

UNIVERSITI TEKNOLOGI MARA

**INDOOR AIR QUALITY AND
PERCEPTION OF HEALTH
EFFECTS AMONG PRIMARY
STUDENTS IN KLUANG, JOHOR**

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

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ABSTRACT

Introduction: Students devote between six and eight hours of their time each day to their studies, making the educational setting an important one for their development. Because of this, it is quite easy for students to be exposed to toxic substances because some of the elementary schools are located in close proximity to industrial regions or near busy roads. This study was conducted at SKUD and SKB3 in Kluang, Johor with the objective of determining the concentration of PM_{10} , $PM_{2.5}$, CO_2 , CO , and benzene as well as assessing the students' perceptions of the Indoor Air Quality (IAQ). **Method:** Students from ages 10 to 12 took part in this study (grades 4 to 6). There are four (4) reading slots: the first slot is from 7am to 9am, the second slot is from 9am to 11am, the third slot is from 11am to 1pm, and the fourth slot is from 1pm to 3pm. Students who had health problems with their respiratory system were not allowed to take part in this study. The appendix B questionnaire (ICOP IAQ 2010) was distributed to the students to see the students' perception towards IAQ. SPSS was used to check for normality and do statistical analysis using the Spearman Correlation coefficient to show how the parameters were related. The data from the questionnaires have been put into a graph bar to show what has been bothering the residents over the past three months and how the students feel regarding their current symptoms. **Result:** In addition to a clear relationship between the measured data, temperature and relative humidity also have an effect in enhancing air pollution in the classroom. Due to their close proximity to palm oil mills, students at both schools chose unpleasant odour as the most bothersome element over the past three months. student perception of presenting symptoms indicates that 68% of SKUD pupils and 27% of SKB3 students suffer from tiredness. This has a lot related to what students do at school. **Conclusion:** The IAQ measure required additional focus because there is a major road and a factory close to where the school is located, both of which could be contributing sources of pollution. In addition, the pupils themselves could be responsible for other factors in the classroom. The poor indoor air quality in the classroom not only makes the pupils uncomfortable but also contributes to the health issues that some of them are experiencing. As a direct consequence of this, the academic performance of students will drop, and the rate of absence among students would rise. I have come to the conclusion that increasing the frequency with which the classroom is cleaned helps to lower the IAQ problem, and that increasing the ventilation may help improve the amount of clean air in the classroom.

Keywords: *IAQ, $PM_{2.5}$, PM_{10} , CO_2 , CO , benzene, temperature, relative humidity, students' perception, SKUD, SKB3*

CHAPTER 1

INTRODUCTION

1.1 Background study

School is a significant microenvironment since students spend 6 - 8 hours every day during the week within the school building (Pakpahan & Wispriyono, 2019). The amount of time children spend in classrooms each day, as well as their academic performance owing to illness-related absences, may be impacted by the IAQ of their classrooms (Kabirikopaei et al., 2021). Adequate air quality in the classroom is critical for student health and learning outcomes. The general population is aware of the impact of air quality on health. However, many people are unaware that IAQ can be worse than outside air quality and have negative health consequences (Chen et al., 2022). Indoor air quality in school classrooms is a worldwide issue due to its significant impact on students' health, academic performance, and productivity. Students are in close quarters and constantly interact with one another in classrooms, thus ensuring adequate IAQ is critical. Evidence shows that poor indoor air quality might have long-term negative implications, including respiratory disease and impaired cognitive function (Mohamed et al., 2021b).

Previously, Korsavi S.S et al. (2020) stated that the most important factors affecting indoor air quality in buildings might be divided into three categories: context, occupants, and building. 1) Contextual aspects at the macro and micro levels, such as climatic conditions and regional temperature and draughts 2) Airtightness, school location, classroom and window design, ventilation type, ventilation rate, CO₂