Tracing Content and Sentiment of Knowledge Brokers

Active and Passive Knowledge Brokers in Social Media

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Educators and policymakers are increasingly doing their work in contexts influenced by social media. Understanding the way knowledge is shared in this space is crucial for improving the amplification and dissemination of the kinds of practices and resources that support equity-focused change. Knowledge brokers play pivotal roles in social media networks by connecting otherwise disconnected users[1] and sharing and providing access to new and relevant knowledge and resources.[2,3] These brokers can facilitate the identification, access, and translation of new information into local contexts and practice[4] and have valuable insights into the communities they are connecting.[5] However, not all knowledge brokers engage in the same ways.

While some knowledge brokers might *actively* share relevant information and resources, others might take a more *passive* role and be tagged by users due to their perceived reach. Knowledge and resources may also be associated with a variety of feelings and emotions, generally referred to as sentiment. *This study sets out to better understand active and passive knowledge brokers' engagement in social media, the information and resources they share, and the associated sentiments.*

> Many educational initiatives already incorporate knowledge brokers into policy processes.[6] This study's insights can support educators and policymakers to better understand active and passive knowledge brokers' topical foci and the general sentiment they share.

Data & Methodology

We collected X (Twitter) data based on a combination of hashtags (e.g., #education, #teachertwitter, #edutwitter, #edtech), drawing 397,415 tweets from 173,963 unique users. We conducted social network analysis (including community detection, betweenness centrality, and degree centrality) to categorize users into knowledge brokers who are either active (contacting others) or passive (being contacted). Next, we used natural language processing to gain insights into the content and resources being shared by knowledge brokers.[7] More specifically, we implemented lexicon-based sentiment analyses[8] to distinguish between nine types of sentiment, including anticipation, trust, anger, and fear.[9]

Findings

Both types of knowledge brokers (active and passive) provide great value to their networks. Both types of brokers connected otherwise disconnected users in the networks, contributing to a wider range of information and resources being shared among a broader audience.

However, they also have some specific qualities and behaviors. While *active knowledge brokers* engaged with the overall network and bridged between communities, *passive brokers* were sought after for their reach by others (through tagging) to access new communities, often resulting in more readily spreading information and resources across a wider audience. As such, passive brokers therefore can be said to serve as network hubs for different users. Figure 1 provides a visual representation of a subset of the network.

In terms of the content being shared, we found that knowledge brokers of both types often shared, among others, the following:

- opportunities for professional development and leadership
- current news and resources
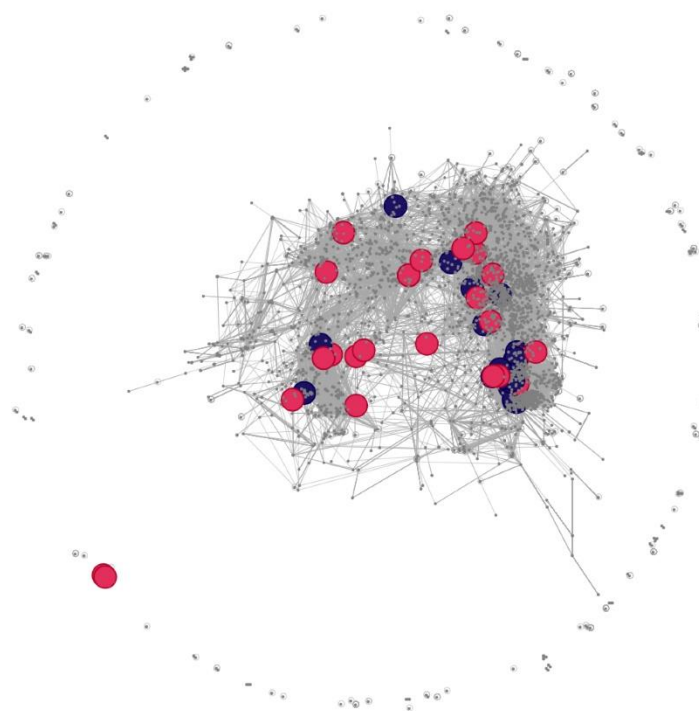- promoting new digital tools

A closer analysis revealed that the conversations of the active brokers revolved around promoting equity approaches and valuing school support. On the other hand, the communications shared through passive brokers were largely fueled by a story about shortages in school supplies and joint efforts to raise awareness.

Lexicon-based sentiment analyses revealed statistically significant differences in the sentiment shared through active compared to passive knowledge brokers. While active brokers exhibited more "positive" sentiments, including *joy* and *trust*, posts shared through passive brokers showed more pronounced signs of "negative" sentiments, including sadness, anger, and fear (see Figure 2).

**Figure 1**. Top 2.5% of Network by Level of Engagement

Note: Color of Nodes – Active Broker ●, Passive Broker ●, Non-Broker ●; Size of Nodes – Top 25 Active and Passive Knowledge Broker (large), NOT Being an Active or Passive Knowledge Broker (small)

So What?

Knowledge brokers are key in sharing knowledge and resources[2] as they have valuable insights into the communities that they are connecting.[5] As a result, educators and policymakers have actively incorporated knowledge brokers in policy processes.[6] However, in a social media context, brokering is more complex. This study provides valuable insights into the differences and similarities between active and passive knowledge brokers on social media, how they are connected, what content they are sharing or channeling, and what feelings and emotions they convey and support while communicating with others. These insights can be used to better understand how content is moving through social networks. For example, active brokers could be approached to effectively support the dissemination of knowledge and resources about

innovative educational initiatives. Alternatively, once passive brokers are identified, they could be selected for their network hub characteristics and be used to disseminate knowledge and resources that strive to further improve education.

Figure 2. Distribution of sentiments across categories by type of knowledge broker
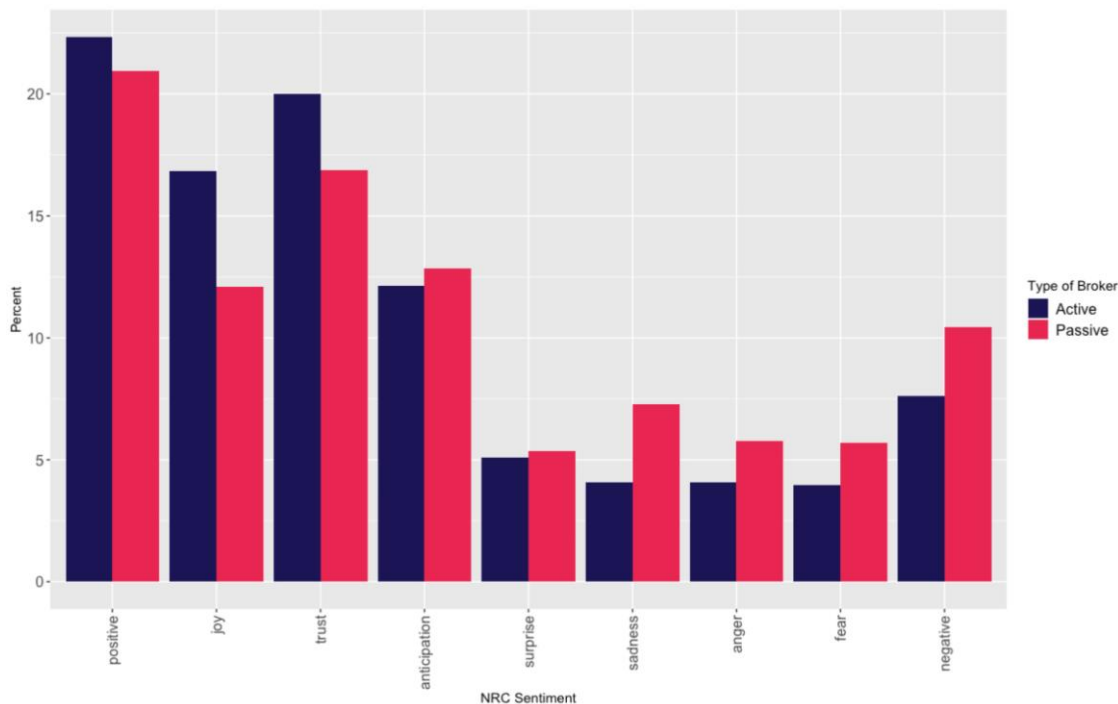
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