

**UNIVERSITI TEKNOLOGI MARA**

**GEOGRAPHICAL PREDICTORS OF  
PARTICULATE MATTER <10  $\mu\text{m}$   
(PM<sub>10</sub>) AT SCHOOLS IN MERU AND  
PUNCAK ALAM BASED ON  
SATELLITE MAPS**

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Project submitted in fulfilment of the requirement for  
the degree of  
**Bachelor in Environmental Health and Safety  
(Hons.)**

**Faculty of Health Science**

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## DECLARATION BY STUDENT

I declared that the work in this project entitled “Geographical Predictor of Particulate Matter <10 µm (PM<sub>10</sub>) at Schools in Meru and Puncak Alam Based on Satellite Map” was my original research work. The project was done under the guidance of Project Supervisor, Dr. Shantakumari A/P Rajan. It has been submitted to the Faculty of Health Science in partial fulfilment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons.). I, hereby, acknowledged that I had been complied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi Mara, Puncak Alam Campus, regulating the conduct of my study and research.

Student’s signature:

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## ACKNOWLEDGEMENT

*In the name of Allah, The Most Gracious, The Most Merciful.*

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## ABSTRACT

**Introduction:** Indoor air quality is the air inside and around the building and pollutant interest in this study is Particulate matter  $<10\ \mu\text{m}$  ( $\text{PM}_{10}$ ). Particulate matter is known as particle pollution and it is the total solid and liquid that are suspended in air. It is hazardous to the human health where it can directly emitted or indirectly formed. **Objective:** The objective of the study is to measure the particulate matter  $<10\ \mu\text{m}$  ( $\text{PM}_{10}$ ) present in the classroom and relate it to geographical predictors derived from satellite images. **Methodology:** This study was conducted at 10 different schools in Meru and Puncak Alam, Selangor. 2 classes were randomly selected to measure  $\text{PM}_{10}$  by using calibrated Dust Trak (TSI). The equipment was placed approximately 1m from the wall and 1.5m from the floor of the classes and the measurement was take for 5 hours. The distance of the sampling location to the main road and residential and green area that covered within 500 m radius from the sampling location was measured that derived from the satellite images. **Result:** The average  $\text{PM}_{10}$  concentration of all schools are within the recommended value where the highest is from SKSB ( $0.176\ \text{mg}/\text{m}^3$ ) and the lowest from SK1JM ( $0.017\ \text{mg}/\text{m}^3$ ). It is found that type of board have an effect on concentration of  $\text{PM}_{10}$  where white board have higher effect on concentration of  $\text{PM}_{10}$  compare to chalk board. The scores for chalk board ( $M = 0.051$ ,  $SD = 0.240$ ) and white board ( $M = 0.066$ ,  $SD = 0.032$ ) conditions;  $t(598) = -6.815$ ,  $p = 0.001$ . There had a correlation between  $\text{PM}_{10}$  and distance of sampling location to the main road,  $r = 0.640$ ,  $n = 600$ ,  $p = 0.023$ . There also had a correlation between  $\text{PM}_{10}$  and number of windows in the classes,  $r = -0.659$ ,  $n = 600$ ,  $p = 0.019$ . **Conclusion:** As the conclusion, there was a significant between  $\text{PM}_{10}$  and distance of sampling location to the main road and number of windows existed in the classrooms. Type of board used in the classrooms give the effect on concentration of  $\text{PM}_{10}$  and white board have higher effect on the mass concentration compare to chalk board.

Keyword: *Indoor air quality,  $\text{PM}_{10}$ , geographical predictor*