

## **Online Learning Versus Face to Face Learning: A Sentiment Analysis on General Education Mathematics in the Modern World of University of San Carlos School of Arts and Sciences Students Using Natural Language Processing**

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**Abstract :** College students of Cebu province have been indoors since March 2020, and a challenge encountered is the sudden shift from face to face to online learning and with the lack of empirical data on online learning on Higher Education Institutions (HEIs) in the Philippines. Sentiments on face to face and online learning will be collected from University of San Carlos (USC), School of Arts and Sciences (SAS) students regarding Mathematics in the Modern World (MMW), a General Education (GE) course. Natural Language Processing with machine learning algorithms will be used to classify the sentiments of the students. Results of the research study are the themes identified through topic modelling and the overall sentiments of the students in USC SAS

**Keywords :** natural language processing, online learning, sentiment analysis, topic modelling

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