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BRAILLE LEARNING TOOLS (BRAILLEARN)

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ABSTRACT

This research is motivated by the problem of braille learning that is still conventional. In conventional braille learning, users need a companion to guide and teach them, thus makes users not independent because they have to be accompanied. Another problem is the providers of braille learning tools that can be self-taught are still limited, especially in developing countries. They are still not common and are sold at very high prices. Apart from that, some of the existing tools only load alphabet characters and have no other features. The authors tried to create a tool that can help the visually impaired people to recognize the character of alphabet and a tool that can be used for counting at an affordable price, using the Arduino UNO microcontroller as the main control of the system. It is expected that with this tool visually impaired people who want to learn to read braille can learn it independently. The type of research used is qualitative research. Qualitative research is an experimental research method by conducting experiments on control variables (input) to analyse the resulting output. Then the result will be compared with the output in the absence of variable control. The result of this research is a braille alphabet reading aid, which can also be used as a learning aid spelling for people with visual impairment.

Keywords: Visually Impaired, Braille, Reading Aids

1. INTRODUCTION

Easy access to good learning facilities such as stationery, reading books, computers, and so forth is expected by everyone. These facilities are certainly very difficult to be used by visually impaired people, which of course greatly hinders their chances to obtain learning facilities like normal people (Syahrul, 2009). Braille code is a kind of touch writing system used by visually impaired people (Syahrul & Chaerudin, 2011). Braille is not a language but a code that allows languages such as Indonesian, English, German, and others to be read and written. Braille reading and writing is still widely used by visually impaired people in both developed and developing countries. Reading and writing braille is one of the means for people with visual impairments to obtain information and communicate with others (Rudiyati, 2010). Braille writing development continues to increase, thanks to the existence of technology that facilitates the process of transferring information (Rizky & Senie Destya, 2022). As for the transformation of interaction, it is still varied and leaves many gaps to be researched. Research on braille is getting more and more important when it is associated with the literacy movement to improve the quality of education for the visually impaired people. The formulation of the problem in this study is how to make an alphabet independent braille learning tool with Arduino microcontroller.

2. METHODOLOGY

The type of research used is qualitative research with experimental methods. Authors consider that this method is very suitable for the research because it develops a tool and conducts research in the form of an exhibition of the author's research object. To support this research, we used supporting references taken from journal and thesis about special needs of visually impaired people and other literature that can be used as a reference to solve this issue. In discussing this issue, we want to develop a tool that can help people with a visual disability to be able to read the braille alphabet and be able to calculate easily.

3. FINDINGS

The authors try to solve this problem by making an alphabet braille learning tool. This braille learning aid is Arduino-based. It is hoped that this tool can help visually impaired people who want to learn to read braille to be able to learn it independently. This braille tool is shaped like a very simple keyboard, but with very complex functions. This keyboard is made with several components that are easy to find in the market at a very low price.

The tool consists of several components containing speakers, power, audio ports, USB & LCD ports. This keyboard contains keys for letters and numbers and counting symbols. This alphabet braille learning tool works when the button is pressed then the speaker will make sound and the LCD will display according to the pressed character. This tool can also be used to spell words, spell syllables and count numbers. This keyboard consists of four segments; counting, numbering, lettering, and spelling.

4. CONCLUSION

The tool created can help people with visual impairment in recognizing braille by producing sounds in accordance with the pressed characters one by one so that it is easier in the process of recognition of braille. This tool can also be an alternative in braille recognition learning method so as not to get bored with monotonous learning methods using braille books.

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