# Banning of ChatGPT from Educational Spaces: A Reddit Perspective

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## Abstract

With the introduction of ChatGPT on November 30, 2022, the online sphere was disrupted seemingly overnight, with its ability to generate human-like text and comprehensively answer questions. It has even been lauded as being able to aid in the editing and generation of code. Some schools and online question-and-answer forums, however, have banned its use. In this paper, we use Reddit data to examine the impact that the banning of the AI tool has had online early in the introduction of the AI, when it began to gain popularity. Our findings indicate that reactions have ranged from skepticism that the ban will work, loss of educational opportunity, to agreement that ChatGPT is not 100 percent accurate in its answers. Our preliminary findings reveal that based on Reddit discussions, it may be postulated that while it may be better to ban it from Question-and-Answer forums, in physical classrooms, ChatGPT may be seen to hinder students from finding their own solutions to problems, and may also provide the opportunity for students to critically view answers provided to them by the chatbot, strengthening their digital literacy and critical thinking skills.

## 1 Introduction

ChatGPT was released on November 30, 2022. Only a few days later, it disrupted the evaluation of education and how students interact with their assignments. Without any reliable tools available to evaluate which submissions were created with ChatGPT, New York City (NYC) public schools banned the use of the AI tool by not only students but teachers as well (Lubowitz, 2023; Baidoo-Anu and Ansah, 2023). As a large language model trained by OpenAI as an interactive chat module to aid in language-related tasks such as answering questions and even aiding in writing code, it has caused concern to learners and educators that it provides easy access to answers with little understand-

ing of the topic, in addition to it occasionally confidently providing erroneous or biased responses unbeknownst to the inquirer.

In this study, topic modeling will be used to explore online reactions to the NYC ban comparing two different groups: educators and programmers. Succinctly put, reactions have mostly been skeptical of the effectiveness of preventing plagiarism and instead, there have been calls for a review and revision of the education system. Meanwhile, when ChatGPT was banned (Kabir et al., 2023) on the question-and-answer website for programmers, StackOverflow, reactions seemed more agreeable with the ban, emphasizing its generation of incorrect answers.

## 2 Background

Public sentiment towards ChatGPT has been largely positive (Tlili et al., 2023). However, the reaction from educators has been more mixed (Sullivan et al., 2023; Neumann et al., 2023). Even though it has been less than a year since ChatGPT has been publicly available, plenty of academic literature on its impact on education exists already, both for and against its inclusion as a tool in education. The mixed reactions from educators include some heralding it as a progressive step into the future leveling the playing field by providing equitable learning opportunities (Sullivan et al., 2023), and others fearing its potential to reduce analytical and critical thinking skills while promoting academic misconduct (Grassini, 2023; Yu, 2023).

Some researchers believe that the use of ChatGPT in classrooms will increase engagement and interaction and provide a personalized learning experience, but highlight a need for a strong focus on critical thinking skills (Kasneci et al., 2023). Many also worry about not just the generation of wrong information, but also the augmentation of biases that exist in the training data and the risks to pri-

vacy and security (Baidoo-Anu and Ansah, 2023; Yu, 2023).

Kabir et al. (2023) even pitted StackOverflow and ChatGPT against each other in order to determine which platform provides better answers. They found that despite 52% of ChatGPT answers containing inaccuracies, users preferred ChatGPT's answers due to their comprehensiveness. On the other hand, StackOverflow has often been accused of providing rude and condescending answers to user questions (Calefato et al., 2018; Brooke, 2019) so it is plausible that the fact that ChatGPT does not mock the question is preferable to especially beginner programmers unsure of their own skills despite the risk of providing inaccurate answers.

Recent studies have also leveraged Reddit to collect data on posts discussing the usage of ChatGPT, or attempt to apply the AI as an analytical tool in various fields from mental health care, streaming media, content moderation, and applications of such generative AI (Haman et al., 2023; Feng et al., 2023; Choi et al., 2023; Wickham and Öhman, 2022). While this research preceded the introduction of ChatGPT, researchers have also found that educators widely use Reddit given that the website is able to host a wide variety of topics and spaces, suggesting that its use may be influential for educators (Willet and Carpenter, 2020).

Moreover, in order to distinguish various public sentiments researchers have employed topic analysis. Many featured Latent Dirichlet Allocation (LDA) topic modeling (Li et al., 2023; Melton et al., 2021), one of the most popular topic modeling approaches. Of the many models available, BERTopic (Grootendorst, 2022), known for its embedding approach, recently emerged to be quite competitive against others. Research on Twitter data, has evaluated BERTopic to be effective compared to Top2Vec and LDA (Egger and Yu, 2022). Many studies have already successfully utilized BERTopic to elicit trends and topics from data scraped from the Reddit platform (Sarkar et al., 2022; Liu et al., 2022; Kerkhof, 2023).

## 3 Data and Method

Three Reddit threads posted early on in the ChatGPT discourse, (Reddit, 2023b),[1] (Reddit, 2023c)[2] and (Reddit, 2023a)[3] were selected for data collection due to them having the most upvotes, the Reddit measure of popularity, about their respective topics, with 28.9k for NYC bans, 6.6k for one StackOverflow thread, and 1.5k votes for another StackOverflow thread, at the point of data collection.

A total of 3958 comments were collected from Reddit with regards to ChatGPT's ban from two different places; New York City public schools and StackOverflow. 2663 comments are from the thread on bans by NYC public schools, while 856 are from the StackOverflow thread with 6.6k upvotes, and 439 are from the StackOverflow thread with 1.5k upvotes. They were collected through PRAW 7.7.1 via Python Reddit API (Bryce Boe, 2023).

Data were first preprocessed: comments were separated to form a single list containing strings of sentences for each thread respectively and to fully utilize sentence-transformers (Reimers and Gurevych, 2019).

Topic modeling was conducted with BERTopic and sentence transformers with the *all-MiniLM-L6-v2* model to get the most out of the sentence embeddings. Intertopic distance maps and topic word scores were first generated to gain an initial understanding of how topics were clustered and the relative c-TF-IDF scores between and within topics (see appendix). Following this, to determine the relationship between topics, and documents within topics, Figures 7, 9, and 8 were generated.

Finally, to confirm the results, LDA through Gensim was utilized as a baseline. To evaluate the number of topics that should be created by the model, coherence scores against the number of topics were calculated for each Reddit thread, as

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[1]Reddit. Nyc bans students and teachers from using chatgpt | the machine learning chatbot is inaccessible on school networks and devices, due to concerns about negative impacts on student learning, a spokesperson said. `https://www.reddit.com/r/technology/comments/103gran/nyc_bans_students_and_teachers_from_using_chatgpt/`

[2]Reddit. Stackoverflow to ban chatgpt generated answers with possibly immediate suspensions of up to 30 days to users without prior notice or warning `https://www.reddit.com/r/programming/comments/zhpkk1/stackoverflow_to_ban_chatgpt_generated_answers`.

[3]Reddit. Chatgpt ai generated answers banned on stack overflow `https://www.reddit.com/r/programming/comments/zd71vl/chatgpt_ai_generated_answers_banned_on_stack` .

shown in Figure 10 in the appendix. Topic numbers that formed the highest peak, but still remained less than 100, were selected for each thread; 38 topics for the NYC thread, 80 for the larger StackOverflow thread, and 38 for the smaller StackOverflow thread. In addition to the topic models and inter-topic distance maps generated, bigrams, trigrams, and co-occurrence networks were also visualized for each thread utilizing nlplot, an analysis a visualization module dor Python (takapy0210, 2022).

## 4 Results

### 4.1 New York City Ban

Interestingly, in the topic models generated by BERTopic, Figure 1 top topics included *the usage of calculators in math, Wikipedia and their source*s, *wrong answers* or *wrong question*s, *phones* and *wifi*, *search engines*, and the *writing of essays*. Details can further be elicited about these topics from Figure 7 in the appendix, where the figure further highlights clusters on circumventing firewalls through the use of Virtual Private Networks (VPN), in addition to being able to observe the math-calculator topic clearly.

Meanwhile, for Gensim's topic model, seemed to pick up on the skepticism against the effectiveness of the ban of ChatGPT from public schools in New York City. Top keywords in the thread, seen in Figure 11a were related to students' critical thinking and problem-solving skills, how students can bypass the school firewall, and the education system. Similar topics could also be observed in the trigrams contained in the appendix. In the trigram, Figure 11b specific methods, such as the utilization of virtual private networks and proxy servers - [bypass, school, firewall], [virtual, private, network], [private, network, vpn] - can be observed. Additionally, concern for cheating with ChatGPT could also be observed, though it was lower ranked than the aforementioned topics. In the co-occurrence network, Figure 14, central keywords were "tool", "thinking", "like", "people", "way", "work", "ai", "school", and "Wikipedia". Outside the central cluster, words related to education, internet access, and firewall were observed.

### 4.2 StackOverflow Ban

With regards to the thread that was more upvoted, the thread with 6.6k upvotes, 6, top topics can be seen to be about search engines & OpenAI, ChatGPT & translators, rabbits fitting inside a building,

GitHub & copilot & mailing, and travelers & inns & understanding of them. Key term searches of these topics through the corresponding data revealed a debate on the functionalities of ChatGPT. With regards to Topic 4 in Figure 6, users were discussing how ChatGPT acted like an experienced translator, in which it would auto-complete the intent/meaning of the text in a human-like manner, referencing (Reynolds and McDonell, 2021), a study on how ChatGPT outperforms significantly in 0-shot prompts namely in translation tasks.

With Gensim's topic model, top keywords observed in Figure 12a were regarding the Turing test, training set or data of ChatGPT, and wrong answers provided by the chatbot. For the trigram, Figure 12b, however, topics were more varied, though common topics were ["incorrect", "lot", "cases"], ["gets", "stuff", "wrong"], and ["scary", "confidently", "incorrect"]. However, there were also topics on ["wrong", "prompts", "usually"], in counter to the aforementioned topics, though this was lower ranked. In the co-occurrence network, Figure 15, central keywords were "like", "people", "ai", "answers", and "correct", similar to the NYC ban thread. Outside the central cluster, no major overarching theme could be observed.

Meanwhile, in the thread with 1.5k upvotes, Figure 5, top topics observed were about questions & StackOverflow, Marvel comics & MidJourney, Google web searches, and Jones & GimmickNG. Topic 1 involved a discussion on whether ChatGPT should be banned on StackOverflow, with many users agreeing with its ban due to various reasons such as the platform being community-driven, to the need for human-generated answers to be used as training data for future iterations of generative AI. Meanwhile, Topic 3 involved a Redditor philosophically questioning the stance of users against AI art, stating that the arguments are quite subjective. Topic 6 involved comparisons between Google, the search engine, and ChatGPT, how both may provide inaccurate information, in addition to users needing to know how to type in their prompts or questions to minimize the inaccuracies. Finally, Topic 7 seemed to be a ChatGPT-generated story that a Redditor posted.

Pivoting to Gensim's topic model, in Figure 13a, top keywords were more varied and contained more random words, such as "genocide" and "communist revolution". Top-ranked terms, however, were still related to ChatGPT as a language model
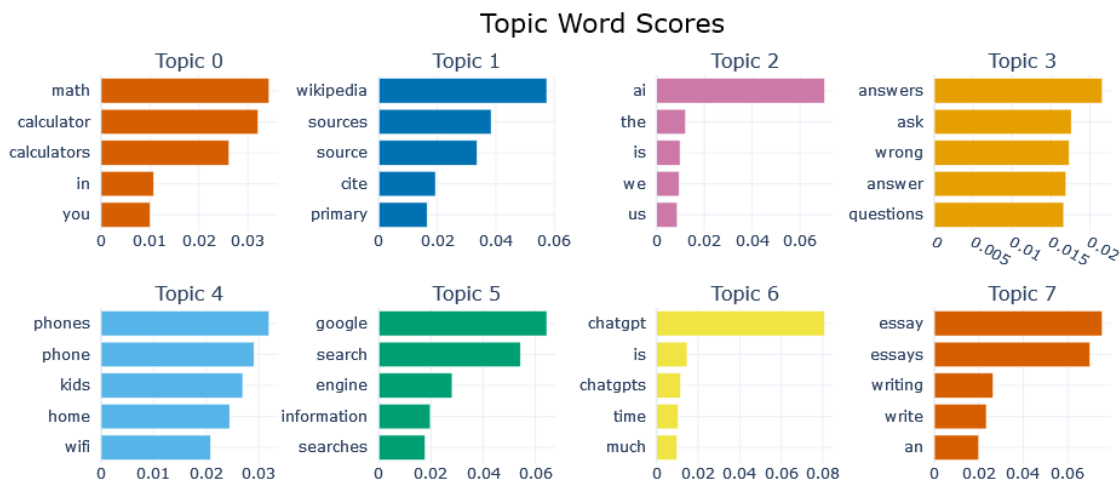
Figure 1: New York Ban topics using BERTopic

and its training data. No major changes in keyword theme could be observed in the trigram, Figure 13b, though topics related to "genocide" were higher ranked compared to the bigram. In the co-occurrence network, Figure 16, similar keywords as the NYC ban and the other StackOverflow thread were observed. Unlike in Figure 13a, the key term "genocide" was not observed to co-occur often. At the bottom of the network, a cluster of terms related to misinformation can be observed, while the left is more about ChatGPT's training model and data.

## 5   Conclusion and Discussion

### 5.1   Reddit Responses

Reactions against the bans in NYC and StackOverflow can be observed to be somewhat different. While NYC focused more on education, StackOverflow's discussion was more regarding the training dataset of ChatGPT. This difference can be explained by the threads' topics and audiences being different, though both belonged to technology-related threads.

Attitudes toward the ban were also seemingly different. Redditors commonly discussed how calculators were allowed in Mathematics, and the topic on Wikipedia and sources, seemingly discussing how the ban provided a sense of *deja vu* in terms of new tools initially being banned from classrooms. Redditors commenting on the NYC thread were skeptical, raising examples of how students could circumvent the ban. What's more, in

the actual thread itself, some have posted methods that ChatGPT has suggested, to demonstrate the ineffectiveness of banning the use of ChatGPT in educational settings. There seemed to be suggestions to take the situation as an opportunity to develop students' critical thinking skills to allow them to not have to rely on AI such as ChatGPT. Supporting this, (Rudolph et al., 2023) suggested that AI such as ChatGPT should be incorporated into an environment where students are invested in their own learning, against policing the use of AI, since most were unable to detect work created by ChatGPT. However, the incorporation of the resource may be limited to European-language-speaking or high-resource-language-speaking classrooms due to it being performing not as well as other resources for low-resource languages (Jiao et al., 2023). This, however, does not necessarily mean that AI such as ChatGPT should not be incorporated in low-resource language classrooms. This can instead be taken as an opportunity for students to develop alternative AI, allowing them to practice their skills while also becoming proficient in digital literacy.

StackOverflow's discussion was more technical. Support was shown for the ban due to a lack of accuracy in providing quality code. The term "genocide" is speculated to have been highlighted in the n-grams due to a Redditor posting a song on genocide in the discussion, possibly a Troll[4] posting

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[4]a person who provokes others (chiefly on the Internet) for their own personal amusement or to cause disruption (Wikipedia)
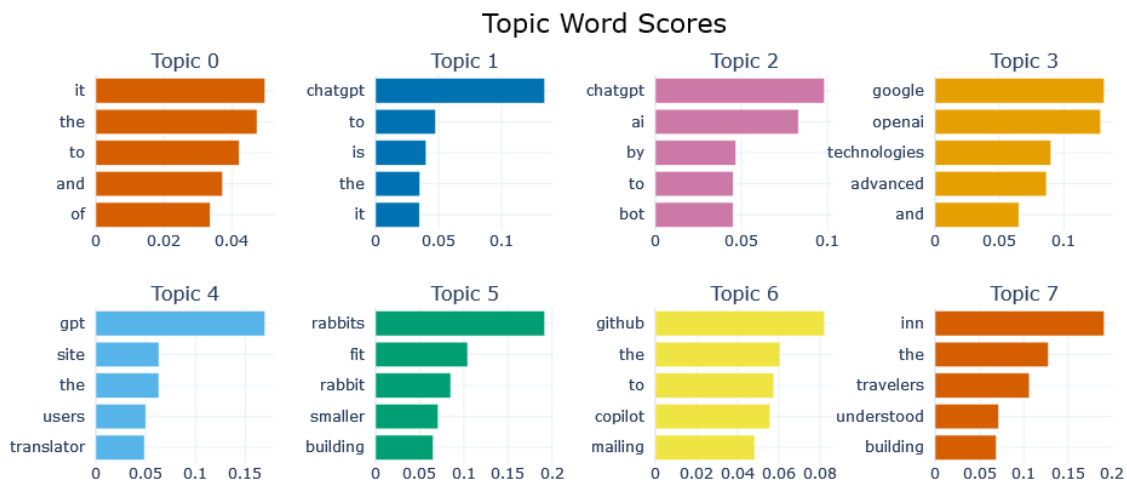
Figure 2: StackOverflow (6k) topics using BERTopic

comments unrelated to the discussion. Meanwhile, "communist revolution" involved a discussion on how AI may be rendered obsolete in true communism. Redditors in this section discussed how the fear of AI taking away jobs in capitalist societies may be solved if a communist revolution occurred. In this manner, this particular thread can especially be seen to highlight how the discussion of AI in educational spaces can diverge into other topics, such as political ideology. In the topic model by BERTopic, "communist revolution" could not be identified while "genocide" was a small cluster in Figure 9, possibly indicating that they are not too relevant to the main topic of discussion. Redditors on this thread seemed to generally be more supportive of the ban, concerned with the accuracy of text generated by the AI, as found in the results section. As noted by (Chatterjee and Dethlefs, 2023), the lack of accuracy for certain topics is due to the model being trained on open-domain data available on the internet, which is known to not always provide the most accurate or correct information. In this sense, in areas such as forums, where the most accurate answer is desired, it may be better to ban the use of such AI as the receiver of the answer may not always be aware that AI was used to generate the answer. In this regard, it may be beneficial for forums on educational platforms to ban the use of AI to allow opportunities for students to learn directly from each other.

## 5.2 Policy Developments Since the Bans

There have been developments in policy and technology since the bans that occurred in late 2022, early 2023. Following the NYC ban, OpenAI stated their concern for maintaining educational integrity, subsequently releasing an AI checker in late January of the same year, though it was later taken down on July 20, 2023 due to its low rate of accuracy (Kirchner et al., 2023). On May 18, 2023, NYC reversed its ban, a move that was applauded to encourage students and educators to explore new technology (Faguy, 2023). On the other hand, to the knowledge of the authors, the chatbot remains banned on StackOverflow as of November 15 2023.

This divide in policy adoption can be said to be a reflection of the Reddit threads; areas that require expertise prefer human beings, while in those that pursue digital literacy and critical thinking skills, AI may aid the development of skills.

## 5.3 Conclusion

In the past, education systems reacted negatively towards the use of Wikipedia, and further back, the use of calculators. Today, they are now actively used in classrooms as educational tools. As AI becomes more mainstream and readily available, instead of reacting in extremities through bans, Redditors seem to instead want them to be educational opportunities to develop digital literacy. Yet, the banning of AI in question-and-answer forums, such as StackOverflow, seems to be viewed as beneficial.

# Topic Word Scores



Figure 3: StackOverflow (1k) topics using BERTopic

As an online environment where users can receive help on problems, the use of AI, when there is a risk of inaccuracy, was deemed detrimental to the user's educational experience.

## Limitations

Further research into this topic was limited immediately following the analysis conducted on the data presented in this report due to a strike being conducted by subreddit moderators at the time. Had this data been available, it would have been interesting to see how stances towards ChatGPT have changed over time in educational settings.

Since sentiment analysis is sometimes paired with topic modeling in the research of social media, this is planned to be the next step in the exploration of this data and any extensions to the data collected following the initial data collection.

## Ethics Statement

While much care was taken into anonymizing users and ensuring that comments used in the study were not leaked to 3rd parties, it must be noted that publicly available Reddit threads can be easily searched and found. As such, some users may be identifiable, though these ethical concerns and limitations will continue to be considered by the researchers. As such, the researchers will attempt to respond to any concerns raised even after the submission of this paper.

## Acknowledgements

## References

David Baidoo-Anu and Leticia Owusu Ansah. 2023. Education in the era of generative artificial intelligence (ai): Understanding the potential benefits of chatgpt in promoting teaching and learning. *Journal of AI*, 7(1):52–62.

Sian Brooke. 2019. "condescending, rude, assholes": Framing gender and hostility on stack overflow. In *Proceedings of the Third Workshop on Abusive Language Online*, pages 172–180.

Bryce Boe. 2023. PRAW 7.7.1 documentation.

Fabio Calefato, Filippo Lanubile, and Nicole Novielli. 2018. How to ask for technical help? evidence-based guidelines for writing questions on stack overflow. *Information and software technology*, 94:186–207.

Joyjit Chatterjee and Nina Dethlefs. 2023. This new conversational AI model can be your friend, philosopher, and guide ... and even your worst enemy. *Patterns*, 4(1):100676.

Wonchan Choi, Yan Zhang, and Besiki Stvilia. 2023. Exploring Applications and User Experience with Generative AI Tools: A Content Analysis of Reddit Posts on ChatGPT. In *Proceedings of the Association for Information Science and Technology*, volume 60, pages 543–546.

Roman Egger and Joanne Yu. 2022. A topic modeling comparison between lda, nmf, top2vec, and bertopic to demystify twitter posts. *Frontiers in Sociology*, 7.

Ana Faguy. 2023. New York City Public Schools Reverses ChatGPT Ban.

Yunhe Feng, Pradhyumna Poralla, Swagatika Dash, Kaicheng Li, Vrushabh Desai, and Meikang Qiu. 2023. The Impact of ChatGPT on Streaming Media: A Crowdsourced and Data-Driven Analysis using Twitter and Reddit. In *2023 IEEE 9th Intl Conference on Big Data Security on Cloud (BigDataSecurity), IEEE Intl Conference on High Performance and Smart Computing, (HPSC) and IEEE Intl Conference on Intelligent Data and Security (IDS)*, pages 222–227.

Simone Grassini. 2023. Shaping the future of education: exploring the potential and consequences of ai and chatgpt in educational settings. *Education Sciences*, 13(7):692.

Maarten Grootendorst. 2022. Bertopic: Neural topic modeling with a class-based tf-idf procedure. *arXiv preprint arXiv:2203.05794*.

M. Haman, M. Skolník, and T. Subrt. 2023. Leveraging ChatGPT for Human Behavior Assessment: Potential Implications for Mental Health Care. *Annals of Biomedical Engineering*, (51):2362–2364.

Wenxiang Jiao, Wenxuan Wang, Jen-tse Huang, Xing Wang, and Zhaopeng Tu. 2023. Is ChatGPT A Good Translator? A Preliminary Study.

Samia Kabir, David N Udo-Imeh, Bonan Kou, and Tianyi Zhang. 2023. Who answers it better? an in-depth analysis of chatgpt and stack overflow answers to software engineering questions. *arXiv preprint arXiv:2308.02312*.

Enkelejda Kasneci, Kathrin Seßler, Stefan Küchemann, Maria Bannert, Daryna Dementieva, Frank Fischer, Urs Gasser, Georg Groh, Stephan Günnemann, Eyke Hüllermeier, et al. 2023. Chatgpt for good? on opportunities and challenges of large language models for education. *Learning and individual differences*, 103:102274.

P. Kerkhof. 2023. Pos0598-hpr what do users of rheumatoid arthritis online forums talk about? applying a deep learning approach to uncover common themes. *Annals of the Rheumatic Diseases*, 82(Suppl 1):570–571.

Jan Hendrik Kirchner, Lama Ahmad, Scott Aaronson, and Jan Leike. 2023. New AI classifier for indicating AI-written text.

Shanghao Li, Zerong Xie, Dickson K. W. Chiu, and Kevin K. W. Ho. 2023. Sentiment analysis and topic modeling regarding online classes on the reddit platform: Educators versus learners. *Applied Sciences*, 13(4).

Yang Liu, Zhiying Yue, and Mohd Anwar. 2022. Monkeypox at-a-glance from google trends and reddit. In *2022 IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE)*, pages 166–167.

James H Lubowitz. 2023. Chatgpt, an artificial intelligence chatbot, is impacting medical literature. *Arthroscopy*, 39(5):1121–1122.

Chad A. Melton, Olufunto A. Olusanya, Nariman Ammar, and Arash Shaban-Nejad. 2021. Public sentiment analysis and topic modeling regarding covid-19 vaccines on the reddit social media platform: A call to action for strengthening vaccine confidence. *Journal of Infection and Public Health*, 14(10):1505–1512. Special Issue on COVID-19 – Vaccine, Variants and New Waves.

Michael Neumann, Maria Rauschenberger, and Eva-Maria Schön. 2023. "we need to talk about chatgpt": The future of ai and higher education.

Reddit. 2023a. ChatGPT AI Generated Answers Banned On Stack Overflow. [Online; accessed 28-January-2023].

Reddit. 2023b. NYC Bans Students and Teachers from Using ChatGPT | The machine learning chatbot is inaccessible on school networks and devices, due to concerns about negative impacts on student learning, a spokesperson said. [Online; accessed 28-January-2023].

Reddit. 2023c. StackOverflow to ban ChatGPT generated answers with possibly immediate suspensions of up to 30 days to users without prior notice or warning. [Online; accessed 28-January-2023].

Nils Reimers and Iryna Gurevych. 2019. Sentence-bert: Sentence embeddings using siamese bert-networks. In *Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing*. Association for Computational Linguistics.

Laria Reynolds and Kyle McDonell. 2021. Prompt programming for large language models: Beyond the few-shot paradigm.

Jürgen Rudolph, Samson Tan, and Shannon Tan. 2023. ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? *Journal of Applied Learning and Teaching*, 6(1).

Shailik Sarkar, Abdulaziz Alhamadani, Lulwah Alkulaib, and Chang-Tien Lu. 2022. Predicting depression and anxiety on reddit: a multi-task learning approach. In *2022 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, pages 427–435.

Miriam Sullivan, Andrew Kelly, and Paul McLaughlan. 2023. Chatgpt in higher education: Considerations for academic integrity and student learning.

takapy0210. 2022. nlplot: Analysis and visualization module for Natural Language Processing.

Ahmed Tlili, Boulus Shehata, Michael Agyemang Adarkwah, Aras Bozkurt, Daniel T Hickey, Ronghuai Huang, and Brighter Agyemang. 2023. What if the devil is my guardian angel: Chatgpt as a case study of using chatbots in education. *Smart Learning Environments*, 10(1):15.

Elissa Nakajima Wickham and Emily Öhman. 2022. Hate speech, censorship, and freedom of speech: The changing policies of reddit. *Journal of Data Mining & Digital Humanities*.

K. Bret Staudt Willet and Jeffrey P. Carpenter. 2020. Teachers on reddit? exploring contributions and interactions in four teaching-related subreddits. *Journal of Research on Technology in Education*, 52(2):216–233.

Hao Yu. 2023. Reflection on whether chat gpt should be banned by academia from the perspective of education and teaching. *Frontiers in Psychology*, 14:1181712.

## A    Appendix
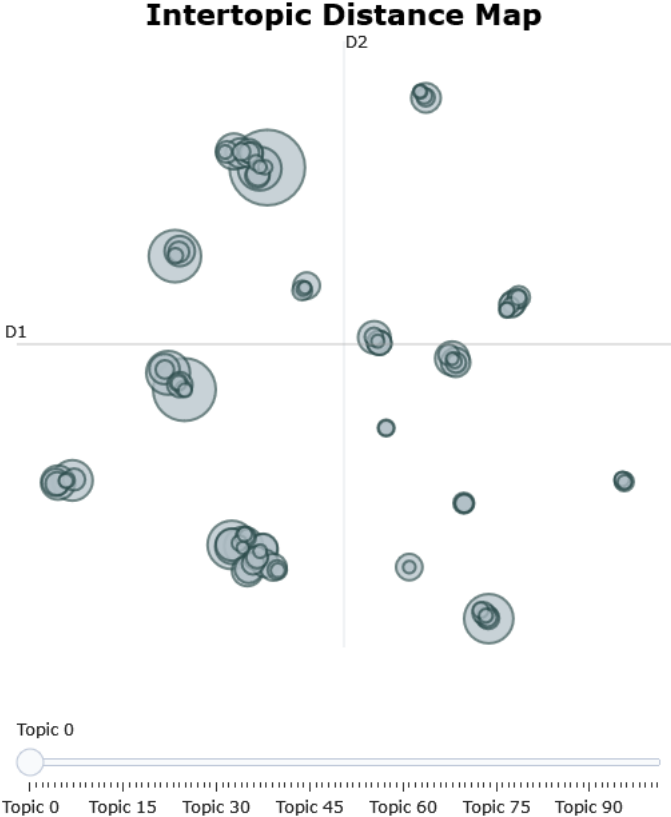


Figure 4: Intertopic Distances in NYC ban Thread

Figure 5: Intertopic Distances in StackOverflow (1k) ban Thread

## Intertopic Distance Map
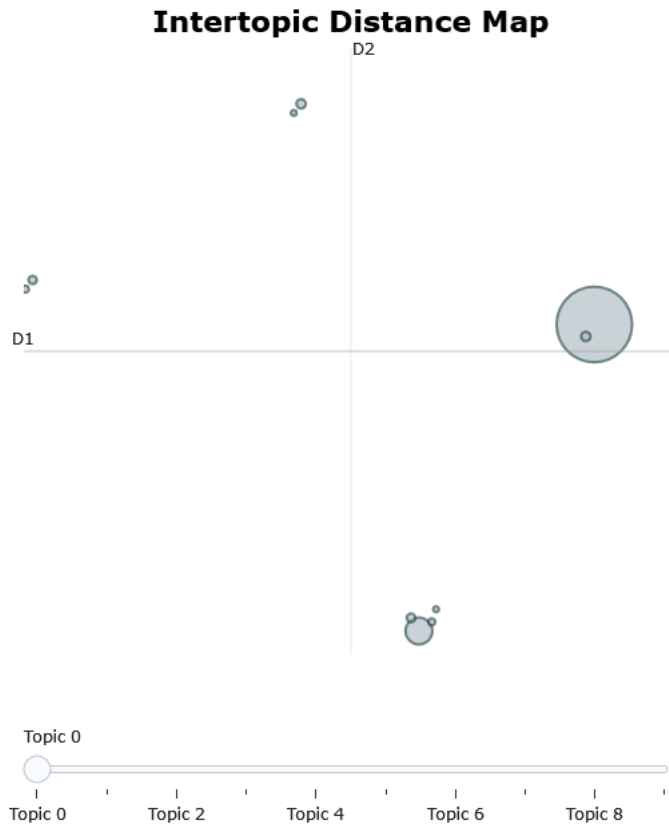


Figure 6: Intertopic Distances in StackOverflow (6k) ban Thread

## Documents and Topics
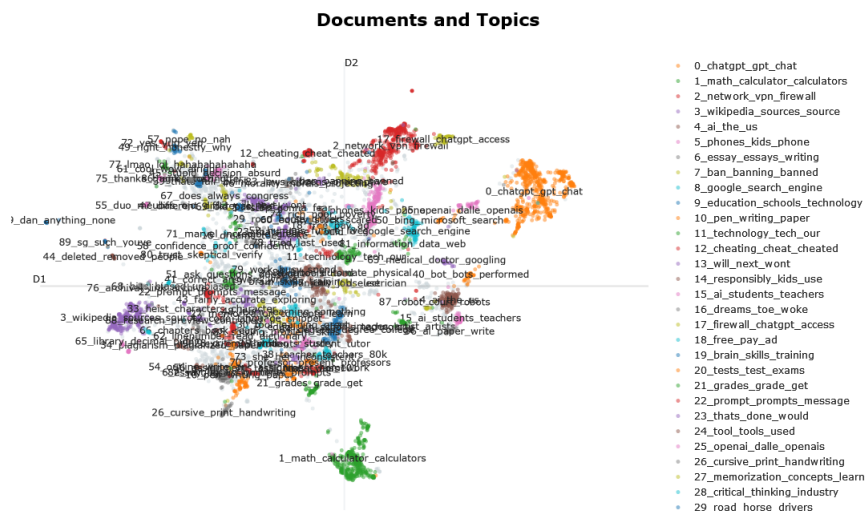


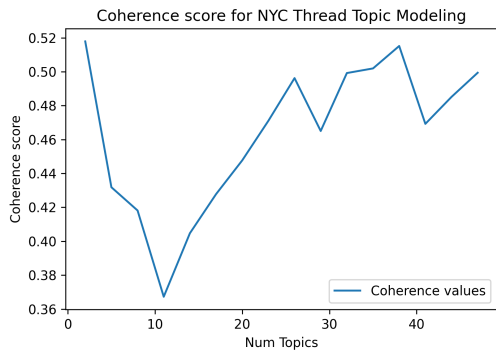Figure 7: Documents and Topics in NYC ban Thread

**Documents and Topics**
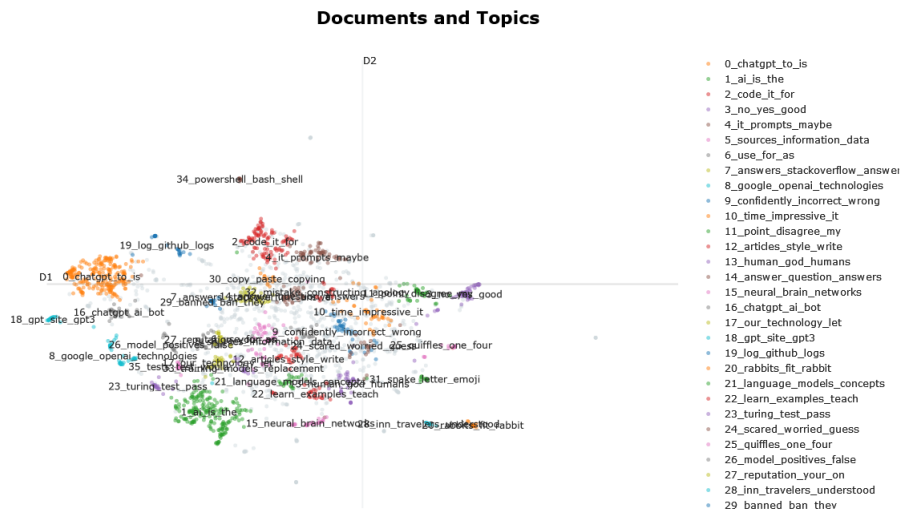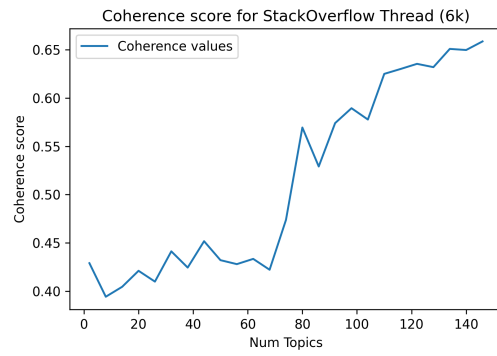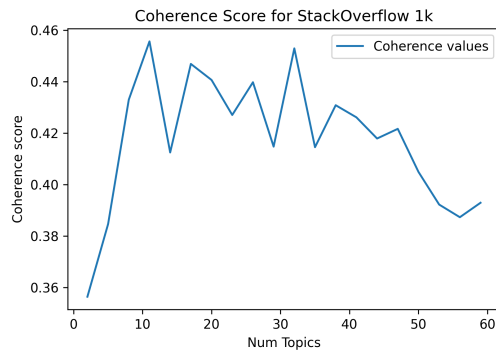


Figure 8: Documents and Topics in StackOverflow (6k) ban Thread

**Documents and Topics**
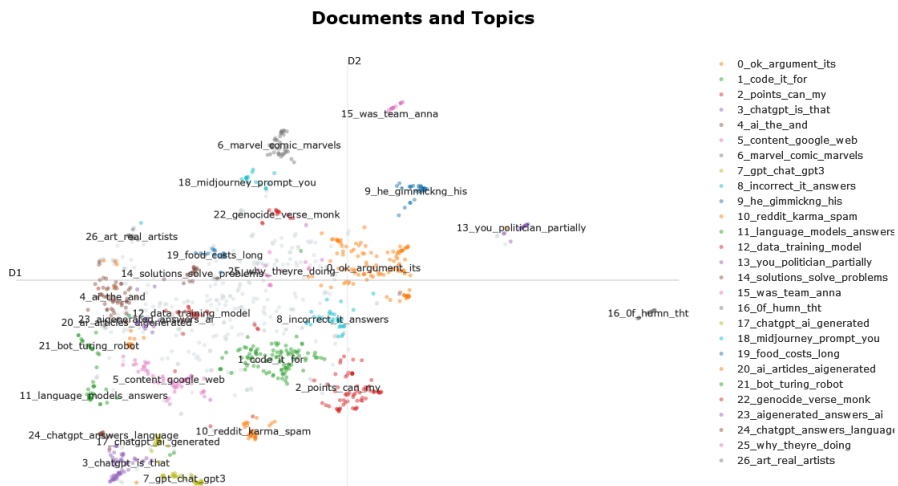


Figure 9: Documents and Topics in StackOverflow (1k) ban Thread

(a) New York Ban



(b) StackOverflow (6k)



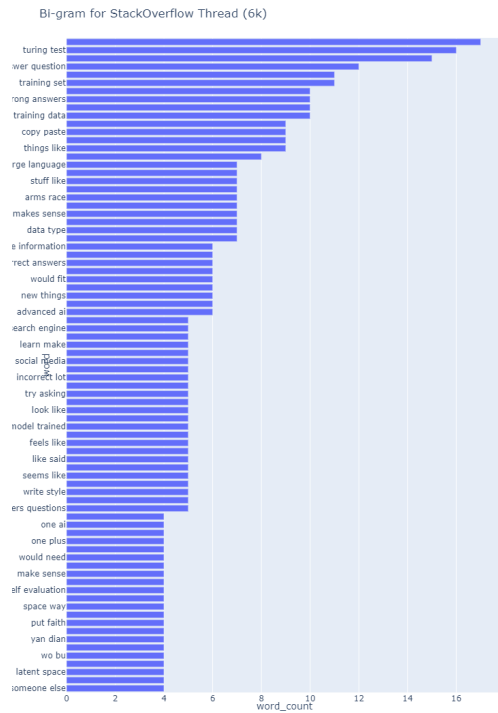(c) StackOverflow (1k)

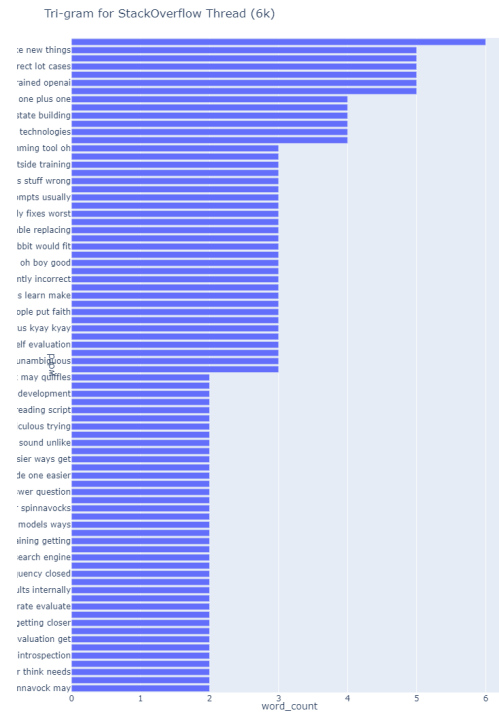Figure 10: Coherence Scores
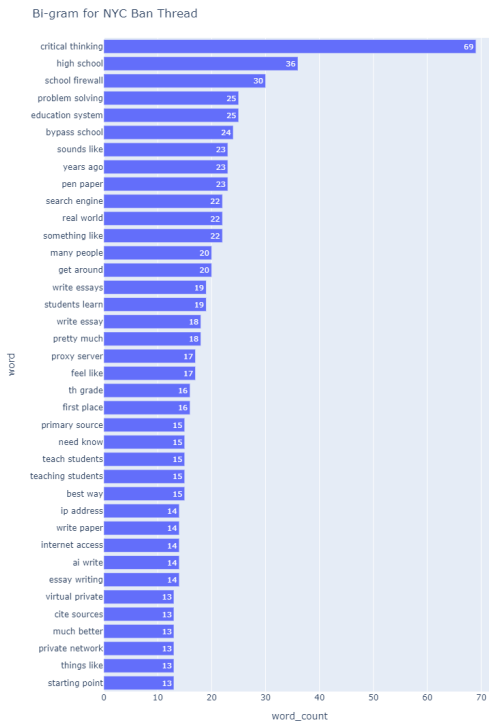


(a) Bigram
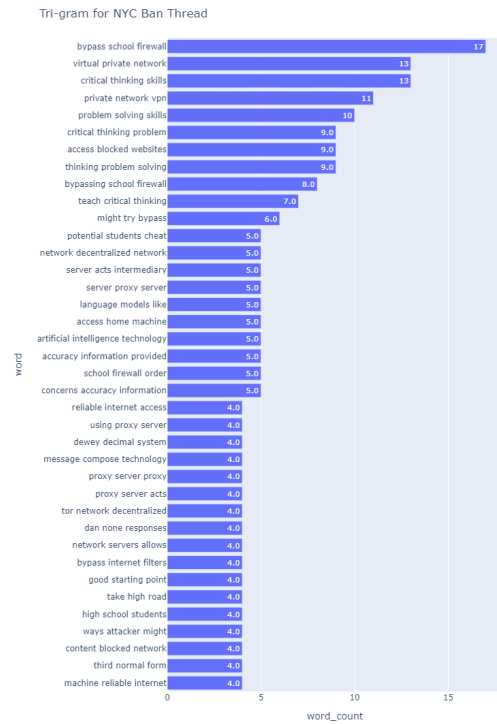


(b) Trigram

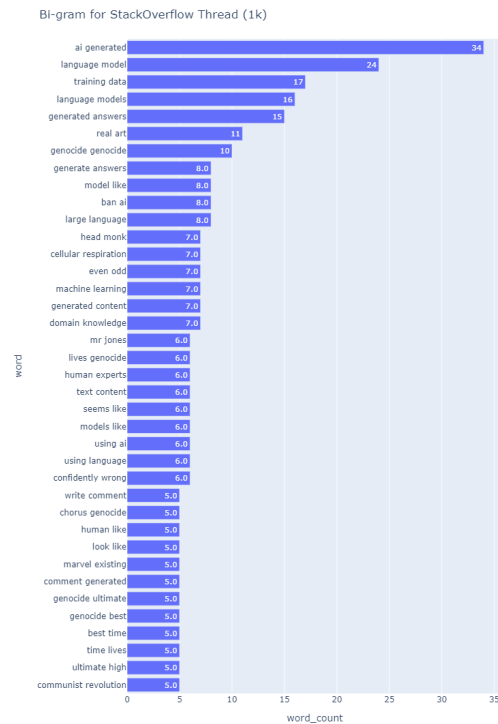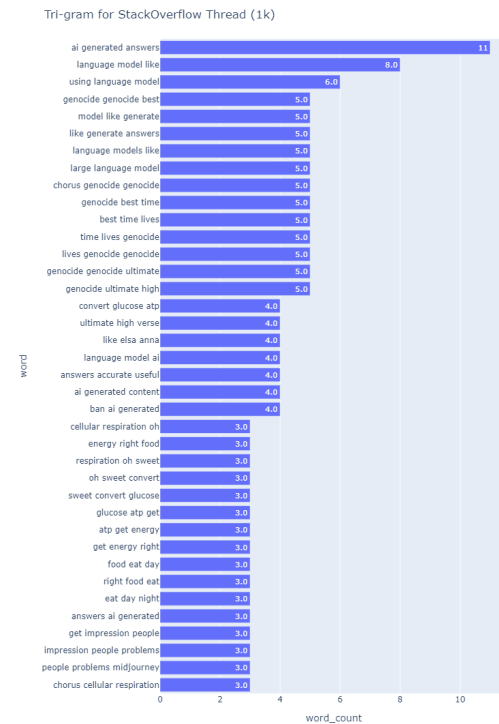Figure 11: N-grams of Reaction to NYC Ban

(a) Bigram

(b) Trigram

Figure 12: N-grams of Reaction to StackOverflow Ban (6k)



(a) Bigram

(b) Trigram

Figure 13: N-grams of Reaction to StackOverflow Ban (1k)

Figure 14: Co-occurrence network of keywords in NYC ban Thread



Figure 15: Co-occurrence network of keywords in StackOverflow ban Thread (6k)

Co-occurrence network for StackOverflow Thread (1k)



Figure 16: Co-occurrence network of keywords in StackOverflow ban Thread (1k)