

Braille - Bar Code - MP3 Method to Teach Blind and Visually Impaired Users Using an Application that Displays Audio Files Using Bar Code and Braille¹

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Abstract

The process of education for people with visual disabilities is a challenge for the same person, his family and governmental and non-governmental organizations concerned with a particular school for people with visual impairments. Many countries have signed several agreements to provide a suitable environment for the education of visually impaired people. However, the arrangements have not been implemented in most states. Hired because of several circumstances that we will address later. In this paper, the researcher introduces a new method for teaching visually impaired people how to focus on the sense of hearing and the use of information technology bar code and a program of its design for the presentation of audio materials, where users use a pre-prepared template from the design of Braille code and barcode to access audio documents representing lectures or articles Scientific or audio books according to the plans of education in the school or institutes.

Keywords: Special Education; Braille; Bar Code; Blind; Visually Impaired.

1. Introduction

The challenge is to use information technology to deal with the problems of social integration for people with disabilities in general and those with visual impairments (Tai et al., 2010). The focus is usually on physical adaptations that cover the missing or weak senses of the target person. This depends on the type of disability and the degree of impairment. Which is available to deal with this problem and create better conditions for achieving higher integration of the target, and this is what is trying to be done by governmental and non-governmental organizations involved in this aspect and may fail in place and succeed in another area depending on individual circumstances:

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- Provide mechanisms and adequate legal cover to support the target segment
- Provide financial resources to the organizations concerned to support the development of tools and research for this segment, which depends on government financial support and community support through donations and charitable organizations that help the humanitarian cases
- Provide competent and professional human cadres to deal with the target group, and this requires special training programs at home, school, street or workplace for those able to work belonging to the target segment
- Communicate with international organizations to deal with modern research in the fields of special education and special education to develop special curricula that make the education process more useful and economic advantage for both the individual belonging to the target group or his family or the organizations concerned with the expenditure, whether governmental or non-governmental.

Touchscreen device design is based on visual interaction (Alnfiai & Sampalli, 2016) And make these devices working as our ability it is a challenge, therefore we used Braille to choose the audio and bar code to interact and program working in an easy way.

The researcher develops the education of people with visual disabilities using ICT with other tools such as Braille and bar code, as well as a program designed by C Sharp C # Visual Studio. This method provides many audio materials that can support the process of learning visually impaired. The majority of visually impaired people are blind and blind in the use of fingers and tactile, in addition to the purpose of the hearing. This is precisely what the researcher focuses on in his method since the blind according to this method deals with the senses of touch and hearing the audio

The user starts to touch the private block and preset to access the specific audio materials he wants to listen to. In this paper; we chose audio files in the format MP3 under each title in the block, a digital address (bar code) represents the name of the audio file. The program can automatically access the preset programming method. The program can also be linked to a massive database of sound libraries and according to the desire and possibilities of the physical users

Many researchers in the field of information and communication presented several methods (Alnfiai & Sampalli, 2017; Christine Simpson, 2013; Anita Perr OTR, 1994) used by people with visual disabilities to keep pace with ordinary people. In this paper, the researcher introduces the Braille method (Kway et al., 2010; Alnfiai & Sampalli, 2016) - bar code - MP3. This method provides lessons, lectures and other

audio materials as needed. The process is designed for students with visual disabilities efficiently using a program specially designed for this purpose. The program works on elements that are called in digital codes that are stored for access by the program and then operated by voice.

- However, how does a visually impaired person recognize the material to be heard?

Answer: The researcher used an innovative method that makes the visually impaired person determine which material he wants to listen to. The titles of the document are written by Braille code, which is proficient for many visually impaired people who are skilled in reading and writing

- What will happen after the target person read the material and choose one to listen to it?

Answer: Run the program, which works full screen as in the figure below, then guide the barcode reader to the paper identified and scans the document vertically up and down for the barcode reader reads the code written below the address Braille and enter it automatically in the text box within the program is ready to begin the text box Without others.

- What happens if the code comes?

Answer: The code that was entered into the program is a code that represents the name of an MP3 file. The worker has programmed the program in a safe according to his needs to be used by students with visual disabilities.

- How will the desired MP3 file work?

Answer: Once you press the Tab key, the badge will be taken to the operating position. The target person will press the input key to play the audio file and listen to the target person's device.

- However, how can I pause the audio file permanently or permanently or exit the program?

Answer: This can be done quickly by using the tab key or the direction keys as desired by the user

2. Application



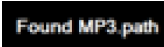
The program works with a full screen  (Full screen without zoom in or out) On the touchable devices or the standard computer or mobile after the training on the use of keys, and the black colors of the keys and white back to being diagnosed by people with low vision, and also use keys of significant size to be distinguished in the case of uncle on the screens touchable, and the same Time is programmed by programming  Textbox, To be the first to receive orders from the user and once the blind press the conversion button  -tab The program converts it to the audio file play button



Figure 1. Reading the Braille Code

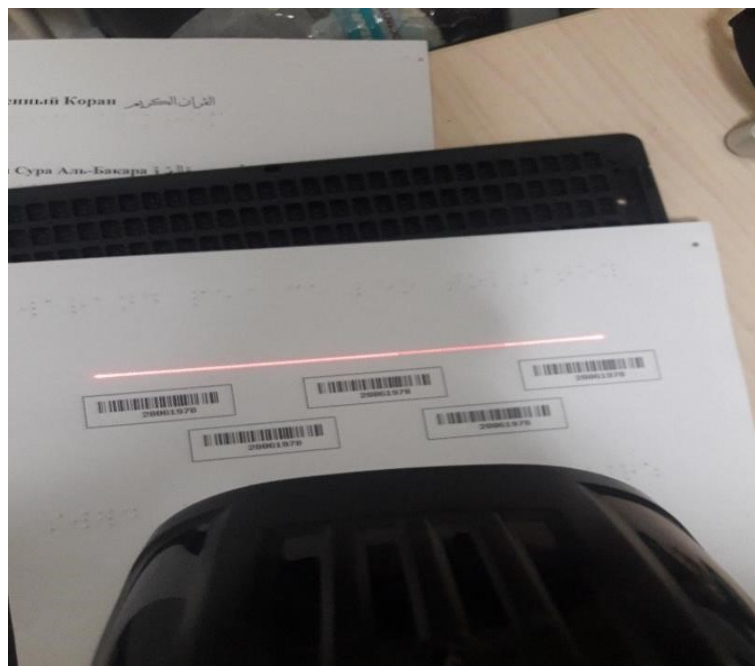


Figure 2. Reading the Bar Code Using Bar Code Scanner

Braille dots in the same page with bar code indexes
As well as other operating commands

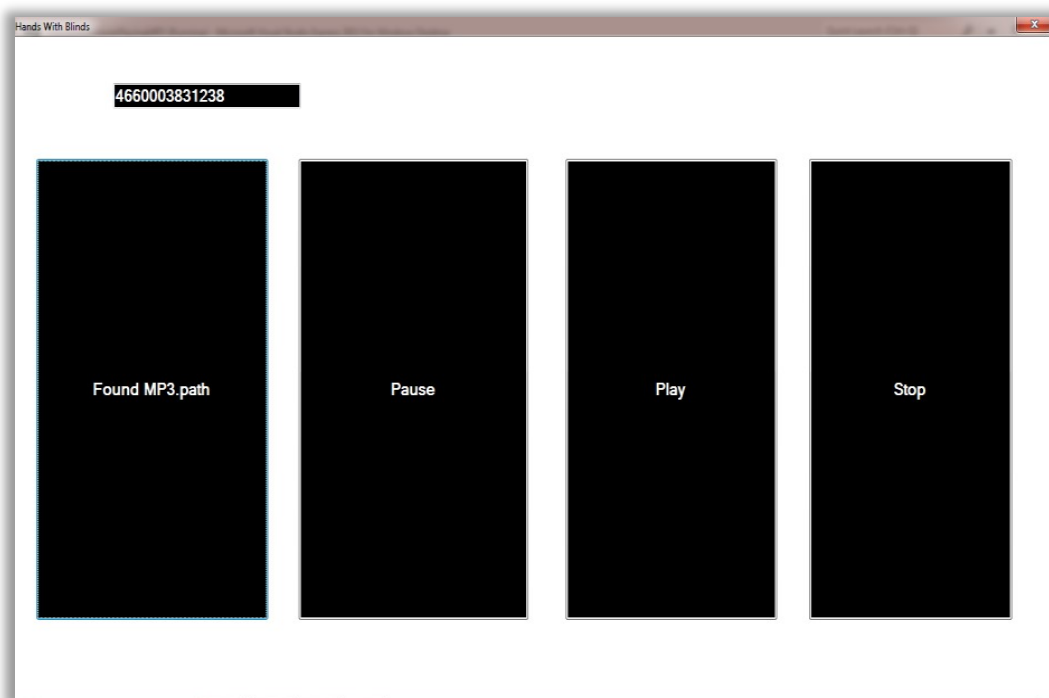


Figure 3. The Program Screen with the Operation and the Introduction of a Digital Code by the Bar Code Reader

How do we store MP3 files that we want the visually impaired user to listen to?

We first select the audio files for the user to listen to according to the study plan of the teacher at the school or institute

We then label the audio files according to the printed, written codes below the titles (Braille addresses) (UNESCO, 2013) and take into account the accuracy of each file label to avoid any unintended human error.

Then a store all the audio files that we have chosen in the visual studio-name app-debug-bin or within a database that can be accessed by the program on the local server of the school or institute.

3. Expected Benefits

Focusing on the tactile and hearing senses is the key to increasing the effectiveness of the learning process for people with visual impairments (Maurel et al., 2012; Valeeva, 2015). When the blind learn to use this new technique, they will not have to go to school daily to receive audio lessons where they can be collected and returned with some focus at home. Of the burdens of the transfer of blind students to their families, as well as allowing more room for families to work on improving economic resources because the blind person is in urgent need of a full-time person to take him back to school and this will reduce the burden on the parents but certainly does not mean isolating the blind from the outside world, but the process of legalization of receiving lessons in some materials as well as school will allow blind and visually impaired by listening to the world novels and stories interesting and according to their desire without the need for prior numbers also, High-speed access to audio materials significant decrease in the error ratio.

It is possible to deal with this method with any computer is low cost and does not require expensive tools compared to other methods.

4. Conclusion

This method provides a mechanism to support the process of education for people with visual disabilities. The researcher believes that these mechanisms play an essential role in the presentation of knowledge, whether academic or general experience, which raises the level of visually impaired students and gives them greater scope to enter the labor market and compete for the way to supply the humanities, Prospects for working in the professions of education, music and other human competencies, like their creative counterparts (Helen Keller, 2002), (Taha Hussein) (Galal, 1993)

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