

Memorandum

To: Professor Amanda Stansell

Date: June 13, 2023

RE: Professional Writing Minor Capstone Reflection

For my capstone project, I wanted to explore ways we could diversify science communication by utilizing Tik Tok as a social media platform for the professional writing minor track.

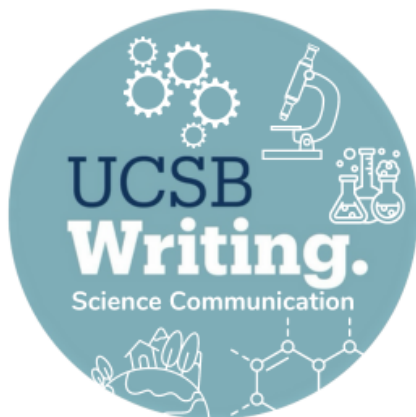
Link to Tik Tok Account:

https://www.tiktok.com/@ucsbwriting_scicomm?_t=8dJcr8wWPWg&_r=1

Project's Goals:

The intention of this project was to determine the effectiveness of TikTok as a science communication tool and identify which video format is best for user engagement and retention. Social media platforms have become increasingly popular for science communication in recent years. TikTok, in particular, has gained significant popularity among the younger generation, making it a potentially useful tool for science communication. Therefore, I will be estimating user engagement by using various posting strategies that the TikTok platform allows.

Making the platform/social media design:



I was able to meet with Kaitlyn Soto and Dan Frank to discuss how they increase user engagement for the Writing Program Instagram account. In addition, they also follow University social media guidelines and policies along with University social media aesthetics. This was able to provide a basis for how to design a profile picture for future Science Communication social media platforms including Tik Tok. With these social media guidelines, I was able to design the Science Communication track Tik Tok profile picture.

Project's Results:

Also posting on social media wasn't as successful as I intended to be, I was very satisfied with how the data analysis was able to be executed. As someone with not a lot of experience with computer science or coding in general, I was basically self taught when running some of the social media analytics on my own.

Science Communication on Tik Tok:

I have been an avid user of Tik Tok for a couple of years now, and I understand that a good majority of Gen Z also uses Tik Tok as a source of entertainment, information, and community. Exploring different niches has allowed me to witness how different members of that niche can communicate different subjects that are important to them, ranging from various different topics such as lifestyle, comedy, and larger socio economic issues. Ultimately, how we communicate science topics are shifting and whichever platform users turn to use to obtain information varies, but in the future I believe Tik Tok can be a powerful and effective tool to communicate various science topics.

Narrative Science with Film

Last quarter for the first Science Communication class, I dabbled into writing about Stanley Kubrick's *Dr Strangelove, or How I Learned to Stop Worrying and Love the Bomb* as a means of connecting it to nuclear disasterism and current perceptions of climate doomism, a feeling that there is nothing else we can do for the planet, and all is lost. I knew for my own science communication Tik Tok, I wanted to discuss science communication in the form of narratives and how they can help us ask bigger questions in life. Both *Dr. Strangelove* and René Laloux's *Fantastic Planet* bring forth an important question when it comes to humanity's positionality in the natural world, various ecosystems, and even other organisms that we interact with. Juxtaposing the ethics of being 'dominators', versus the demoralizing perspective of the 'dominated'. Humanity's unyielding desire for authority in the natural world can be seen in *Dr. Strangelove* through characters such as General Jack D. Ripper, as well as Dr. Strangelove himself who embodies extreme hubris and the detached nature of scientific ambition, based on the real-life theoretical physicist Edward Teller. Through its biting satire, "Dr. Strangelove"

challenges viewers to reflect on the absurdity of human dominance and the detrimental impact it has on the natural world, and the devastating consequences of human actions on the environment. The nuclear war and the ensuing destruction portrayed in "Dr. Strangelove" serve as a metaphor for the irreversible damage caused by unchecked power; humanity's reckless manipulation of the natural world, and its impact on the fate of our planet. Kubrick highlights the potential for environmental catastrophe, demonstrating the alarming ease with which humans can push the planet to the brink of annihilation.

In the film *Fantastic Planet* (*La Planète Sauvage*), we witness the complete opposite with humans being both physically and intellectually inferior compared to the dominating alien race known as 'Draggs', who perceive the human population ("oms") as no more than pests to either be kept as pets or completely exterminated. By organizing under their leader and former Dragg housepet 'Terr', the 'oms' are able to resist Dragg's oppression with the knowledge gained regarding Dragg technology. This film displays how with both technology and strength in community resilience in that the Oms were able to succeed in the face of adversity. In addition how positive change can come to those part of historically oppressed groups when coming together to unite against injustice.

Ultimately, both of these films suggest that any intelligent group, human or not, can often overlook unintended consequences that may lead to their downfall during their pursuit of control. For instance, the om uprising against the Draggs that threatens the fate of their existence ultimately brings them to a negotiation of peace between the oms by permitting them to occupy their planet's moon, known as the 'fantastic planet'. With very different endings, but similar messages, both *Dr. Strangelove* and *Fantastic Planet* serve as powerful reminders to critically examine our relationship with all aspects of science such as technology and our environment. As we continue to experience the effects of Climate Change and other global crises' that arise, by aspiring for community resilience and collective action toward a reevaluation of humanity's role in the natural world, we can remove the notion of science as a tool for oppression and instead a tool for upliftment for all.

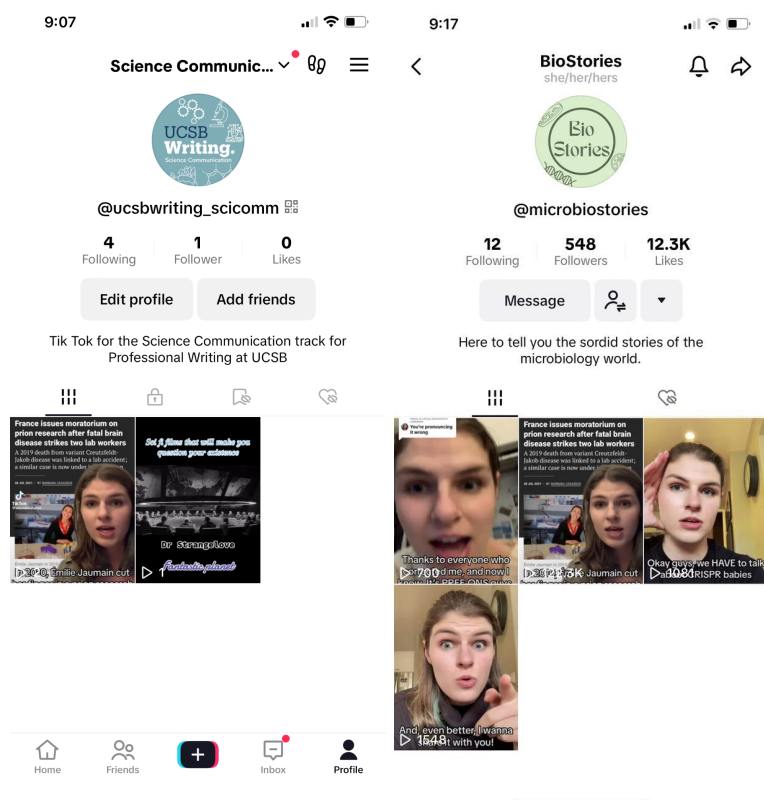
Hopefully with the Tik Tok I made, people would be inspired to seek out these movies and watch them on their own time to see how science communication can transcend what 'traditional' science communication can or should look like. With this in mind, I made a 48 second longer-lecture style tik tok video with some of the movie stills I found for both *Dr Strangelove* and *Fantastic Planet*

What worked and what didn't

Upon creating the Tik Tok account, I ran into some minor technical issues where everytime I tried to follow a UCSB affiliated account, the app rejected it. Hence, I wasn't able to build the

social media relationship that I wanted to create, in addition to short time period to post content didn't allow me to cultivate the following I was expecting to receive.

However, I will note that I had been communicating with Caroline as both of our capstone projects involved Tik Tok content creating. Her videos on her Tik Tok account @Biostories, were extremely successful and garnered a lot of attention from scientists and nonscientists alike, especially the video that discusses prions. Therefore, I'd like to argue that Caroline's account actually proves this proposal's claim that science communication on Tik Tok is extremely effective not only for sharing important scientific knowledge, but encouraging and facilitating productive discourse online that makes science an accessible topic to others. It also shows the diversity of knowledge others have that can interact with Tik Tok's such as Caroline's and share the knowledge they were able to receive in their experiences. Due to the timing of the Tik Tok posts, I wasn't able to run a sentiment analysis on some of the comments left behind on Caroline's Tik Tok, but I believe it would be really interesting to see how that can be used to predict people's perceptions towards different topics to be discussed on @Biostories.



Data Analysis

As we are shifting in strategies for communicating various science topics to the general public, the social media Tik Tok can provide users with sufficient data to learn what content results in higher user traffic. By utilizing Tik Tok's video and user performance analytics in order to gauge

how Tik Tok users engage with certain science topics, and analytics tools such as retention rate and sentiment analysis can assist in how content can be shifted in order to increase user engagement and retention. By utilizing research methodologies such as clustering methods, qualitative coding, and mixed-methods approaches, we are able to further assess the effectiveness of science communication on Tik Tok.

This research paper portion of this project sought to enhance the understanding of social media strategies through data analytics, specifically sentiment analysis and retention, for science communication genres on TikTok. With this analysis focusing on a sample from the six TikTok videos covering broad and specific science themes that I posted on my personal account. Each with the purpose of engaging various audiences' perspectives towards particular science topics. By leveraging sample data from TikTok's API that was downloadable; In addition to Python programming, data was collected and various visualization techniques were employed to analyze the performance of the videos.

Additionally, a set of popular science-related hashtags on TikTok was used to gather insights into user sentiments regarding specific science topics. Methodologies employed in these studies from the literature review including keyword search, clustering, and mixed-methods research can also provide valuable insights for data collection and analysis. For data collection, TikTok's creator analytics were utilized, providing performance metrics such as views, likes, comments, shares, and retention rate. Python programming was employed to further analyze the collected data, including descriptive statistics, sentiment analysis, and potential regression analysis. In regards to implications, it is important to note that data analysts are required to apply Tik Tok API in order to have access to their entire catalogue of data. Below are some of the graphs and images I was able to generate with Python:

```
In [26]: df.loc[1:5, ['Hashtag', 'Views', 'Average view per post']]
```

```
Out[26]:
```

	Hashtag	Views	Average view per post
1	#scicomm	1,538,245	7056.0
2	#science	2,979,644,774	46079.0
3	#womeninstem	11,406,641	13051.0
4	#stem	97,444,008	3291.0
5	#womeninscience	588,349	1862.0

Figure 1: Top 5 hashtags with highest views and average view per post: #scicomm, #science, #womeninstem, #stem, #womeninscience

Gauging which Hashtag is Most successful on tik Tok through Average view per post

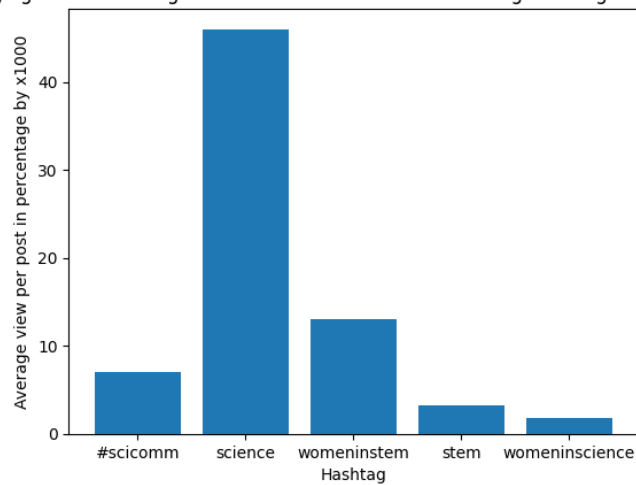


Figure 2: Gauging Which Hashtag is Most Successful on Tik Tok though Average View Per Post

Note: Since the average view per post was in the thousands, I reduced these values to a decimal by multiplying by one thousand in order for the data to fit on the y-axis of the bar graph.

```
In [50]: print(sentiment_df)
```

	Keyword	Average Polarity	Average Subjectivity
0	Scicomm	0.625	0.60
1	Science	0.750	0.90
2	womeninstem	0.000	0.00
3	stem	0.700	0.85
4	womeninscience	0.000	0.00

Figure 3: Average Polarity and Average Subjectivity scores for each keyword or 'hashtag'

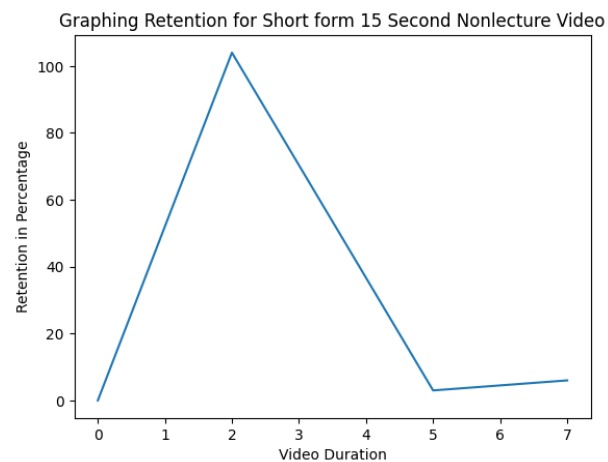


Figure 4: Graphing Retention for Short form Dynamic method for communicating science, 15 second nonlecture video utilizing visuals and text to display information. The x-axis and y-axis was taken from the graph provided by the app's analytics section that is automatically calculated after every post.

Data analysis and visualization play a crucial role in extracting insights and understanding content performance. Sentiment analysis, a valuable tool for understanding audience response, was employed to gauge users' emotional reactions to specific science-related topics. By using the VADER tool, the average polarity and subjectivity scores were calculated for the top five science communication hashtags on TikTok. This analysis helps science communicators understand audience sentiments and preferences, facilitating content planning and engagement.

Furthermore, the study explores the role of sentiment analysis in assessing discourse within the science communication space on social media. Discourse is inevitable on social media platforms, and sentiment analysis assists in identifying relevant comments for engagement and understanding overall audience perceptions of the content.

Conclusion:

Overall, I believe I was partly successful in this project. It had its ups and downs and at somepoint I was wondering if this project was even feasible according to what I had initially set for myself in the capstone proposal. However, after working things around and getting serious about the project, I was able to submit something I believe I can say I am proud of. Also something I want to note I am proud of is how much I was able to learn about social media analytics. This project made me seriously consider looking more into social media coding with Python because although very long and tedious was the second genre research paper, I think that was the part of the project I most enjoyed.

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