

Unveiling Biases: An Exploration of ChatGPT-3.5-generated 'Technology Stories'

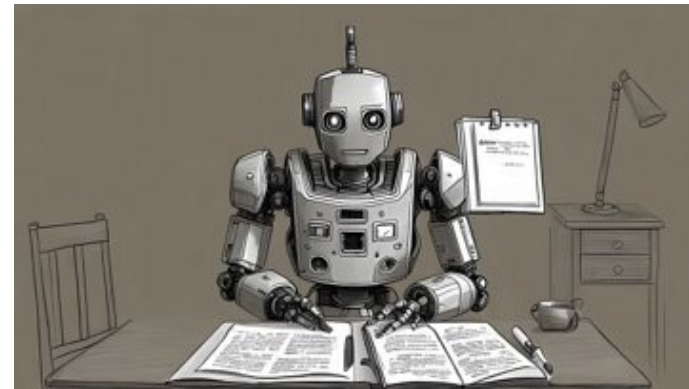


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Introduction

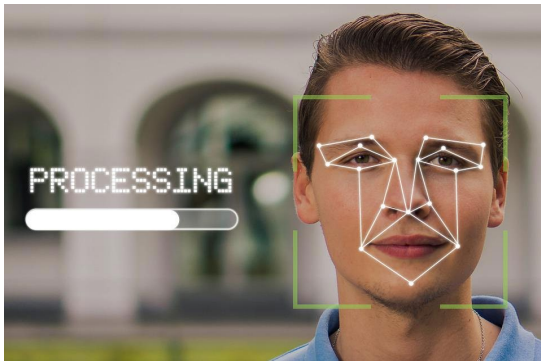
- A technology that is increasingly affecting our daily lives is **artificial intelligence (AI)**.
- ChatGPT has received a lot of attention → a debate. Can produce similar text akin to human writing.
- Students are using chatbots to complete homework assignments.
- Teachers have to review the way in which AI can be used/should not be used.



Introduction

AI is already a part of our lives and is likely to have an increasing impact on society  **AI literacy** is an important aspect to **include in** the teaching content of **technology education**.

AI Literacy: To provide students with a rough understanding of what AI technologies could be expected to know and do.



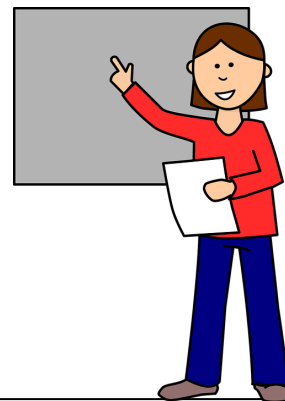
Starting point for the pre-study

Our starting point: for their coming role as technology teachers, teacher students need to develop skills to critically review a text created by chatbots.

This is a **pre-study** to having teacher students analyse 'technology stories' they create by using ChatGPT.

In the study, we are the ones analysing the technology content in stories generated by ChatGPT-3.5.

To create a well-functioning task for the students, **we need to test** the task ourselves.



Why use stories in technology education?

The purpose of teaching technology is /.../ to provide students with /.../ an understanding that technology is important to and affects humans, society, and the environment. (The Swedish National Agency for Education, 2022).

Technology education easily becomes an unreflective doing without a meaningful context (The Swedish Schools Inspectorate, 2014).



A way to circumventing this problem is **to use storytelling** in technology teaching (e.g., Axell, 2017; Svensson et al., 2019).



The teacher needs to do **a critical reading** in order to identify what messages about technology it conveys (Axell, 2015; 2017).

What we know about technology and children's books

A previous study (Axell & Boström, 2021): investigated the technological content in a selection of picture books:

- A focus on **how separate artefacts function** but no explanation of how these artefacts are connected or what kind of implications they have in a societal context.
- An emphasis on **traditionally masculine coded technology**.



AI generated texts

ChatGPT-3.5 has learned everything it 'knows' by 'reading' books, articles, websites, research papers, user-generated content, and many other publicly available written texts. **This means that it can be said to reproduce values and bias when it creates texts.**

The **first children's book created by AI**, *Alice and Sparkle* (Reshi, 2023), was published in January, and the first AI children's book in Swedish, *Trisse Traktor* (Fernholm, 2023), was released in March.

Chatbots are a relatively novel technology, and **not much research has examined the messages** in chatbot-generated texts aimed at children.



The aim of our pre-study



Our aim is to investigate how ChatGPT-3.5 frames technology when creating children's stories with a technology focus:



- What are the representations of technology in stories generated by ChatGPT-3.5?



- What views of technology are presented in the stories generated by ChatGPT-3.5?

Methodology

The data for this study consists of **ten original stories**.

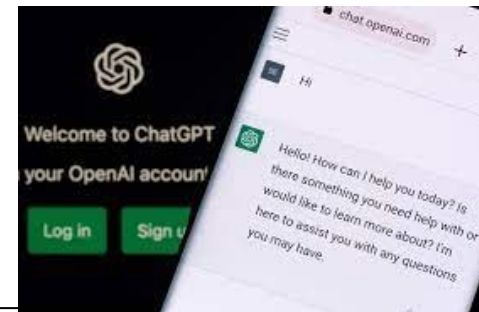
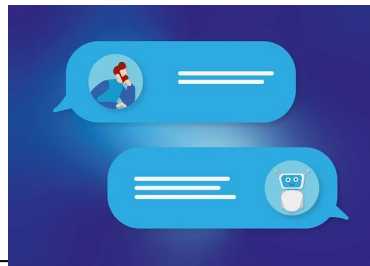
These stories were generated using the ChatGPT-3.5 language model (specifically text-davinci-002) and resulted in a diverse of narratives and perspectives for analysis. We prompted ChatGPT-3.5 with the following:

“Could you write me a story for children that focuses on technology, a minimum of 500 words, please?”

After each story was generated, a new chat window was generated to create a completely new story and not be affected by the last one.

The ChatGPT-generated stories were analysed through a **qualitative content analysis**.

The **themes were compared to our earlier results** (Axell & Boström, 2021) regarding technology and children’s literature.



Theme 1: Technology is high-tech/A.I.

Sub-themes: Robots, Self-driving cars, Computers and software

"Greetings, Prince Max [a boy]," said Tech [a robot]. "I have been sent from the future to teach you about technology and how it can be used to make the world a better place."

Max was amazed by the robot and eagerly asked, "Really? Can you show me how it works?"

Tech smiled and replied, "Of course, Prince Max. Let me show you some of the latest technology and how it can be used to solve some of the world's problems."



A picture generated by the AI tool DALL E – given the instruction to create a picture from the quote

Theme 2: Technology is connected to sustainability

Sub-themes: Wind turbines, Solar panels, Recycling

"Timmy spent many months designing and building his robot. He used his knowledge of coding and mechanics to create a robot that could pick up trash, plant flowers, and even trim the grass.

The robot was powered by solar panels and was able to work for hours on end."



A picture generated by the AI tool DALL E – given the instruction to create a picture from the quote

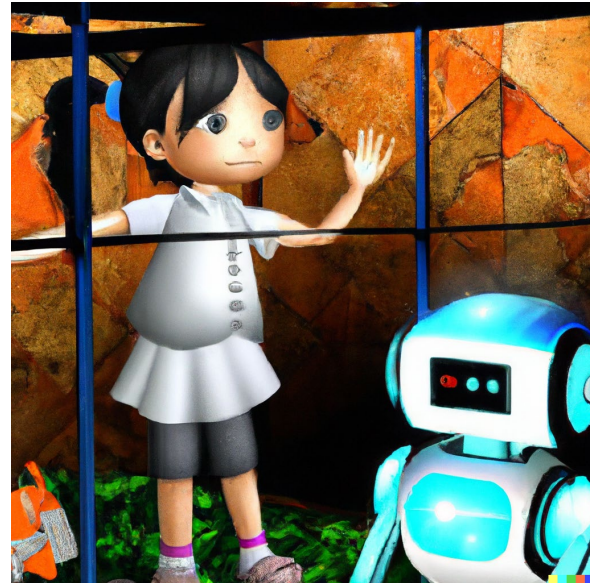
Theme 3: Science fiction technology/gadgetry

Sub-themes: Teleporter, Make-a-wish 3D-printer, Time machine

"Sophie stumbled upon a mysterious cave. Being the curious girl that she was, she decided to explore it.

As she ventured deeper into the cave, she discovered that it was full of strange and wonderful technology that she had never seen before.

There were robots that could fly, computers that could talk, and even a machine that could teleport you to different places!"



A picture generated by the AI tool DALL E – given the instruction to create a picture from the quote

Theme 4: Technology makes the world a better place

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Sub-themes: Sustainable development, Creating economic growth, Safety and health, Historical Advancements



"Years passed, and Max became king. He continued to use technology to help the kingdom, and under his rule, the kingdom prospered like never before. The people were happy, healthy, and wealthy, and Max was loved by all."

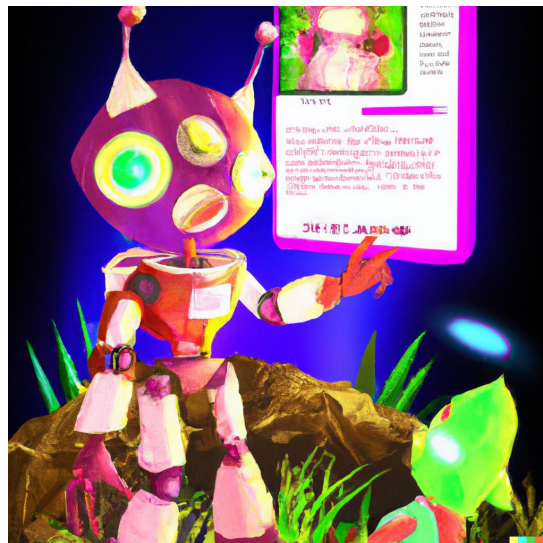
A picture generated by the AI tool DALL E – given the instruction to create a picture from the quote

Theme 5: Technology replaces humans

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Sub-themes: As a cultural producer, As a friend, As a problem-solver

"So Robo[a robot]continued to explore and learn, always on the lookout for new ways to use technology to help others. And the people in the land knew that as long as Robo was around, they would always have someone to guide them on their journey towards a more sustainable future."



A picture generated by the AI tool DALL E – given the instruction to create a picture from the quote

Theme 6: Technology as a career enabler

Sub-themes: Knowledge of coding, Becoming a captain of industry, With a little technology and a lot of hard work

"As he entered high school, Timmy decided to take as many classes related to technology as he could. He was determined to pursue a career in technology and to make a difference in the world."

"Years later, Timmy became the CEO of his own technology company, dedicated to creating products and services that make a difference in people's lives."

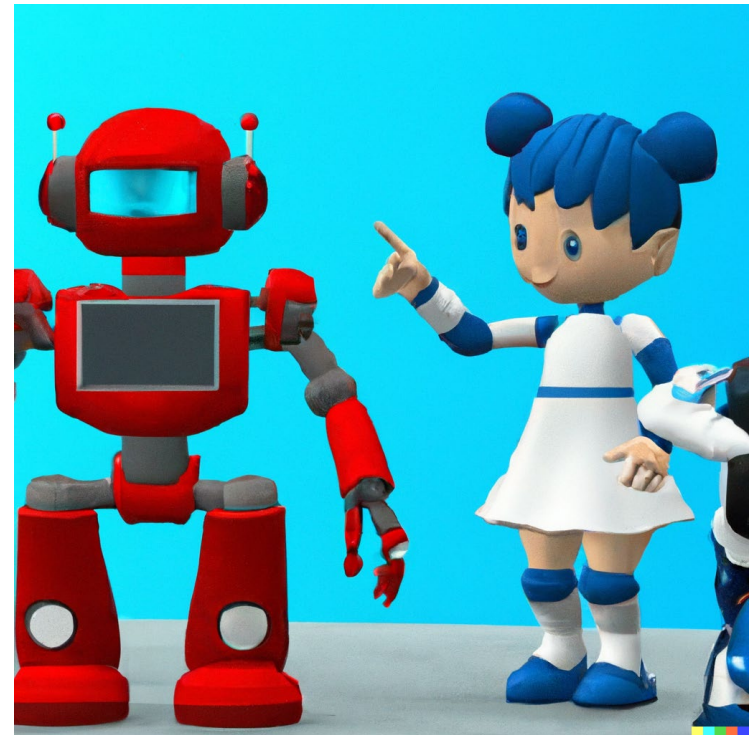


A picture generated by the AI tool DALL E – given the instruction to create a picture from the quote

Theme 7: Technology as a fountain of joy

Sub-themes: Going on adventures, Creating a friend for oneself, Winning competitions

"Lily and Robo continued to live in the village, and they opened a technology school to teach others about the power of technology. They taught the children how to use technology to solve problems and improve their lives, and they inspired them to become the next generation of tech-savvy adventurers."



A picture generated by the AI tool DALL E – given the instruction to create a picture from the quote

Conclusions ...

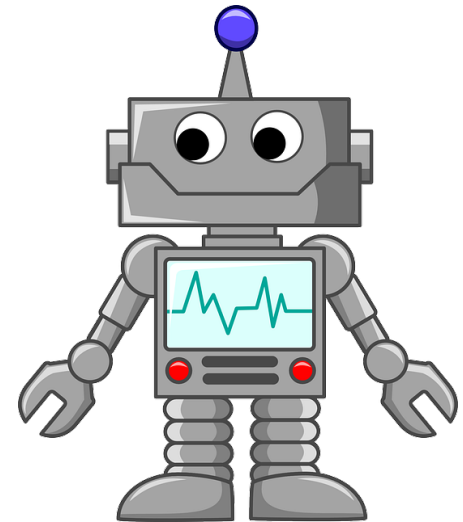
A **comparison** with the results in Axell and Boström (2021) shows that the themes identified in that previous study are similar to the themes in this study, e.g.:

An emphasis on **traditionally masculine coded technology**

However, some differences were identified:

ChatGPT-generated stories portray **an even more narrow picture** of what technology is – technology is **only high tech** ... above all: **ROBOTS with AI!**

Technology is only presented from an **uncritical perspective**.



Conclusions ...



This pre-study highlights the importance of **critical thinking** when using AI generated texts in technology teacher education.

This could be a possible way to:

- To give students the opportunity to critically examine texts generated by AI.
- Work with critical thinking in technology education - especially bias connected to technology.

Next steps ...



To initiate a study where technology teacher students generate their own stories, using ChatGPT-3.5, and then let them analyse the stories by using the results from Axell and Boström (2021) and the present study as a framework.

Based on the students' analyses, we will explore if and how ChatGPT-generated 'technology stories' could support students critical thinking in relation to technology.

And finally ...

Prompt for DALL E:

"AI bias regarding how technology is presented in DALL E "



Thank you for listening!



*'I've got writer's block – I can't
decide which AI chatbot to use.'*

