Generative AI Generating Buzz: Volume, Engagement, and Content of Initial Reactions to ChatGPT in Discussions Across Education-Related Subreddits

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Abstract
The emergence of generative artificial intelligence (GenAI) has ignited debates regarding its potential benefits and detriments for education. Despite widespread discussions, insights into GenAI's impact on education have been limited because early studies have often been narrow in scope and focused on specific contexts. Therefore, the purpose of this study is to explore and analyze the volume, engagement, and content of initial reactions to one leading GenAI tool, ChatGPT. Specifically, we collected and analyzed public online discussions of ChatGPT in the first four months following the tool's release. We collected 345 posts and 6,463 comments about ChatGPT from 25 education-focused subreddits. We analyzed the volume, engagement, and content of ChatGPT discussions through descriptive statistics and natural language processing techniques. Findings show relatively low *volume* of ChatGPT discussions, unevenly spread across education-related subreddits—with the majority of the discussions occurring in two subreddits, while six subreddits did not have any discussions. Despite this, the level of *engagement* within ChatGPT posts was substantial; for instance, a ChatGPT post hosted a median of 15 comments, and these comments were lengthy, indicating rich engagement rather than superficial. The *content* of ChatGPT discussions across the six largest education-related subreddits differed in the degree of analytical thinking and emotional tone even while sharing a predominant focus on students and AI. Diverse reactions to and perspectives on GenAI—observed from varied levels of volume, engagement, and content of ChatGPT across educational-related subreddits—highlights how diverse educational stakeholders reacted to GenAI differently, offering insights into how to explore, analyze, and comprehend the spread and adoption of technological innovation in education.

Keywords: ChatGPT, GenAI, Reddit, affinity spaces, technology reaction, learning analytics

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Introduction

Incorporating new technologies into educational settings has been widely advocated by the common belief that these tools enhance teaching and learning, and that developing technology-related skills is essential for students to become successful members of society

(Davies & West, 2014). These views have led to the perpetual introduction of emerging technologies into education during the past century. For example, Cuban (1986) traced classroom-technology integration from film (1910s) to radio (1920s) to television (1960s). Weller (2020) examined more contemporary applications of technology in education, chronicling the year that 25 technologies became significant in the field of education, starting with digital bulletin board systems (1994) and continuing with the web (1995), wikis (1998), e-learning (1999), learning management systems (2002), virtual worlds (2007), social media (2009), massive open online courses (MOOCs; 2012), and artificial intelligence (AI; 2016).

The reaction to and reception of new technologies in education have often been mixed. Cuban (1986) noted that film, radio, and television were all met with initial resistance. On the opposite end of the reaction spectrum, overhyping technologies has been a persistent reality in education. For instance, Cuban (2003) described how the promise of computers in classrooms was "oversold and underused" in the 1990s, as school districts made large purchases of computers but provided no training or guidance to teachers for how to use them. There has been a long history of promising technology-led changes and transformations to teaching and learning, but these promises not being fully realized (Cuban, 1986, 2003). Even as technologies have come and gone from the educational realm, there has been an overall impact of technology on education—not only on teachers and students, but also on school systems and educational policies (Kalolo, 2019; Tamim et al., 2011).

As technological advances seem to be developed more rapidly than ever, deeper understanding of historic and social context (i.e., a sociohistorical perspective), away from the initial hype, is essential for making real progress (Moore et al., 2024). In 2023, *generative AI* (GenAI) tools—that is, AI-driven technologies capable of creating new content (e.g., written essays, images, music, computer code) based on the patterns learned from large datasets (Stokel-Walker & Van Noorden, 2023)—seemed to be ubiquitous topics of conversation in education circles. This immediate and widespread reaction is reminiscent of the reception to other educational technologies in the past. First launched on November 30, 2022, the ChatGPT GenAI chatbot (OpenAI, 2022) caused a stir in education because of its easy-to-use interface and significantly improved performance over past AI language models (Bozkurt, 2023). In the months following its release, numerous conversations about ChatGPT quickly emerged (Bahroun et al., 2023), including many among educators (Lo, 2023).

Following the heightened interest in ChatGPT, each month of 2023 witnessed the introduction of new GenAI tools or notable improvement in their performance (Martin, 2023). For instance, ChatGPT 4.0, released on March 14, 2023, outperformed earlier versions (OpenAI, 2023) and Google's Gemini, released on December 6, 2023, replaced and improved upon its predecessor, Bard (Pichai & Hassabis, 2023). The potential *benefits* of these increasingly powerful GenAI tools—such as new conversational pedagogies enabled by GenAI dialogue agents (Bozkurt & Sharma, 2023)—are being examined alongside debates about *detriments* such as new avenues for cheating or accidental misallocation of credit (Oravec, 2023). In addition, there are new legal controversies as GenAI push the bounds of copyright and attribution as well as responsibility for online content created with these new tools (Perault, 2023).

Both positive and negative, reactions to GenAI in education have been seemingly frequent in terms of *volume*, active and ongoing in terms of *engagement*, and diverse in terms of

content. However, understanding the reactions prompted by ChatGPT's release and subsequent GenAI adoption has been more anecdotal than rigorous and systematic. Therefore, the purpose of this study is to explore and analyze the volume, engagement, and content of initial reactions to one leading GenAI tool, ChatGPT in the first four months following the tool's release. To accomplish this purpose, we collected and analyzed discussions about ChatGPT spanning 25 education-related affinity spaces hosted on the social media platform Reddit. This research design supplements the survey and interview approaches of past studies, which have been limited in scope and context.

Literature Review

To begin this investigation of the reactions to ChatGPT in the field of education, we first examine relevant past research. Specifically, we review the literature to understand how past research has explored reactions to new technologies in education generally, as well as applications of AI and GenAI tools in education specifically.

Reactions to New Technologies in Education

Considering the significant impact of new technologies in education, numerous studies have explored how diverse educational stakeholders respond or react to the integration of new technologies. These studies have often drawn upon theoretical frameworks, such as the Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT), to analyze these responses (e.g., Frei-Landau et al., 2022; Habibi et al., 2023; Wingo et al., 2017). TAM (Davis, 1989) delineates how individuals accept and use new technology based on two salient factors: perceived usefulness and perceived ease-of-use. In recent research, for instance, Habibi et al. (2023) explored undergraduate students' acceptance of ChatGPT, and Mailizar et al. (2021) investigated teachers' behavioral intention to accept online education through a TAM lens.

Offering a wider perspective than TAM, IDT has been applied to explain how new technologies spread within a community over time (Rogers, 2003). In education, IDT has been used to explore and explain educational stakeholders' technology adoption processes across time (e.g., Frei-Landau et al., 2022). This theory further categorizes people based on when they start using new technology (e.g., early adopters, laggards) and identifies factors influencing an individual's decision to adopt an innovation (e.g., perceived compatibility, how-to knowledge). Although TAM and IDT differ in scope and focus, research has indicated that TAM and IDT converge on certain aspects. For instance, two salient factors of TAM can be seen as a subgroup of factors in IDT (Lee et al., 2011). Put together, these theories emphasize crucial considerations for the new technology adoption process—either *affective* (i.e., attitudes or perceptions toward an innovation) or *intellectual* (i.e., level of understanding about an innovation).

Applications of AI and GenAI Tools in Education

AI encompasses a range of definitions due to its cross-disciplinary nature, but the term broadly refers to machines or computers that perform cognitive tasks, particularly for learning and problem-solving (Chen, Chen, & Lin, 2020). Recognizing the capabilities of AI, applications of AI in education have received considerable attention from educational researchers and practitioners for over 30 years, and this interest has notably intensified in recent years with rapid

technological advancements, such as deep learning algorithms (Hwang et al., 2020). Several reviews have highlighted diverse applications of AI in education, including learner profiling, students' performance automatic assessment and prediction, facilitating personalized and adaptive learning experiences, and supporting making an informed decision on educational policies and practices (Chen, Xie, Zou, & Hwang, 2020; Hwang et al., 2020).

Applying AI in education has often faced a variety of challenges, despite its potential as a powerful tool for improving teaching and learning (Hwang et al., 2020; Picciano, 2019). In terms of potential, past studies have underscored that AI can offer intelligent tutoring systems or personalized and adaptive learning guidance (Hwang et al., 2020). AI can also empower educators in various ways; for instance, it can help instructors tailor teaching strategies based on learner profiling data (Huang et al., 2023) and provide timely and individualized feedback (Pokrivcakova, 2019; Wolf & Wolf, 2023). However, in terms of challenges, ethical concerns and data privacy are two significant issues among many others, as illustrated by a recent study assessing 22 AI ethics guidelines (Hagendorff, 2020). Furthermore, there remains a lack of concrete and practical guidance for educators trying to integrate AI into education (Zhang & Aslan, 2021).

The recent rise to prominence of a specific type of AI, generative AI (GenAI) tools, has prompted renewed discussions of pedagogy. Like earlier debates, these more recent discussions have again spanned the full range from potential to challenges. The category of GenAI tools includes technologies that can generate new content based on pre-trained patterns learned from large datasets (Stokel-Walker & Van Noorden, 2023). Producing new content—both in the form of understanding and generating human-like outputs across a broad range of topics (Kelly, 2023)—distinguishes GenAI from other types of AI.

The enhanced accessibility of GenAI—allowing users to interact with the tool in the familiar form of a chatbot—open new possibilities in education while raising familiar and persistent questions and concerns (Chiu, 2023). For instance, recent studies have suggested that GenAI tools can be used as intelligent tutoring systems providing personalized feedback for learners (Lo, 2023) as well as assisting educators with lesson planning and grading (Dai et al., 2023; Topsakal & Topsakal, 2022). However, at the same time, other studies have pointed out concerns about academic dishonesty and an overreliance on these tools that can hinder the development of critical thinking and cognitive skills (e.g., Cotton et al., 2023; Hung & Chen, 2023).

To date, much of the GenAI research base has been narrow in scope and focused on specific contexts—not able to offer a comprehensive understanding of the volume, engagement, and content of such discussions. For instance, numerous studies have employed close-ended surveys to explore educators' perceptions of GenAI tools. Mandal and Mete (2023) surveyed 100 secondary school teachers and students, and Woodruff et al. (2023) surveyed 4,528 K–12 educators. Although Woodruff et al. (2023) had many more participants, their findings were limited due to simple and closed-ended questions. Several studies have employed mixed-method design to explore the content of their discussions. For instance, ElSayary (2023) investigated Dubai secondary teachers' perceptions of using ChatGPT for teaching and learning using an explanatory sequential mixed-methods design. The initial survey consisted closed-ended items, and although the follow-up interviews added a depth of understanding, the small number of

interview participants (n = 7) limited the breadth of implications. Similarly, Moura and Cavalho (2024) employed a similar research design, but only nine teachers participated in the study. In a purely qualitative study focusing on higher education, Iqbal et al. (2022) individually interviewed 20 faculty members in a private university—offering deep and nuanced understanding in a specific context, not broad trends. In sum, although these studies have captured specific details of educators' initial reactions to GenAI tools, a more comprehensive investigation regarding the volume, engagement, and content of initial reactions to GenAI in education is still warranted.

Framework

We approach our current investigation with an *affinity space* lens. Gee (2004) defined affinity spaces as environments—whether virtual, physical, or a combination of both—where individuals gather around shared interests or goals. Affinity spaces emphasize open membership and varied levels of participation, ensuring everyone can participate in such spaces without concerning participants' age, gender, race, and expertise level. Affinity spaces are most concerned with what users choose to do with the space, allowing flexibility to examine how much people contribute (i.e., volume), how they interact with each other and the content of the space (i.e., engagement), and how these interactions align with the shared affinity of the spaces (i.e., content). Previous studies have applied the concept of affinity spaces to Reddit, identifying subreddits as distinct affinity spaces that accommodate users with specific interests (e.g., Carpenter et al., 2018; Na & Staudt Willet, 2022; Na et al., 2024; Robinson et al., 2023). This affinity-space lens appeared particularly useful for our investigation, as ChatGPT discussions within various education-related subreddits manifest a wide range of perspectives from diverse participants who are interested in its impact on education.

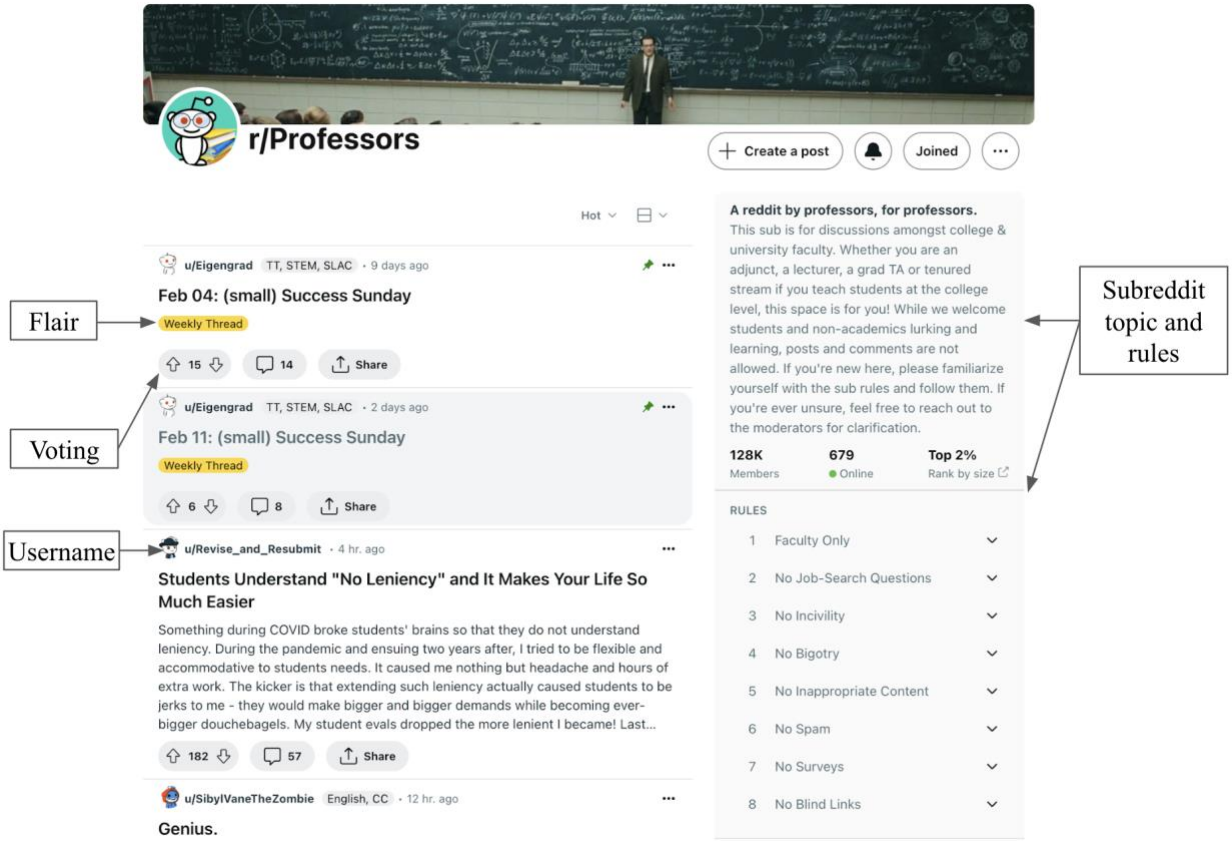
Purpose

With this past research in mind, the purpose of this study is to explore and analyze the volume, engagement, and content of initial reactions to one leading GenAI tool, ChatGPT. To gain a broad understanding, we examined numerous discussions about ChatGPT in education-related affinity spaces on the social media platform, Reddit.

Reddit is a suitable site for examining reactions to a new technology in education for numerous reasons. First, Reddit is big, consistently one of the most popular social media platforms in the United States (fourth in April 2024) with more than two billion monthly visits (Similarweb, 2024). Second, reflecting its motto of "Dive Into Anything" (RedditInc, 2024), Reddit hosts a diverse array of conversations in distinct discussion forums. These discussion forums, called *subreddits*, provide spaces where users engage by posting and commenting (Figure 1). As of 2024, Reddit has more than 100,000 active subreddits (RedditInc, 2024) that cover an extensive spectrum of topics, including serious (e.g., r/Teachers, r/MachineLearning), trivial (e.g., r/DuckDuckJeep, which is dedicated to pictures of ducks with Jeeps), and detrimental (e.g., r/druggardening). Between Reddit's overall size and numerous subreddits, it is likely that users can find subreddits to meet their needs and interests, even if these are very niche.

Figure 1

A Screenshot of the r/Professors Subreddit



In addition to its size and range of topics, Reddit has additional features that support the possibility of observing initial reactions to new technologies like GenAI, and ChatGPT specifically. For example, Reddit allows users to add "flairs" to their posts, which is a tagging system for indexing content within a subreddit. Also, Reddit has a voting system that allows users to *upvote* (i.e., +1) and *downvote* (i.e., -1) posts and comments, and the platform's algorithm prioritizes recent content with the most cumulative votes, making popular topics more visible. Finally, each subreddit is moderated by a team of volunteers who can remove content that is irrelevant to the shared interests of the subreddit. The result is that education-related subreddits like r/Teachers are largely on-topic (Carpenter et al., 2018; Carpenter & Staudt Willet, 2021). However, the process of moderation can leave some users feeling like their legitimate contributions were unfairly excluded and that some subreddits are not as open as they purport to be.

In addition to these platform features, Reddit users have developed norms that can foster open conversations about new technologies. For instance, users' anonymity is the norm—Reddit does not have an identity verification process, and most users use pseudonyms to identify themselves, with no link to their real identities (Haythornthwaite et al., 2018). Anonymity can potentially enable users to share their honest experiences and engage in discussions freely in education-related subreddits (Carpenter & Staudt Willet, 2021; Henninger, 2020; Na & Staudt Willet, 2022) but can also facilitate the spread of harmful, promotional, or irrelevant content (Massanari, 2017). In addition, anonymity means that posts and comments cannot be definitively attributed to educators—instead, only the content of posts and comments can be determined to be

relevant to the educational topic of the subreddit, or not. Finally, in the context of these features and norms, ChatGPT and GenAI discussions may be more likely to occur because Reddit users are more likely to be more technologically adept than the general population (Richard et al., 2021; Simmonds, 2023).

Research Questions

With this context in mind, the purpose of this study is to explore and analyze initial reactions to a leading GenAI tool, ChatGPT. To gain a broad understanding, we examined conversations about ChatGPT in numerous education-related subreddits. We seek to answer three research questions related to the volume, engagement, and content of subreddit discussions in the first few months after ChatGPT's release:

- RQ1. What was the volume of ChatGPT discussions in education-related subreddits in the initial months following the tool's launch?
- RQ2. What was the engagement with ChatGPT discussions in education-related subreddits?
- RQ3. What was the content of ChatGPT discussions in education-related subreddits?

Method

To answer the research questions, we used a naturalistic, unobtrusive approach (Lincoln & Guba, 1985) to collect and analyze *digital traces* (Lee et al., 2017) of conversations about ChatGPT in education-related subreddits, similar to approaches in prior research (e.g., Carpenter et al., 2018; Haythornthwaite et al., 2018; Na & Staudt Willet, 2022; Na et al., 2024; Staudt Willet & Carpenter, 2020, 2021). This approach allowed us to quickly gain a broad perspective on initial reactions to ChatGPT across numerous distinct education-related affinity spaces, at a large scale. These methods provide a complementary approach with a different set of limitations than the self-reported data and narrower context of the survey and interview studies that have examined GenAI and ChatGPT to date. Although not suitable for describing internal motivations or experiences, a digital traces approach offers opportunities to observe how people think and behave naturally—avoiding the confounding effects of self-reports or interventions (Lee et al., 2017).

Data Collection

To collect data, we used the statistical programming languages Python (Python Software Foundation, 2024) and R (R Core Team, 2024) to search for any posts in 25 education-related subreddits containing the keyword text "chatgpt" from January 1, 2022 (much earlier than ChatGPT's release on November 30, 2022, in case ChatGPT was mentioned prior to its official launch) through March 31, 2023 (four months after release). We purposefully selected the 25 education-related subreddits, starting with the 16 that officially comprise the Reddit Education Network listed in r/education (e.g., r/education, r/Teachers, and r/matheducation). Following explorations from our past Reddit studies (Carpenter & Staudt Willet, 2021; Muljana et al., 2022; Na & Staudt Willet, 2022; Na et al., 2024; Staudt Willet & Carpenter, 2020, 2021), we added

nine additional education-related subreddits to include more perspectives from higher education (e.g., r/academia, r/Professors) and K–12 teachers' experiences (e.g., r/TeachersinTransition, r/teaching). Although we collected data from a broad range of education-related affinity spaces, it is important to note that this sample does not represent all educators, because those posting on Reddit are likely to be above-average technology users (Richard et al., 2021; Simmonds, 2023) with an interest in discussing the emerging technology of GenAI. Furthermore, we were only able to collect posts and comments that were publicly accessible at the time of collection in April 2023. Nevertheless, although imperfect, the data we collected do offer a broader perspective on reactions to ChatGPT than most studies to date and offer a useful addition to the growing knowledge base. In total, we collected 345 posts and 6,463 comments pertaining to ChatGPT in 19 education-related subreddits (i.e., six subreddits had no discussions of ChatGPT in the first four months), with the earliest ChatGPT post occurring in r/Teachers on December 6, 2022.

Data Analysis

We conducted a variety of quantitative and computational analyses to answer our research questions. To analyze *volume* (RQ1), we created a scatter plot of posts and comments about ChatGPT over time, separating out the 19 subreddits (Figure 2). To analyze *engagement* (RQ2), we calculated descriptive statistics such as median word count per post and comment by subreddit, response rate to posts, and median length of conversations (Table 1). To analyze *content* (RQ3), we conducted several natural language processing analyses. First, we used *Linguistic Inquiry and Word Count* (LIWC) software (Pennebaker et al., 2015a), a rigorously pre-trained machine learning classifier, to computationally assess 23 language features in the six most popular education-related subreddits (each had at least 50,000 subscribers as of April 5, 2023): r/Teachers, r/education, r/Professors, r/teaching, r/academia, and r/highereducation (Figures 3–4). Specifically, we examined a variety of LIWC measures of language use: four *summary* measures (analytic, clout, authentic, tone), five *affect* measures (positive emotions, negative emotions, anxiety, anger, sadness), seven *cognitive processes* measures (overall, insight, casual, discrepancies, tentative, certainty, differentiation), and seven *personal* measures (work, leisure, home, money, social, family, friend). Finally, we used R (R Core Team, 2024) to perform term-frequency analysis. That is, we identified the most-used terms in ChatGPT posts and comments in the six most popular subreddits, and we then created a heat map visualization of these term frequencies (Figure 5).

Results

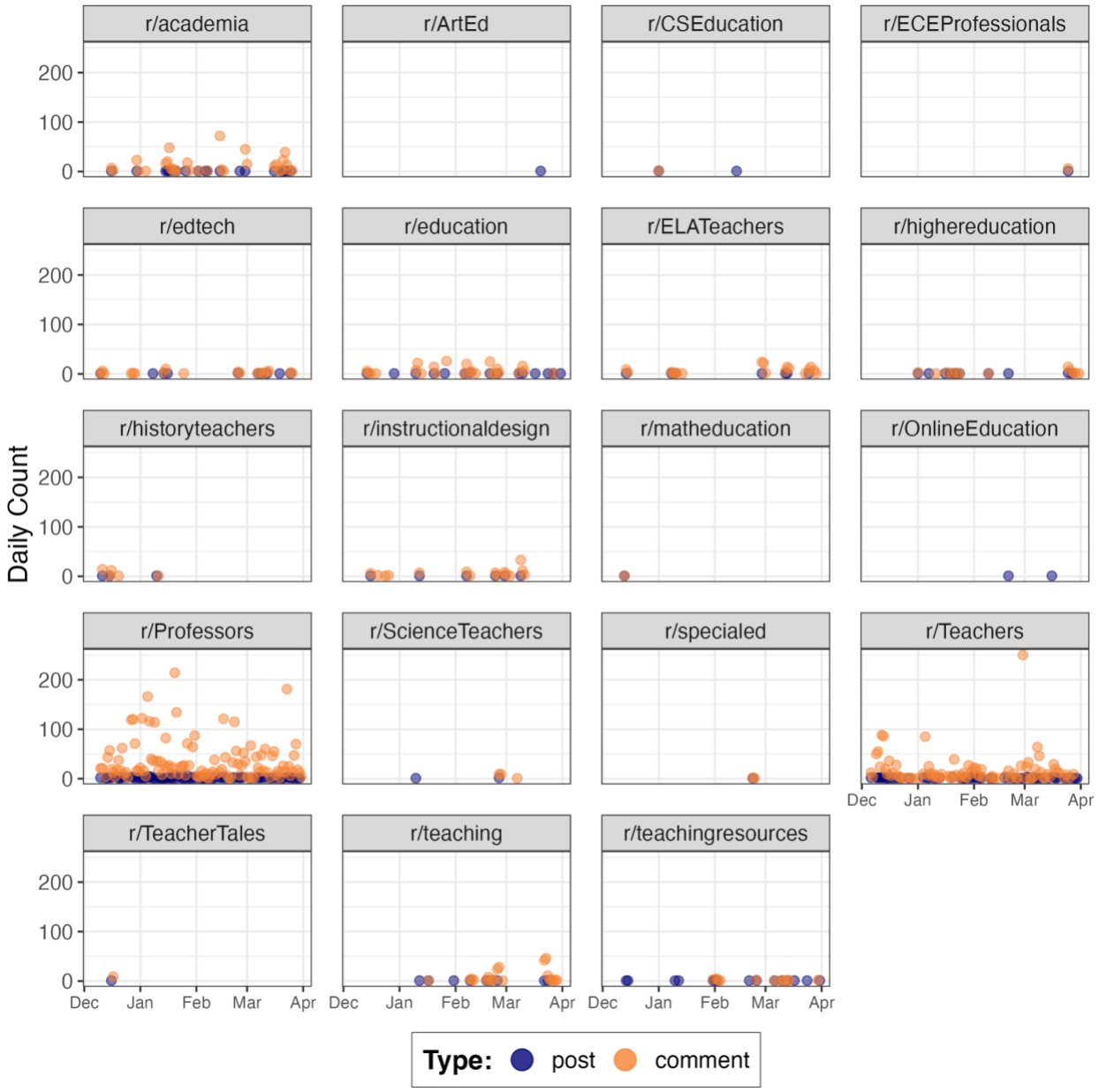
RQ1. What was the volume of ChatGPT discussions in education-related subreddits in the initial months following the tool's launch?

ChatGPT discussions were widespread across various education-related subreddits, but the majority of the discussions took place in the r/Professors and r/Teachers subreddits. The first ChatGPT discussion in an education-related subreddit was in r/Teachers on December 6, 2023—a week after ChatGPT's launch. ChatGPT discussions began in r/Professors (December 10) and r/edtech (December 10) soon after. Six of the education-related subreddits did not have any discussions of ChatGPT in the first four months after its launch.

Among the 19 subreddits that had ChatGPT posts and comments (Figure 2), several volume profiles are evident. The subreddits r/academia, r/education, r/Professors, and r/Teachers had fairly consistent and ongoing ChatGPT discussions throughout the four-month period. Meanwhile, r/edtech, r/ELATeachers, r/highereducation, r/instructionaldesign, r/teaching, and r/teachingresources had numerous ChatGPT discussions, but these were more sporadic. The remaining nine subreddits had a much lower volume, with r/historyteachers, r/matheducation, and r/TeacherTales having a few ChatGPT discussions in the first month but none after that, whereas r/ArtEd, r/ECEProfessionals, r/OnlineEducation, and r/specialed did not have any ChatGPT discussions until the third or fourth month—and even at that point, only had a few posts and comments. Finally, r/CSEducation and r/ScienceTeachers also had low volume, with a few sporadic ChatGPT discussions spread out over time.

Figure 2

Daily Posts and Comments about ChatGPT in Education-Related Subreddits



RQ2. What was the engagement with ChatGPT discussions in education-related subreddits?

We report numerous measures of participants' engagement in 25 education-related subreddits (Table 1), sorted by the total sum of comments and posts about ChatGPT in these spaces through March 2023. We again note that six subreddits did not have any ChatGPT posts during this period. In several subreddits, the volume of ChatGPT discussions is substantial in terms of the total number of posts and comments, as can be observed for r/Professors, r/Teachers, and r/academia in Figure 2 and Table 1. However, even in these cases, the impact on the overall discourse in the subreddit is very low, with ChatGPT only being mentioned in 3.9% of r/Professors posts, in 1.7% of r/academia posts, and just 0.6% of r/Teachers posts. Similarly, although the speech-language pathology subreddit, r/slp (2,798 posts and 37,526 subscribers), the early childhood education subreddit, r/ECEProfessionals (1,284 posts and 26,200

subscribers), and r/TeachersInTransition (896 posts and 6,063 subscribers) were all very active spaces, none of their discussions pertained to ChatGPT, except for one post in r/ECEProfessionals.

The *response rate* (i.e., the likelihood that a ChatGPT post would receive a comment in response) was high for many of the education-related subreddits. For r/Professors and r/Teachers, the response rate was nearly universal, at 96.0% and 94.1%, respectively—this means that nearly every time someone posted about ChatGPT in these subreddits, someone else responded to them. Across the 10 subreddits with at least five ChatGPT posts, the response rate was over 70%, except in the case of r/teachingresources (46.7%).

Despite high response rates, the ChatGPT posts generated differing degrees of sustained interest. In the top-10 subreddits (i.e., those with at least five ChatGPT posts), seven had a median *thread length*—that is, the median number of comments in response to a ChatGPT post—of eight or higher, with r/Professors again having the highest engagement with a median of 15 comments per post. However, posts in r/teachingresources (median thread length zero), r/highereducation (median thread length one), and r/edtech (median thread length four) received many fewer responses.

Finally, the length of ChatGPT posts and comments also varied by subreddit. The median word counts of ChatGPT posts in r/instructionaldesign (147 words), r/Teachers (128 words), r/education (93 words), and r/Professors (81 words) demonstrate more than superficial engagement with ChatGPT in these spaces. We also observe that the median word count of comments on ChatGPT varies much less by subreddit, with most averaging 30–40 words per comment.

Table 1

Engagement in ChatGPT Conversations Across 25 Education-related Subreddits

	Subreddit	Subreddit Subscribers *n*	Total Posts *n*	ChatGPT Posts *n* (%)	Post Word Count median	Response Rate %	Thread Length median	Post Upvote Ratio median	Total ChatGPT Comments *n*	Comment Word Count Median	Earliest ChatGPT Post
1	r/Professors	114,965	3,799	148 (3.9%)	81	96.0	15	0.8	3,829	31	12/10/22
2	r/Teachers	419,352	13,298	84 (0.6%)	128	94.1	8	0.7	1,462	32	12/6/22
3	r/academia	57,860	1,332	22 (1.7%)	21	81.8	8	0.8	399	34	12/16/22
4	r/education	166,688	2,390	16 (0.7%)	93	75.0	9	0.7	177	37	12/14/22
5	r/teachingresources	32,329	643	15 (2.3%)	56	46.7	0	0.9	20	20	12/14/22
6	r/highereducation	52,686	674	12 (1.8%)	17	75.0	1	0.8	38	28	12/31/22
7	r/edtech	18,441	258	11 (4.3%)	29	72.7	4	0.8	53	38	12/10/22
8	r/teaching	108,342	2,131	9 (0.4%)	20	77.8	11	1.0	188	34	1/12/23
9	r/ELATeachers	15,990	323	7 (2.2%)	28	100.0	12	0.9	131	35	12/14/22

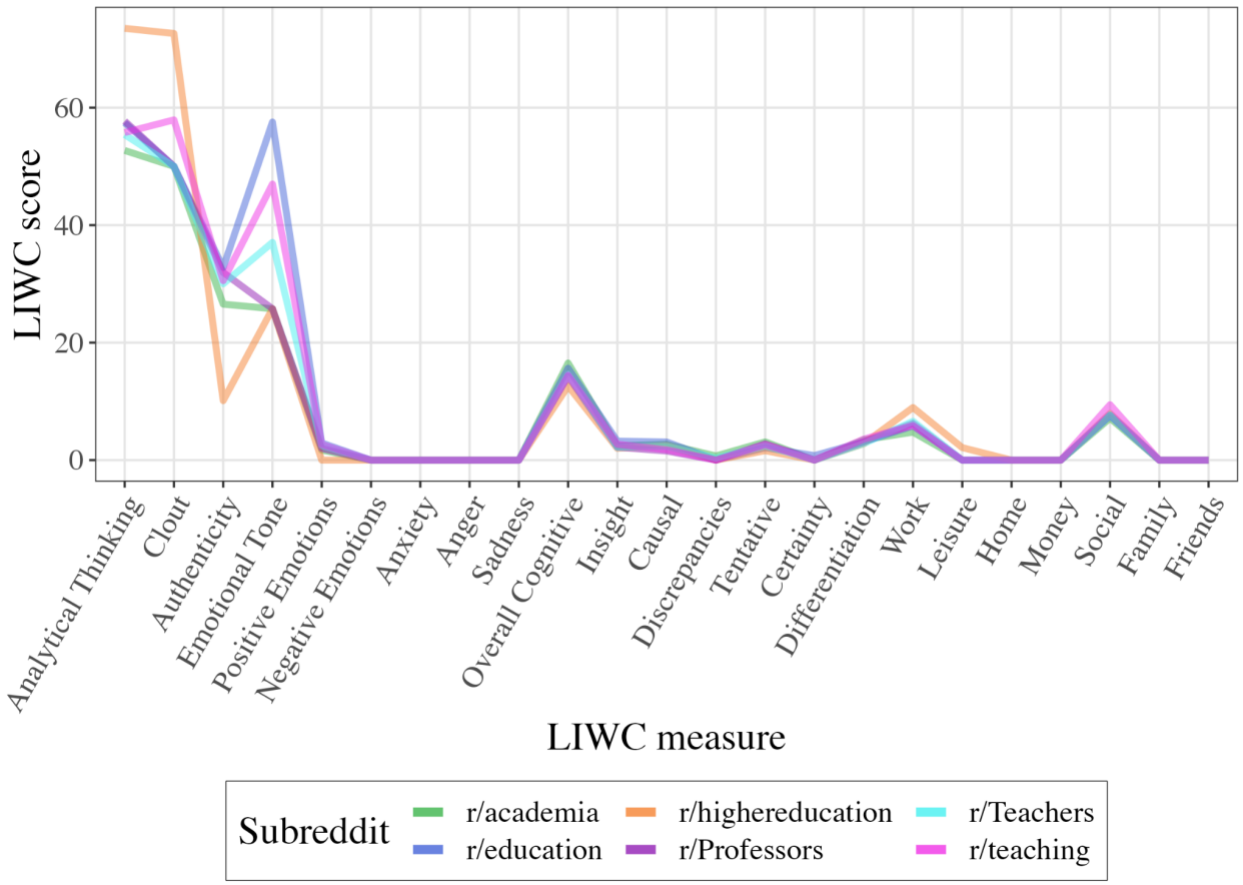
10	r/instructionaldesign	23,641	726	6 (0.8%)	147	100.0	11	0.8	97	35	12/16/22
11	r/ScienceTeachers	37,097	515	3 (0.6%)	52	33.3	0	1.0	19	34	1/10/23
12	r/historyteachers	12,847	313	3 (1.0%)	58	100.0	14	0.9	29	41	12/11/22
13	r/CSEducation	23,733	77	2 (2.6%)	328	50.0	1	0.8	2	69	1/1/23
14	r/OnlineEducation	13,973	449	2 (0.4%)	15	0.0	0	0.8	0	0	2/20/23
15	r/ArtEd	6,173	198	1 (0.5%)	9	0.0	0	1.0	0	0	3/20/23
16	r/ECEProfessionals	26,200	1,284	1 (0.1%)	62	100.0	6	0.5	6	22	3/24/23
17	r/TeacherTales	29,919	134	1 (0.7%)	80	100.0	9	0.8	9	14	12/16/22
18	r/matheducation	24,315	282	1 (0.4%)	6	100.0	1	1.0	1	28	12/13/22
19	r/specialed	13,635	537	1 (0.2%)	44	100.0	3	1.0	3	42	2/22/23
20	r/AdultEducation	4,155	24	0 (0.0%)	0	0.0	0	0.0	0	0	NA
21	r/MusicEd	15,906	292	0 (0.0%)	0	0.0	0	0.0	0	0	NA
22	r/TeachersInTransition	6,063	896	0 (0.0%)	0	0.0	0	0.0	0	0	NA
23	r/itinerantteachers	2	6	0 (0.0%)	0	0.0	0	0.0	0	0	NA
24	r/slp	37,526	2,798	0 (0.0%)	0	0.0	0	0.0	0	0	NA
25	r/teacherspromote	468	50	0 (0.0%)	0	0.0	0	0.0	0	0	NA

RQ3. What was the content of ChatGPT discussions in education-related subreddits?

The six largest subreddits were nearly identical across most LIWC categories (Figure 3). All six subreddits had medium levels of overall cognitive processing as well as a small emphasis on insight, casual, and tentative. LIWC analysis also showed more emphasis, in each subreddit, on work and social matters compared to an absence of leisure, home, money, family, and friends.

Figure 3

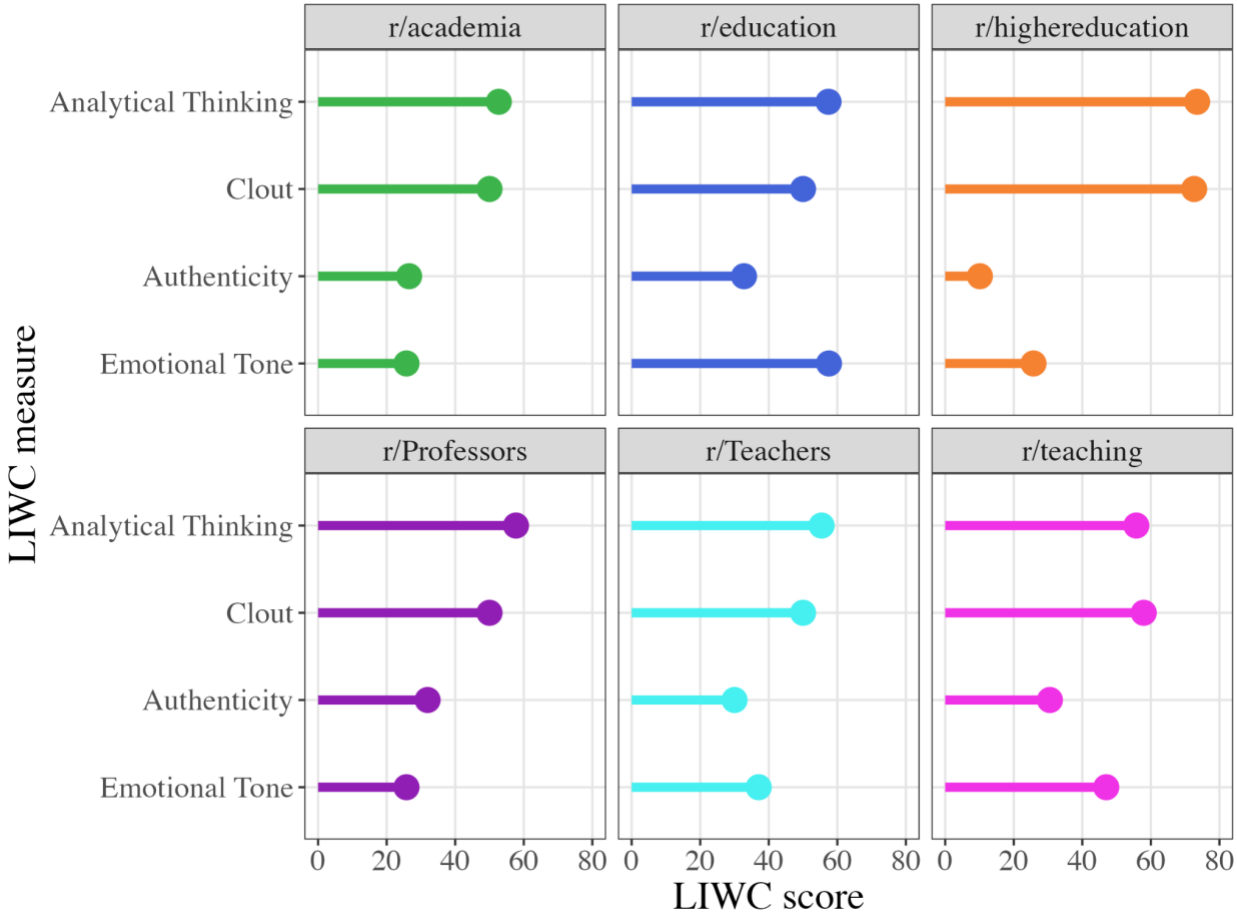
Linguistic Inquiry and Word Count Measures by Subreddit



Content in the six largest subreddits varied across the LIWC summary categories of analytical thinking, clout, authenticity, and emotional tone (Figure 4). The higher *analytical thinking* score in r/highereducation reflects more "formal, logical, and hierarchical thinking" (Pennebaker et al., 2015b, p. 22), whereas the relatively lower score in the other five subreddits reflect "informal, personal, here and now, and narrative thinking." *Clout*, again highest in r/highereducation and relatively high in r/teaching, suggests authorship that is confident and offering an expert's perspective, whereas the relatively lower clout scores in the other four subreddits suggests writing that is more tentative (Pennebaker et al., 2015b). In terms of *authenticity*, r/highereducation is once again the outlier, but in this case, scoring much lower than the other five subreddits, reflecting writing that is more distant and guarded. The other five subreddits' somewhat higher authenticity scores suggest content that is more personal and disclosing (Pennebaker et al., 2015b). Finally, the content of the six largest subreddits varied by *emotional tone* more than any other measure. Pennebaker et al. (2015b) interpreted a higher score to reflect more positive and upbeat writing, whereas a lower score suggested a more negative or downbeat style. This means that r/education appears to be the most optimistic about ChatGPT, whereas r/academia, r/highereduation, and r/Professors are pessimistic. r/Teachers is also on the pessimistic side, but slightly less so, and r/teaching, with an emotional tone score close to 50, showed a more neutral or ambivalent view of ChatGPT.

Figure 4

Summary LIWC Measures by Subreddit

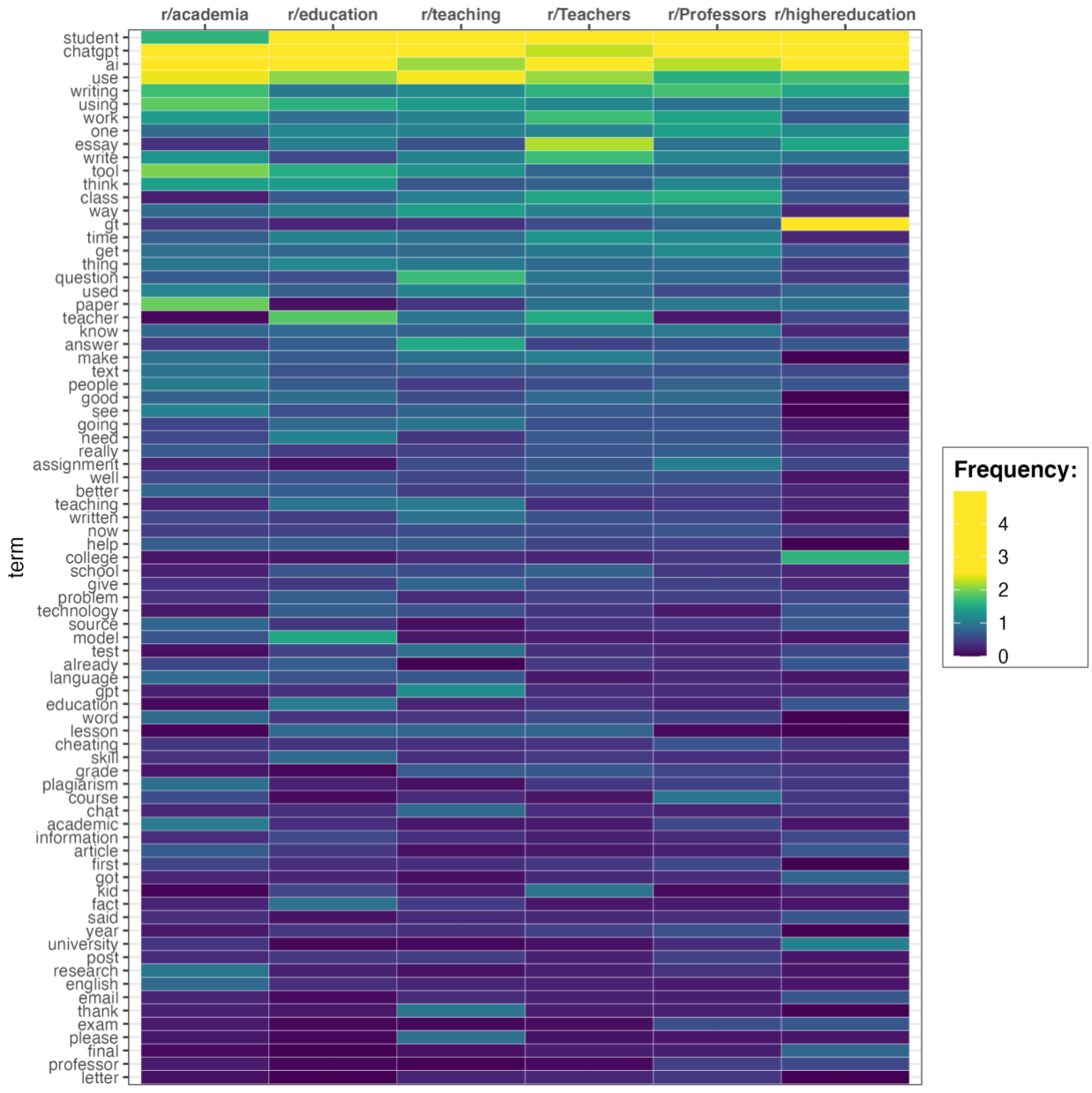


Finally, our term-frequency analysis (Figure 5) showed that discussions of ChatGPT in the six largest subreddits most often pertained to *students* (although to a lesser degree in r/academia), *ChatGPT* (all posts would contain ChatGPT as a keyword, but not necessarily all comments associated with those posts), and *AI*. Beyond these commonalities, the subreddits varied slightly by the most-used terms. The columns of Figure 5 are sorted so that the most similar subreddits are next to each other. First, r/academia emphasized *use/using* and *write/writing* (as did other subreddits), with a distinct emphasis on words like *tool*, *paper*, *plagiarism*, *research*, and *English*, more than the other subreddits. This suggests a particular concern for academic dishonesty through ChatGPT. Second, r/education also emphasized *use/using*, but less so *write/writing*, and also included *teacher*, *model*, *skill*, and *fact* more than the other subreddits. This set of terms could suggest a focus in r/education on teachers' role in responding to ChatGPT. Third, in r/teaching, the frequent use of the terms *question*, *answer*, *thank*, and *please* distinguish it from the other subreddits, suggesting a space where participants were actively trying to figure out ChatGPT together. Fourth, r/Teachers includes the terms *essay*, *writing/write*, *work*, *class*, *think*, and *teacher* relatively more than the other subreddits. This suggests that r/Teachers participants were discussing ChatGPT to understand impacts on teachers' instructional practice, such as essays and writing. Fifth, r/Professors uses the terms *write/writing*, *class*, *course*, and *assignment* at a high rate compared to the other subreddits. This suggests that ChatGPT discussions in r/Professors have addressed the scope of impact at the

course level, not just the individualistic perspective of students or instructors. Finally, r/highereducation has a striking rate of inclusion of the terms *GT* and *college/university*, as well as a relatively high use of *essay*. This suggests that ChatGPT discussions in r/highereducation may have focused on Georgia Tech (GT), whose admissions blog (see Clark, 2023a, 2023b) actively encouraged prospective students to use ChatGPT to assist in the college search and application process.

Figure 5

Term Frequency by Subreddit



Discussion

Our purpose in this study is to explore and analyze the volume, engagement, and content of initial reactions to one leading GenAI tool, ChatGPT. We address a gap in the research base by designing a rigorous and systematic approach to gaining a broad understanding of ChatGPT reactions by analyzing discussions in 25 education-related subreddits across the first four months following ChatGPT's launch.

When considered in aggregate, a first major theme in the findings are the patterns of both similarities and differences across various subreddits—reinforcing past evidence that when digital spaces are organized around a simple principle of shared interests, participants can choose how to use and fill those spaces to meet their needs. For instance, our findings from 25 subreddits are reminiscent of Carpenter and colleagues' (2022) conclusions from 16 education-related X/Twitter hashtags—especially that different affinity spaces meet different needs. For example, here it seems evident that r/academia is meeting a slightly different need than r/Teachers. While both subreddits host ChatGPT discussions centered on students and AI, relatively consistent in volume over time (albeit with r/Teachers as a higher volume), r/academia emphasized issues of academic dishonesty while r/Teachers focused more on impacts to instructional practice. Understandably, r/academia also seemed to take a more pessimistic view of ChatGPT compared to r/Teachers, as measured by the LIWC emotional-tone score. In fact, all three higher education subreddits (r/academia, r/Professors, and r/highereducation) were more pessimistic than the general education/K–12 subreddits (r/Teachers, r/Teaching, and r/education). Given that the five most frequently mentioned terms (i.e., students, ChatGPT, AI, use/using, and write/writing) reflect discussions on how students might use ChatGPT for writing tasks, the heightened level of pessimism in higher-education-related subreddits makes sense because higher education places great importance on writing and academic integrity (Boehm et al., 2009).

A second major theme in the findings is the relatively low volume of ChatGPT discussions against the backdrop of regular and ongoing discussions in education-related subreddits. At most, 1 in 23 posts (4.3%) were about ChatGPT in r/edtech—the highest rate in any of the education-related subreddits. The subreddit with the most ChatGPT posts by far, r/Professors, saw 1 in 26 posts (3.9%) pertaining to ChatGPT. In r/Teachers, the largest education-related subreddit, by far, in terms of subscribers, had only 1 in 158 posts (0.6%) on ChatGPT. It is possible that participants in these spaces saw more ChatGPT content than the raw numbers suggest because of Reddit's algorithms. Still, it is likely that media outlets—including academic journals—have contributed to the overinflated attention given to ChatGPT (e.g., Bahroun et al., 2023; Lo, 2023), continuing historic patterns of hype around educational technologies (e.g., Cuban, 1986, 2003).

Given the scarcity of ChatGPT discussions in education-related subreddits, those who did participate may be viewed as innovators or early adopters who generally have a deeper interest in technological advancements than the majority. Thus, despite the infrequency of ChatGPT posts, the existing discussions were marked by a consistent and sustained *volume* across the four-month period. Furthermore, numerous *engagement* metrics (e.g., response rate, thread length, word count) and the LIWC score for analytical thinking were relatively high. This suggests interest in scrutinizing ChatGPT's strengths, weaknesses, and potential applications—at least among a few early adopters. The ability for a small subset of the overall subreddit participants to create and engage with topics and content important to them—even while most other users are not impacted—again demonstrates the flexibility of affinity spaces that are defined simply by a

shared interest. In this case, even within a single subreddit, some users can continue regular, ongoing discussions while others are free to react to and examine an emerging technology like ChatGPT. This is reminiscent of how X/Twitter users have been observed to use the same hashtag affinity space for different purposes (Greenhalgh et al., 2020).

Implications

Implications for Practitioners

The results suggest that practitioners can look to education-related subreddits to glean insights on ChatGPT, GenAI, and other emerging technologies from the reactions of early adopters. These discussions can serve as a reference point for exploring the possibilities and perils of new tools for instructional practice as well as their own self-directed professional learning. However, echoing Carpenter and colleagues' (2022) admonition from their study of 16 education-related X/Twitter hashtags, it is important that practitioners be aware that different education-related subreddits have been used for different purposes (e.g., Carpenter & Staudt Willet, 2021; Staudt Willet & Carpenter, 2021). Each subreddit is an affinity space loosely organized around a shared interest, but from there, what users do with the space can vary substantially. Practitioners should explore several different subreddits that might be relevant to their own level (e.g., r/ECEProfessionals, r/Professors) or subject area (e.g., r/ELATeachers, r/ScienceTeachers) in addition to the broad subreddits (e.g., r/Teachers, r/teaching). Even when focused on something as specific as reactions to a new technology, our findings show that participants in these spaces take different approaches. Depending on a practitioner's needs and interests, they may find some subreddits more suitable than others.

Implications for Leaders and Policymakers

For educational leaders and policymakers, discussions in education-related subreddits can serve as valuable indicators of popular and trending topics that may be worth addressing from their positions of influence, especially as they develop guidelines and policies governing the use of GenAI in education. For instance, the differences in volume—both in terms of the number and frequency of ChatGPT posts in various education-related subreddits—suggest that concern about ChatGPT in its first four months was not shared equally across different corners of education. These differences are reinforced by the varied levels of engagement and varied levels of analytical thinking and emotional tone in different subreddits, indicating that emerging technologies like ChatGPT and other GenAI tools can elicit diverse reactions and perspectives.

Being able to follow these ChatGPT discussions in situ will allow educational stakeholders to see early reactions before perceptions have been shaped by broader discourse on social media and traditional media outlets. Viewing these discussions in education-related subreddits could be particularly advantageous because Reddit users are above-average technology users (Richard et al., 2021; Simmonds, 2023) who can offer a window into the perceptions and experiences of early adopters in the diffusion of innovation process (Bennett, 2014).

Implications for Researchers

For educational researchers, the data mining and analytics methods used in this study could be applied to monitor and assess emerging trends in education through measures of volume, engagement, and content. This monitoring could be automated to alert various educational stakeholders, including practitioners, leaders, and policymakers. The trends would not necessarily be limited to reactions to new technologies but could also include responses to societal changes or new legislation—or even unexpected disasters that prompt the need for immediate response and forms of *just-in-time* professional development (Greenhalgh & Koehler, 2017). Reddit would likely be a good source for data mining information spanning many aspects of education. LIWC measures, especially analytical thinking and emotional tone, plus term-frequency analysis seem to be a rapid-yet-robust way to analyze textual data. This approach updates and applies, in situ, strategies for monitoring well-being through diary entries (Tov et al., 2013), resulting in a powerful method for understanding rapid reactions across education.

Limitations and Future Research

Future research should continue collecting posts and comments from these 25 education-related subreddits—and any additional relevant affinity spaces that can be identified—to see how ChatGPT and broad GenAI conversations further progress. Analyses of this digital-trace data could be expanded as well, perhaps using supervised machine learning classification to assess similarities and differences between these emerging discussions more rigorously. Furthermore, because Reddit is not representative of all educational stakeholders—and likely leans toward more tech-savvy users—future research should seek to explore and analyze reactions to GenAI tools among all educators, especially those who would typically be late adopters of emerging technologies. Regardless of approach, much more work is needed to understand reactions and responses to emerging technologies, with a specific focus on GenAI in the near future.

Conclusion

Incorporating technology into education has long prompted strong reactions, whether resistance or hype. The recent rise to prominence of GenAI and the debates sparked by ChatGPT specifically are the latest manifestation of both technological resistance and hype. The potential of GenAI to both enhance and challenge teaching, learning, and the systems of education (Bahroun et al., 2023; Chiu, 2023) warrants deliberate attention and more rigorous response. For instance, one insight from this current study is that no more than 4.3% of posts in any subreddit were about ChatGPT. This finding can be interpreted from a sociohistorical perspective (Moore et al., 2024) to regard the technology in a new light: when ChatGPT is discussed, engagement is high and a variety of topics are covered (hype)—but more than 95% of the time, regular discussions continue as before (resistance). That is, there is potential, but this potential must be viewed realistically. The work of systematically and rigorously evaluating reactions to ChatGPT and GenAI—to understand these tools from a sociohistorical perspective—must continue as emerging technologies will continue to intersect and impact education.

Author Note

The authors report no conflicts of interest in conducting this study. The study was approved by the Institutional Review Board (IRB) at the authors' home institution. Materials for data analysis are shared through GitHub: https://github.com/bretsw/reddit-chatgpt/

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