Creation of a Portable Device for Environmental Measurements Using a 3D Printing Design

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Irrefutable environmental changes have been recorded in recent years evidenced by increased cyclonic activity and changes in ocean temperatures. This causes the need for improved and efficient tools to monitor environmental parameters, thus, raising the following question: How to create an environmental device that uses sensors to measure temperature, humidity, heat index and detects CO2? It was thought that when a microprocessor was programed to use a DHTT1 (temperature, humidity) gas sensor and rotary potentiometer, then the measurements could be read on an LCD, and the gas sensor could detect smoke, make a red LED turn on and start a buzzer alarm. To achieve this, a microprocessor was programmed to create a DHTT1 and gas sensor function, and an electric sketch was made for the connections. The internal components were assembled and tested to make a 3D design. Inserted in the design was a cavity for the LCD, DHTT1, gas sensor, potentiometer, and the battery. The components were inside of the 3D printing design. Data collection was taken in three different hours of the day for 30 days and compared to NOAA data and measurements. An average and standard deviation of each criterion was calculated, and graphs were made for data comparison. The results showed that the sensor was reliable after being compared to the NOAA forecast. The hypothesis was proven to be true, demonstrating the device can successfully carry out its functions, thus serving as an alternate and cost-effective tool for monitoring environmental parameters.

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