



INTEGRATING SMOKE DETECTION AND MONITORING SYSTEM FOR ENHANCED SCHOOL DISCIPLINE AND SAFETY

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ABSTRACT

The growing incidence of vaping among students poses one of the very worrying subjects for school discipline and safety. Passive smoke detection methods find it very difficult to identify modern discreet vaping devices, which makes it even more challenging for the school staff to enforce rules against them effectively. This study aims to show how a smoke detection and monitoring system may detect vaping incidents and contribute to reinforcing school discipline. The project is based on Arduino with an MQ2 gas sensor to detect support for smoke alerts and help in policy enforcement. Application evaluation led to sensitivity, and detection range testing of the system. Results show that the sensor was able to detect all kinds of smoke, including vape smoke, with varying response times based on smoke concentration and source. Smoke continuous exposure has increased the accuracy for comprehension of detection. With the success of the system, schools can now proactively send a message against smoking and vaping, instilling discipline and promoting safety. The system worked well when it came to detecting smoke but can be refined in the future to enhance sensor accuracy versus other environmental factors that could affect overall

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performance. This research is beneficial to the larger effort of mounting technology into the school safety protocol, whereby a much healthier learning environment for students and staff will be ensured.



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