

Analyzing Gifted Students' Social Behavior on Social Media at COVID-19 Quarantine

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Summary

COVID-19 has caused a global disturbance, increased anxiety, and panic, eliciting diverse reactions. While its cure has not been discovered, new infection cases and fatalities are being recorded daily. The focus of the present study was to analyze the reaction of gifted undergraduate students on social media during the quarantine period of the COVID-19. A special group of gifted students, who joined the program of attracting and nurturing talents at the University of Jeddah, University students as were the target sample of this study. To analyze online reactions during the pandemic; the choice of university students was arrived at as they are perceived to be gifted academically. Hence, the analysis of the impacts on their behavior on social media use is imperative. This study presented accurate and consistent data on the effects of social media using Twitter platforms on gifted students during the quarantine occasioned by the COVID-19 pandemic. The behavior of learners due to during the use of social media was extensively explored and results analyzed. The study was carried out between April and May 2020 (quarantine period in Saudi Arabia) to establish whether the online behavior of gifted students reflects positive or negative feelings. The methods used in conducting this study the research were online interviews and scraping participants' Twitter accounts (where most of the online activities and studies take place). The study employed the Activity theory to analyze the behavior of gifted students on social media. The sample size used was 60 students, and the analysis of their behavior was based on Activity theory Overall, the results showed proactive, positive behavior for coping with a challenging situation, educating society, and entertaining. Finally, this study recommends investing in gifted students due to their valuable

problem-solving skills that can help handle global pandemics efficiently.

Keywords:

Gifted students; social behavior; social media; activity theory; COVID-19; quarantine.

1. Introduction

As the COVID-19 pandemic disturbed the world, it is essential to observe how society and individuals respond to these unprecedented times. Persons have expressed different reactions during the quarantine period varied from panic, depression, and anxiety, while others reacted positively by seeing this crisis as the opportunity to develop themselves and overcome problems. One of the most significant current discussions in this crisis is about the impact of it on the educational system and students around the globe. The United Nations (2020) reported that the pandemic affected nearly 1.6 billion students in more than 190 countries and all continents, and the school closure has affected 94% of the students' population. Questions have been raised about the effects of schools' closure and quarantining students' knowledge, achievement, and behavior. This issue has drawn increased attention among educators and heightened the need for extensive analysis and data to understand the extent to which this crisis affects students and all educational aspects.

In the field of gifted education, it has been reported that gifted students of all ages may display extraordinary feelings and behaviors such as anxiety, stress, fear, and anger [10]. Although many investigations have recently turned to the impact of the pandemic on gifted students, this

issue has rarely been mentioned in Saudi literature. The social and emotional issues of gifted students have generated wide concern among researchers and educators in gifted education. A central issue in this situation is the asynchronous development of gifted students in which he may exhibit social behaviors that differ from his advanced intellectual or cognitive abilities. The current study focuses on gifted students at the University of Jeddah in Saudi Arabia as the major source of analysis to understand their reaction and behavior during the quarantine period of the COVID-19 pandemic. Because with the fourth industrial revolution, using technology became vital in science for many purposes, such as tracking persons' online behavior and collecting data about their online activities. As noticed recently, since December 2019, with the emergence of the coronavirus disease (COVID-19), persons asked to be social apart to avoid its spread. Many researchers from different fields attempt to study how this virus can be detected and how it affects people's health, physically and psychologically. The purpose of this study is to aim to analyze gifted students' behavior on social media through the Twitter platform to understand their reaction during the quarantine period due to the COVID-19. The method of collecting data is grounded on using the fourth generation of Activity theory to gain information from many aspects.

In this research, previous research studies about using the Twitter platform are reviewed, and then the activity theory is highlighted as the theoretical framework for the methodology and analysis of this paper.

2. Literature Review

The Ministry of Education in Saudi Arabia defined gifted students" as "The student who has an aptitude or exceptional ability or differentiated performance from his peers in one particular field or more considering by the society, particularly in the field of intellectual talent, creative thinking, academic achievement, and special skills and abilities, and he needs special educational care that cannot be provided by the school in the regular academic pro "ram" [1]. Hence, since gifted students have exceptional abilities or higher performance levels, we will use technology to determine their behavior on social media. Social media is a crucial tool that has helped support people in coming up with new ideas and implementing them. One of the regularly used social media platforms is Twitter. Millions of people have used Twitter in discussing events, expressing emotions, and other countless topics. The content in this platform is generated, authored, and disseminated in actual time for free or at affordable costs. Discrete messages known as tweets are typically labeled with the precision of longitudinal and time-based coordinates [2]. Many researchers have preferred to use Twitter as a significant data resource compared to other

social media platforms. For instance, Twitter has been applied in the healthcare industry to carry research studies [3]. Twitter has been efficiently used to deliver research results in hospitals and the truism research field [4]. Besides, this type of social media platform has been crucial in spatiotemporally tagged tweets used in crime prediction [2] and predicting elections outcome [5]. Another research conducted by Schnitzler, et al. [6] recommended the application of Twitter as a contemporary, quick, easy, flexible, and cost-effective way of disseminating information and research data globally, which helps in causing an immediate impact in society. According to Sinnenberg, et al. [3], scholars have applied the traditional databases in studying public health and other disciplines for decades. There is limited information about using social network databases such as Twitter and other emerging platforms for research and study. Despite the current escalated attention in using Twitter to scrutinize human conduct and attitudes, there is still a substantial gap for the development and expansion of knowledge regarding the capability to influence Twitter and other social media platforms in studying. Particularly, gleaning demographic data on Twitter users, fundamental social research, and study remain the main challenge.

The challenges of online data collection strategies are also explored and how the large-scale social networks usage data may benefit future demographic scholars [7]. Moreover, the research is essential in helping assess individual learner behaviors and recommend strategies on the type of behaviors that resulted from quarantine.

A study done by Valdez, et al. [8] shows how children with high ability were affected during the COVID-19 quarantine period. The study shows that students developed a change in behavior due to excessive social media usage. It is observed that most bright students developed feelings of anxiety and depression due to their nature of high sensibility. A study carried by Elmer, et al. [9] shows that the outbreak of the COVID-19 pandemic led to a change in social networks, which forced people to interact and exchange information through social media. They further observe that social media usage as a means of communication has adversely affected students, especially on their psychological aspects. The current study examines how social media use has affected bright students through a literature review of the researchers who have examined the issue previously. Enmienda, et al. [10] suggest that the contemporary conditions brought by the COVID-19 pandemic, such as the confinement in homes and use of social media in learning and accessing information, have caused an increase in anxiety and other psychological problems among students with high abilities. Even though they can handle the information concerning the virus cognitively, they exhibited signs of intense feelings of fear for the lives of their loved ones and themselves [11].

Students have applied various platforms in learning. For instance, they have used Twitter and WhatsApp platforms to carry out classwork and submit their research papers. Some students have acknowledged the method as effective, whereas others have cited the frustrations of using social media as a means of studying. Those who were citing frustrations have claimed that social media is destructive as it has a lot of information that is toxic, which results in the change of behavior.

According to Sobaih, et al. [12], the use of social media by learners resulting from the worldwide outbreak of the COVID-19 pandemic caused negative and positive impacts on learners both of high and low abilities. The authors observe that the use of platforms such as YouTube, Zoom, and WhatsApp made learners develop strange behaviors such as laxity and laziness since they could get information already available on online platforms. However, their research established that high-ability students who have used the platforms responsibly had developed more different behaviors tremendously due to the bulky knowledge found in the online databases. Moreover, Gerber [2] emphasized that Twitter, in particular, is an ideal data source for decision support. They justify this by its importance for its millions of users who publicly discuss events, emotions, and countless other topics. However, Twitter's content is authored and distributed in real-time for free. In addition, tweets are often tagged with precise spatial and temporal coordinates [2]. Thus, it is clear that many researchers have used Twitter, in particular among other social media, as a valuable source of data. For example, Twitter has been used in the health care research field [3], the hospitality and tourism research field [4] as well as some research used spatiotemporally tagged tweets for crime prediction [2] and in election prediction [5].

Another research recommends using Twitter as "a contemporary, fast, easy and cost-effective way to augment existing ways of disseminating research which helps drive impact" [6]. According to Sinnenberg et al. (2017), researchers have used traditional databases to study public health for decades. Little is known about using social media data sources such as Twitter for this purpose. "Despite the recent growing interest in using Twitter to study human behavior and attitudes, Twitter's potential can still grow significantly [3]. Data used for social science research. In particular, collecting demographic information about Twitter users, which is an important part of many social science studies, remains a challenge. In this article, we use Twitter data to act, attitude and express or participate in groups. Develop an accurate and reliable computing approach for social science researchers interested in studying demographics. How to process data to get user-reported demographic information (such as image details) that is not encoded as text, using information from Twitter

users who said they did not want to vote in the 2012 presidential election. Describe and evaluate and the reliability of these technologies. Finally, we assess the challenges of this data collection strategy and discuss how large-scale social media data can help demographic researchers. [7].

As shown above, many research papers mentioned how vital is Twitter as a data source. Thus, we demonstrated different tools that can help scrape Tweeter accounts in Tab. 1.

Table 1: Margin specifications

<i>Tool</i>	<i>Description</i>
	A Twitter analytics tool to analyze, monitor, manage, track and optimize your any account on Twitter.
	It needs five steps as follows: Step 1: installing R. Step 2: Open R and load your script. Step 3: Arrange the screen to be divided into four sections. Step 4: Obtain Twitter access. Step 5: Running and merging data. Step 6: Save the results in CSV or excel file.
	By Using scripts and Application Programming Interface (API).
	Web Scraper is an extension for chrome browser made exclusively for web data scraping. ... It lets you export the extracted data to CSV. Multiple pages can be scraped using the tool, making it all the more powerful. It can even extract data from dynamic pages that use JavaScript and Ajax
	Instant Data Scraper is an automated data extraction tool for any website. It uses AI to predict which data is most relevant on an HTML page and allows saving it to Excel or CSV files (XLS, XLSX, CSV).

As shown in **Tab.1**, there are different tools to import or scrape data from Twitter. Some tools use programming with Python or R, some other tools and services like Twitonomy, and adding web scraper chrome and instant data scraper extensions.

To sum up, all these propositions of different research studies testify that Twitter is among the most used social media platforms, particularly for research purposes.

However, a framework needs to be used to analyze the Twitter data; in this paper, activity theory is used as the theoretical framework to be as a lens to see through the data analysis. The activity theory is explained in the next section.

2.1 Introducing Activity Theory

Activity Theory (AT) is based on the cultural-historical school that drew mainly upon the works of [13] and [14]. The basic concept of AT is that every activity has

someone who wants to accomplish something with the help of tools. In addition, other aspects can influence activities when social conditions are taken into account. These are rules, communities, and divisions of labor.

Activity theory has been in research in different fields. Some research use activity theory as a theoretical framework, and AT within this research is used as a lens for designing interview questions, data analysis, and structuring the data findings [15]; See **Fig. 1**.

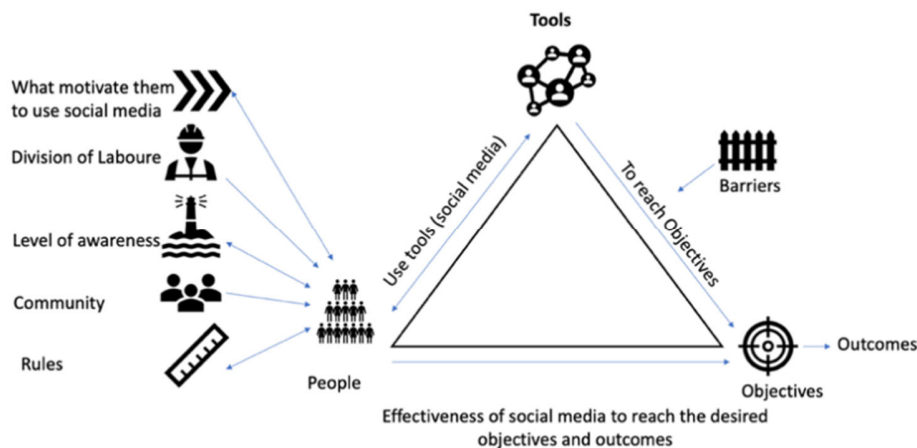


Fig. 1 Activity theory and COVID-19.

Activity Theory (AT) is one such example of a theory that takes people, their relationships, and technology into account. Its structure has proven useful in the IS arena [16] because it takes into account the interactions, dynamics, and developments of work activities in a social context. [17, 18] claim that researchers who have used AT have found it helpful and may provide insight into their research. For example, [19] utilized AT in her research in the field of human-computer interaction (HCI) and created six research questions based on it, as follows:

- "What tools do the subjects use to achieve their objective and how?
- What rules affect the way the subjects achieve the objective and how?
- How does the division of labour influence the way the subjects satisfy their objective?
- How do the tools in use affect the way the community achieves its objectives?
- What rules affect how the community satisfies their objective and how? and
- How does the division of labour affect how the community achieves the objective?" (p.155).

However, the questions by Mwanza can be customized based on the research nature, as will be shown in the next

section, where we create the interview questions based on the 4th generation of the activity theory.

3. Methodology and Data Sources

Data collection for two months (during the COVID-19 quarantine April and May 2020) has been done through two stages:

Scraping gifted students' Twitter account (as shown in **Tab.1**)

Online interviews (questions are based on the 4th generation of the activity theory aspects), as shown in **Fig.1**.

A set of open-ended questions have been provided to the gifted students as follows:

Regarding the online "game/competition" "fight or flight, we asked the gifted students to answer the following questions:

- What are your motivations for creating the online game "fight or flight"?
- How did you divide the work between the team?
- What was your level of awareness?

- How did the community impact you in conducting your activity?
- Were there any rules that govern your activity?
- What challenges, difficulties, and barriers have you faced during this activity?
- What were your objectives and outcomes?
- What are the tools you have used to achieve your objectives and outcomes?

Now, the next section will elaborate on the gifted students' answers to the above eight questions and the results of the Twitter scraping.

4. Results

Firstly, regarding scraping the gifted students' Twitter account, which is @almustagbal_UJ, Fig. 2 and Fig. 3 are based on the Twitonomy analysis. Fig. 2 shows that the hashtag "#we_can_overcome_it" was mentioned 44 times.

Hashtags most used

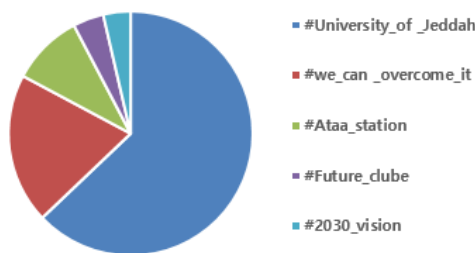


Fig. 2 The most used Hashtags.

Furthermore, Fig.3 shows the Twitter activities distribution on days and hours of the day. Fig. 3 shows that gifted students were tweeting all the weekdays, reflecting how they are using Twitter to express their interests and activity level.

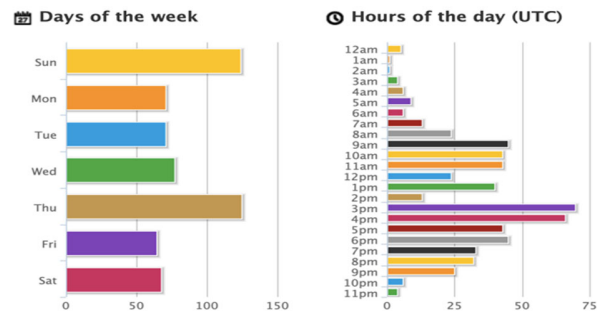


Fig. 3 Twitter activities are distributed on days and hours of the day.

Secondly, regarding the theoretical framework (the aspects of the 4th generation of the activity theory have been studied as shown in Fig.1), the results of the analysis are as flows based on their answers to the eight questions:

What are your motivations for creating the online game "fight or flight"?

They said that "Since there are many errors and rumors about the pandemic and ways to prevent it, we felt that we need to activate our role as students and members of the 'Future Club' in the service of the society and the country. We wanted to educate society about all coronavirus strands in a different and new way (in a game style). We noticed the lack of awareness of society, as the pandemic is new, and there is not enough information on it. Thus, renewing the prevailing awareness-raising method caused some alienation, so the entertainment method was chosen. So, choosing a fun method that was based on several factors, including reducing stress and breaking boredom through games. We found that it is difficult for some groups to understand traditional awareness, such as children, so the best way to educate them is through games. In the end, the name of the initiative was a catalyst and primary goal for us to leave a mark in the crisis".

How did you divide the work between the team?

We distributed the tasks in 9 categories as follows:

- 1- Formation of the work team
- 2- Managing the work team
- 3- Collecting information
- 4- Drafting information into questions
- 5- Translation and searching for translators
- 6- Implement the game design
- 7- Writing questions in the game
- 8- Create links for transfer on Twitter
- 9- Make final adjustments

What was your level of awareness?

"Our level of awareness is good, and that is because we have taken information from trusted official bodies such as the Ministry of Health and the World Health Organization, and in the case of using information from an unofficial source, they are searched for in reliable sites, realizing that there are many rumors that spread at the beginning of the pandemic, and the numbers of cases are reviewed Circulars daily, and we made last-minute changes to games due to recent studies published by the World Health Organization. The team gained more information and increased awareness of the team as we worked on the game."

How did the community impact you in conducting your activity?

Asking them about the impact of the community, they immediately remembered the name of the supervisor on the department of attracting and nurturing talents in the university of Jeddah, and they said, "One of the most important catalysts of the initiative is Dr. Faisal Al-Amri" They also clarified that the interaction of the student community and those around them have returned with a positive impact on the process of the games and the players' reactions were positive. Finally, they were happy that they found sponsors to provide the prizes and raffles that have been given to the winners.

Were there any rules that govern your activity?

They said there were internal conditions within the gifted team. They create seven rules to follow as the following:

- 1- Guarantee the correctness of the information provided in the game
- 2- Determine the date of delivery of the games
- 3- A simple motivating language that adds enthusiasm
- 4- Approval of the ideas by the club management
- 5- Continuous audit by the team
- 6- The period between the game descent and the prize draw is 24 hours
- 7 - Implement the conditions agreed between the club and the sponsor.

What challenges, difficulties, and barriers have you faced during this activity?

The gifted students faced seven challenges during the online game implementation as follows:

1. Combining fun and awareness at the same time
2. Translate games and find translators
3. Delivering games to as many people as possible
4. Limited beneficiaries from other languages
5. Not easy to explain how to play
6. How to choose the winners
7. Publish the picture in the hashtag to enter the clouds

What were your objectives and outcomes?

Gifted students had three objectives out of the online game as follows:

Increasing public awareness of all segments of society about the emerging coronavirus, emphasizing caution on finding trusted information as well as avoiding rumors and spreading them.

Diffusing COVID-19 virus prevention methods by demonstrating correct methods of using both muzzle and sterilizer.

Urging the importance of abiding by the Ministry of Health instructions and using the time for what is beneficial while staying at home.

What are the tools you have used to achieve your objectives and outcomes?

The Gifted Students said that they used Twitter, Genially, and WhatsApp to manage their online activity during the quarantine.

Thus, at the end to portray the overall information that have been collected in this research based on the 4th generation of the activity theory, we found that the gifted Students raised awareness of compliance with the Ministry of Health regulations, designed attractive ads on Twitter using enthusiastic ways to attract the audience, acknowledged who helped and motivated the participants, and finally creatively found sponsors as shown in Fig.4.



Fig. 4 An example of one of the designs of the gifted students, which demonstrates the sponsors of the online games.

The outcomes were educating with fun online activities that motivate searching for accurate information in reliable sources to eliminate some misconceptions about the coronavirus. Surprisingly, the initiative reaches the largest possible segment of society (1221 followers) to

benefit and use the time in an enjoyable way while staying at home.

Now the model of the activity theory is shown in Fig.5 by illustrating the gifted students' activities.

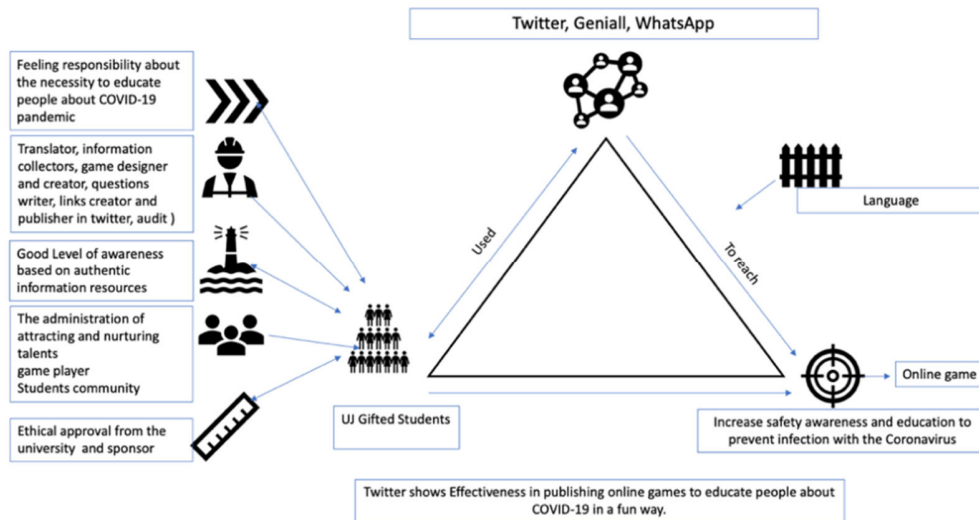


Fig. 5 Gifted students' activities at COVID-19 quarantine analysis based on the activity theory.

5. Findings and Discussion

The study reveals that the measures taken to curb the spread of the coronavirus, such as social distancing and lockdown, made the gifted students proactive, enabling them to control their situation by participating in creative activities of educating and entertaining society. The gifted students used their free time to increase public awareness in all segments of society about the emerging coronavirus, emphasizing caution on finding trusted information as well as avoiding rumors and spreading them. Their activities were consistent on all the days of the week, with most of the online interactions taking place in the mid-morning and mid-afternoon. It was also established that Twitter was the most used social platform by the students. On the other hand, according to Elmer et al. (2020) [9], mental health trajectories and social networks cannot be understood independently. Therefore, the study failed to establish whether some gifted students experienced a higher risk of social isolation, especially those who have less direct contact with friends and weaker social network integration.

The situation resulting from the pandemic has been a historical moment forcing everyone to live in unprecedented conditions of pronounced doubt [8]. Nevertheless, from the sample data presented in this study when it was conducted (April and May 2020), there is no significant and evident emotional disadvantage witnessed.

The study could contribute to future research seeking to comprehend the personal experiences of gifted students who have experienced life in this bizarre period characterized by the pandemic. It could create opportunities for students to socialize and interact while learning at the same time. The study provides deeper insights that can be used for further investigations into the effects of social isolation and lockdowns and the effects that can be experienced by gifted students and learning adolescents. It can also be used to understand, formulate, and enact coping and intervention strategies for similar occurrences in the future. The findings could also be used to further inform efforts by teaching institutions to develop new hybrid teaching strategies that use social media platforms.

6. Conclusion

This paper shows how gifted students reacted online on social media at COVID-19 Quarantine. The Twitter platform was the social media tool that was under investigation. The activity theory was used as a theoretical framework for data collection and data analysis. The results of this research showed that gifted students were proactive and had positive behavior not only for coping with a challenging situation but also for educating society and entertaining. This testifies how they have creative thinking, employing and utilizing technology to express their feelings

and educate and entertain society. This reflects how this category is beneficial by disseminating positivity. Thus, they deserve continuous investments.

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