

ABSTRACT

Deafness is a disorder or partial or total loss of hearing function, including groups of hearing loss, deafness, and total deafness. This research aims to design an Internet of Things (IoT)-based sound intensity measuring instrument with Sound Pressure Level (SPL) in A-weighted decibel units (dBA) that considers the sensitivity of human hearing to sound frequencies to support learning in Sekolah Luar Biasa B (SLB B).

The device consists of three main components: KY-037 as microphone, LCD as display media, and NodeMCU ESP8266 as microcontroller with the support of internet connectivity and IoT system. IoT allows the collection and exchange of data from sound sensors to the website. The purpose of this tool is to help students in verbal communication by knowing the intensity of voice intonation from conversations and knowing the noise in the SLB B environment. In addition, this tool can also display the results of the measured sound intensity through a website that can be accessed by students and teachers.

The results of testing the tool based on the success parameters of each subsystem are successfully executed. The optimal distance test results produce a distance of 28 cm. The results of the tool accuracy test were carried out twice, the first test resulted in an accuracy value of 9.9% and in the second test of 10.2%. Although the accuracy value of the tool is small, the results of the tool execution test produce measurement values that are in line with the comparison tool in the form of SLM. QoS testing produces an average throughput value of 4269.02 bps with a very good category in the TIPHON standard and an average delay value of 427.53 ms with a medium category in the ITU-T G.1010 standard. Black box testing on each feature on the website used in the system design gets results.

Keywords: *deaf, SLB B, Internet of Things (IoT), Sound Pressure Level (SPL), sound measuring device, KY-037, NodeMCU ESP8266, website, product testing, accuracy and Quality of Service (QoS).*