

# Big Data Analysis of Public Perceptions of Face-to-Face Learning in COVID-19 Era

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**Abstract.** This study began on January 2, 2022, to determine public opinion on face-to-face learning in Indonesia. The study takes public opinion from Twitter on January 2nd and 3rd, 2022, using the naive-bayes approach. Drone Emprit Academy provided the data. According to the data, there are 1,026 tweets with negative sentiment or 65 percent. Concerns about the spread of the COVID-19 virus, weariness, and fear of change are among the causes of bad feelings. There are also a few favorable feelings (24 percent), which might be attributed to the enthusiasm for face-to-face learning.

**Keywords:** face-to-face learning, COVID-19, twitter, sentiment analysis

## 1 Introduction

At the end of 2019, there has been a COVID-19 pandemic in the world. This pandemic limits people from leaving the house, and learning activities that have been carried out face-to-face converted to online learning. This change resulted in many reactions from the community, both positive and negative [1].

After almost 2 years of students in Indonesia doing online learning, several schools have implemented a hybrid method (a mixture of face-to-face learning with online learning) since September 2021. Then, starting in 2022, the Indonesian government has implemented limited face-to-face learning in several regions, one of which is Jakarta. This change also resulted in many reactions from the community because people who are already getting used to online and hybrid learning must adapt again to start face-to-face learning.

Initially, many studies stated that people preferred face-to-face learning rather than online [2], [3]. Some of the reasons are the interaction between students and the boredom that quickly hits when studying online at home [3], [4]. However, because online learning has been running for almost 2 years, students are getting used to online learning patterns. This can result in a reluctance to adapt again because humans are difficult to change something that has become their routine [5], [6].

Based on this, the authors are interested in researching the public's perception of face-to-face learning starting in 2022. This is due to the possibility of differences in results with previous studies because students are already familiar with online learning systems. The purpose of this study is to see the public's perception of the change from online learning to face-to-face learning. This research is expected to be input for policymakers to consider the implementation of online and face-to-face learning in the future.

## 2 Methodology

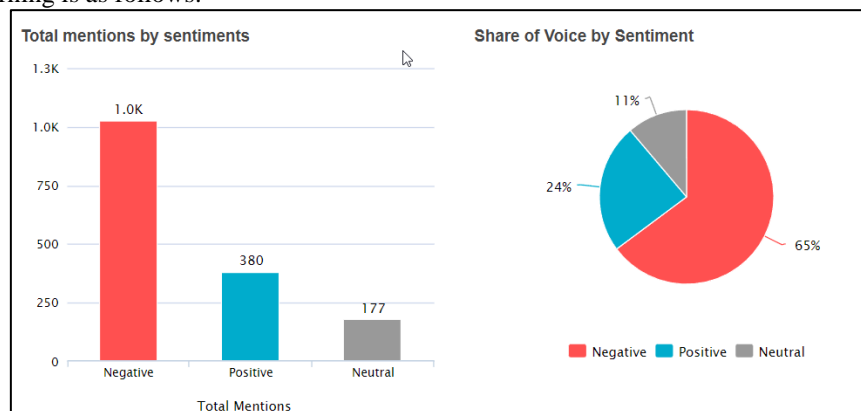
This study uses Twitter data processed using an application created by Fahmi [7], namely Drone Emprit Academy (DEA). The application uses the Application User Interface from Twitter.

The data that was processed in this study was tweets data on January 2, 2022, and January 3, 2022. The keyword used in this study is "belajar", "tatap muka", dan "offline."

This study is based on data gathered from the previous investigation by Ramadhan [8]. An analysis of all processed tweets examined public opinion on face-to-face learning (including mentions, retweets, and replies). Twitter's word frequency and mood were analyzed by a DEA engine, which revealed that the primary emotions were positive, negative, or neutral. Based on a machine learning algorithm, probabilistic classifiers were utilized to understand the outputs of the DEA sensing algorithm [9]. The following classifier will identify naive Bayes (Adaptive Multiplicative Model) or Maximum Entropy classification methods [10]. However, the DEA classifiers' performance review shows that Naive Bayes has an accuracy of 90.26 percent.

## 3 Result and Discussion

Based on Twitter data taken on January 2, 2022, and January 3, 2022, there were 1,583 tweets on that date consisting of 913 (57.68%) were tweets, 318 (20.09%) were replies, and 352 (22.24%) were retweets. The proportion of sentiment from public perception related to face-to-face learning is as follows:



**Fig. 1.** Public Sentiment

Based on Figure 1, we could see that there are 1,026 negative sentiments (65%), 380 positive sentiments (24%), and 177 neutral sentiments (11%) that showed that most people said opined negatively about face-to-face learning.

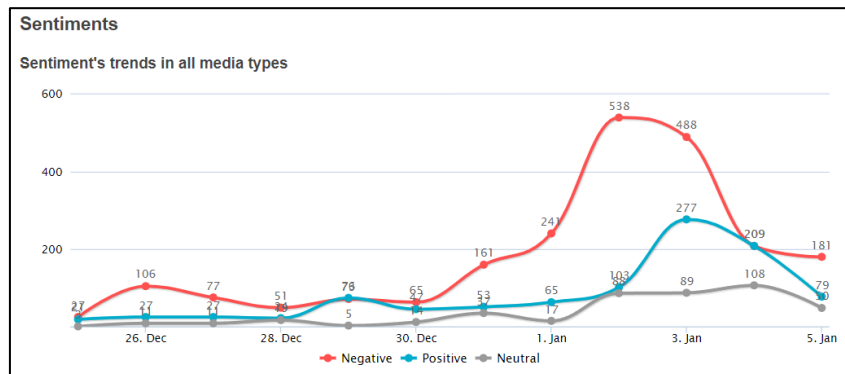
Then, if we see in the sentiment by hour, we could get:



**Fig. 2. Sentiment by Hour**

Based on Figure 2, we could see that most tweets are posted in the evening (6 PM – 8 PM).

In addition, if we take the data for a broader time (from December 25, 2021 – January 5, 2022), we could conclude that the negative sentiments are always more than positive/neutral sentiment consistently, as could be seen as below:

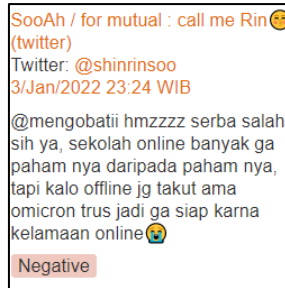


**Fig. 3. Sentiment in a Broader Time**

Furthermore, if you look deeper into the reasons for negative sentiment in the community related to face-to-face learning, it is known that there are several reasons, including:

1. Concerns related to the spread of the COVID-19 virus

If we look at the condition of COVID-19 in Indonesia, on January 2, 2022, and January 3, 2022, the state of COVID-19 is in good condition. However, with the spread of the Omicron variant abroad and the increasing number of Omicron variants spreading in Indonesia, it concerns students who have to do face-to-face learning. One example of a tweet that illustrates this is as below:

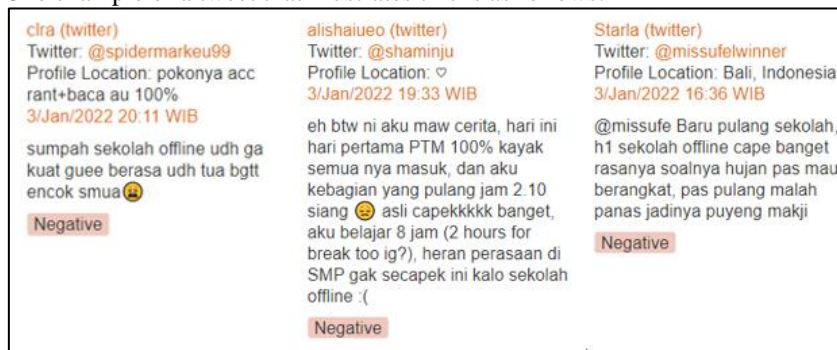


**Fig.4.** Negative Sentiment in of Fearing of Spreading of COVID-19

This is in line with research conducted by Dozois and David [11], which showed that anxiety levels increased during the COVID-19 pandemic. Later, Moghanibashi-Mansourieh [12] also found that cases of anxiety disorder in Iran increased during the COVID-19 pandemic.

## 2. Fatigue

Some of the negative sentiments captured on January 3, 2022 (the first day of face-to-face learning) are caused by fatigue experienced by students fatigue compared to online learning. One example of a tweet that illustrates this is as follows:



**Fig.5.** Negative Sentiment in of Tired Caused by Face-to-Face Learning

This is due to radical changes in face-to-face learning compared to online learning, where students have to get up early, go to school, and do more physical activity. This is in line with Huy's research [13] which explained that radical changes could have an emotional effect in fatigue.

## 3. Worry about change

Furthermore, negative sentiment related to face-to-face learning is also caused by excessive concerns related to face-to-face learning. Students worry about the absence of friends and can not socialize and concerns about changes because they are used to online learning. Some of the tweets describing this are as follows:



**Fig.6.** Negative Sentiment in of Worrying of Changes

This is following research conducted by Feldman [5], where he explained that changing a routine is difficult.

However, behind the negative sentiment, there is also a positive sentiment generally caused by the excitement in face-to-face learning that cannot be obtained in online learning. This can be seen in some of the following tweets:



**Fig.7.** Positive Sentiment

## 4 Conclusion

This research aims to find the public sentiment of face-to-face learning in Indonesia started on January 2, 2022. The study uses the naïve-bayes method to grab public view from Twitter on January 2 2022, and January 3, 2022. The data is taken from Drone Emprit Academy. Based on the analysis, 65% of tweets are negative sentiment or 1,026 tweets. Several reasons for negative sentiments are concern related to the spread of the COVID-19 virus, fatigue, and worry about change. In addition, there are several positive sentiments (24%), and the reason of that is the excitement of face-to-face learning.

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