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Educational Networks on Twitter in COVID-19

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Abstract

The COVID-19 pandemic has disrupted schools worldwide and posed unprecedented challenges to education. This study collects education and COVID-related Twitter data and uses social network analysis (SNA) to explore the features and evolution of the networks among educational stakeholders on Twitter in the pandemic. This brief presents preliminary findings from analysis of data from May (around the peak of school closures) and September (around the start of a new semester) in 2020, which sheds light on how the educational community has utilized social networks as a way to connect in the time of crisis.

Research Aim

The purpose of this study is to explore the features of the educational networks on social media (i.e., Twitter) during the COVID-19 pandemic and how the networks had evolved. The educational network here is defined as the network of educational stakeholders, namely any individuals or entities that have posted education-related tweets during a specified timeframe.

Research Problem

The COVID-19 pandemic has created a new normal for teaching and learning. In 2020, over 160 countries mandated temporary school closures; many countries pursued the option of remote learning to mitigate the loss of learning (World Bank Education, 2020). This rapid and systematic transformation has brought challenges to everyone involved with education: teachers, students, staff, institutions, parents, and policymakers. Teachers specifically need administrative and technical support as well as adequate professional development (PD) to successfully transition from face-to-face to online teaching environments (Kebritchi et al., 2017). For many, the challenges go beyond teaching to issues of work-life balance, child/elderly care, economic instabilities, and psychological traumas associated with the pandemic.

Fortunately, social media provides a low-cost, easily accessible platform for its users to network and share support. Even before the pandemic, informal online communities and networks have served as a sometimes-preferred alternative to traditional, face-to-face PD among educators (Macià & García, 2016). Social media has played a key role in forming these informal communities and enabling self-initiated networking. Twitter, as an increasingly popular social media application, encourages text-focused discourse for professional purposes. Twitter also hosts high-volume, longitudinal data with rich information that can provide useful insights into public interactions, discourse, and sentiment regarding a particular topic during social events (Beigi et al., 2016). While social media data has gained traction in some disciplines, there is scarcity in educational research that takes advantage of social media to understand communities and narratives among education stakeholders against a social context or educational crisis (e.g., the COVID-19 pandemic).

Preliminary Findings

This study is a work-in-progress and will evolve to be part of a mixed-methods study involving SNA and qualitative analysis to understand salient themes in social media discourse within these networks. While the research questions for the more extensive study are still under development, this brief presents preliminary findings that aim to address the following questions:

1. What are the primary features of educational networks in May and September 2020 on Twitter?
2. How are the educational networks on Twitter similar or different in September compared to May 2020?

Table 1

SNA Measures	May 2020 (N=3547)	September 2020 (N=7917)
Nodes	7160	14785
Edges	4054	9154
Network Density	0	0
Average Degree	0.566	0.619
Network Diameter	1	1
Eigenvector Centrality	0 (49.54%) 0.04 (47.16%) 1 (0.01%)	0 (53.55%) 0.01 (0.9%) 1 (0.01%)
Modularity	0.999	0.998

Social Network Analysis of Educational Networks on Twitter in May and September 2020 (N=11464)

This study adopts a large-scale, open-access COVID-19 dataset by Banda et. al (2020), who used the API method to capture all tweets with keywords concerning “COVID19.” The researcher filtered this original dataset with education-related keywords: "teach", "educat", "school", "student", "university", "college". The final dataset contains both COVID and education-related keywords and consists of 11,464 tweets: 3,045 from May and 7,917 from September. This study's network is defined as a directed network with nodes being Twitter users and edges being the “reply” interactions.

Conclusion & Implications

More than double education-related tweets were posted in September than in May 2020 that also addressed issues of COVID. The educational network was overall sparse (density=0), with most interactions happening on a one-on-one basis (diameter=1). There were few influential features in the network, as indicated by the low centrality measure. Educational stakeholders seemed to interact with only a limited number of individuals on Twitter and rarely branching out to others (modularity being close to 1). It seems that Twitter has not yet shown its full potential in forming powerful networks or well-connected communities among educational stakeholders in this crisis. However, the drastically increasing tweets (nodes) about education and the growing interactions (edges) in September compared to May does indicate that social media attention had focused much more on educational topics against the COVID-19 context in the latter half of 2020 compared to earlier months.

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