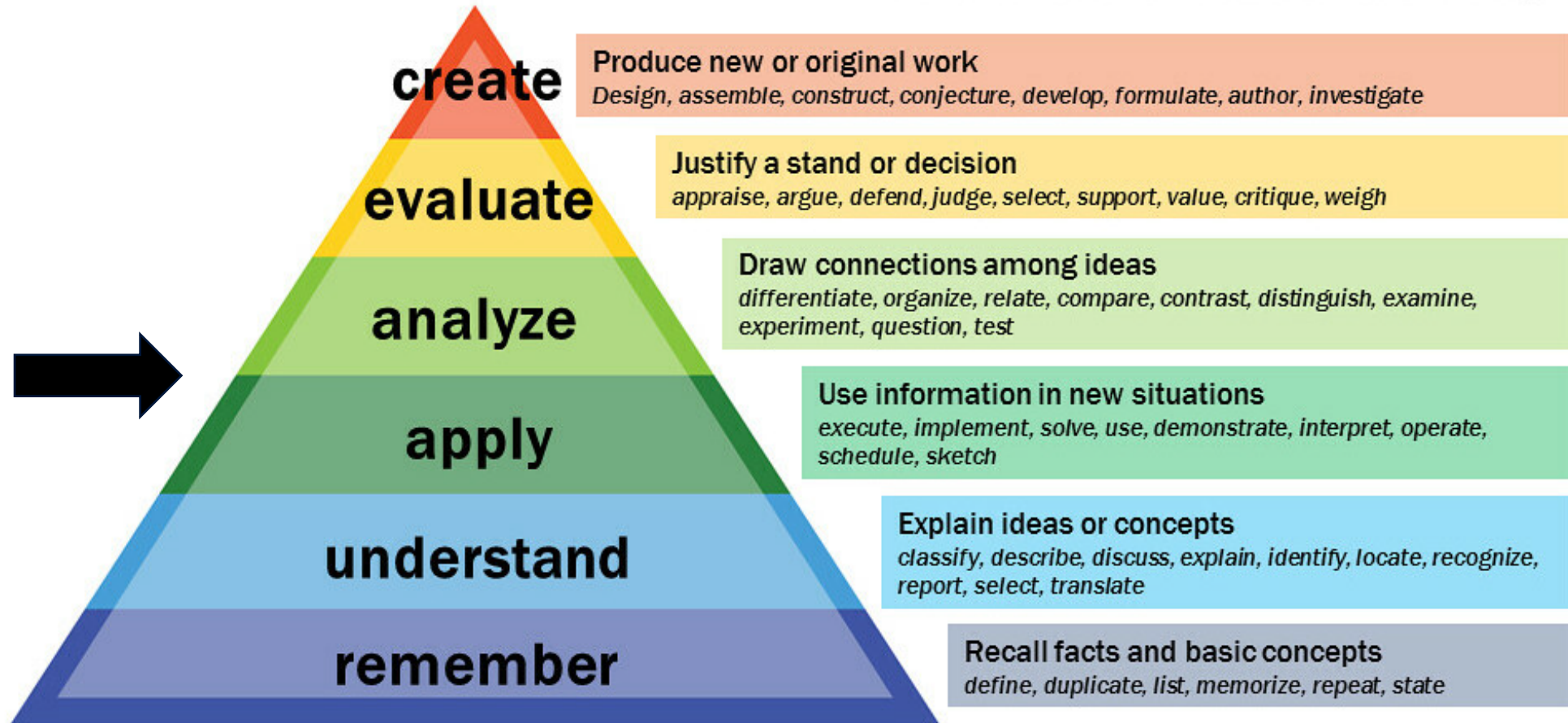
Mitigate

Limit the use of ChatGPT and other large language models to purposes approved by the course instructor

Treat unauthorized use of LLMs as a form of 'contract cheating'

Emphasize analytical, evaluative, and creative tasks in all assessments, following Bloom's taxonomy of cognitive processes in learning

Bloom's Taxonomy



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Inform

Emphasize terms such as ‘large language model’, ‘machine learning’, and ‘algorithmic system’ over ‘artificial intelligence’

Explain that LLMs are pattern-matching *mimics* (“stochastic parrots”, Bender *et al.* 2021) that do not have the capacity to *understand* anything

Explain how *writing is part of the learning process*, not just an ‘output’

Adopt

Encourage the use of automation for tasks that are not integral to learning and for which 'cognitive offloading' (Dawson 2020) is appropriate

LLMs may often be a useful starting tool for other tasks, but it's more like talking with a knowledgeable but overconfident peer than an expert

LLMs should only be used for research insofar as they follow the inferential and evidentiary standards of your discipline

Artificial intelligence literacy

Explain the character and limitations of algorithmic systems

Explain the importance of how algorithmic systems are perceived and other social implications

Explain how and when algorithmic systems should and shouldn't be used