Development of Learning Aids for Visually Impaired Students using Hannafin Peck Theory

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Abstract

The research is conducted to assess the improvement of brailing efficiency level of visually impaired students in using slate and stylus after accommodated with a learning aids called EZy Mirror Braille. In order to develop EZy Mirror Braille, the approach of Hannafin and Peck Model is used as a design model in creating an effective and creative learning process. The research is involving twelve visually impaired students of secondary schools. The development of this tool and method has given validity percentage of more than 70 percent. The result of the research shows that EZy Mirror Braille that has been developed able to fulfill the needs of the visually impaired students in acquiring the brailing concept in using slate and stylus.

Key word: Learning Aids, slate and stylus, braille code, braille dots, A+J+3+6 Method

1.0   Introduction

Brailing can be done manually by using brailler and slate and stylus. According to Bourgeanlt (1969), the usage of Perkins Brailler and slate and stylus really complement each other in term of improving brailing skill. Brailler can be used in a class while slate and stylus is used when students are not in their classes. He is in the opinion that both of these tools need to be taught to all of the visually impaired students. Slate and stylus can be used in halls and public areas since it is used silently without any sound; thus, reducing any clatters issue.

According to Kway (2007), the implementation of A+J+3+6 Method can overcome the drawbacks of conventional method in brailing using slate and stylus. Apart from that, this method is suitable to be applied in teaching and learning process for visually impaired

students. Nevertheless, this method is still having a drawback as it not equipped with suitable learning resources. Some of learning resources must be built to compliment A+J+3+6 Method to ensure that information and description given by teachers on how to use slate and stylus are understandable easily by visually impaired students. Effective teaching and learning method needs a form of learning resources that helps abstract explanations become clear. Learning process that is using multiple senses especially in the aspect of touching and listening are very effective for this kind of students. Through this kind of learning experiences, explanations on brailing concept using slate and stylus are easily understood.

Therefore, the development of learning aids called EZy Mirror Braille that is adapted from A+J+3+6 Method needs to be done. A+J+3+6 Method is just one of the learning strategy in increasing the brailing skills in using slate and stylus among visually impaired students. A good teaching method needs to be supported by suitable learning aids. As for this matter, the EZy Mirror Braille is developed based on Hannafin-Peck Theory.

1.1   Methodology

According to Pratomo & A. Irawan (2015), Hannafin-Peck design is a product oriented learning model that needs to undergo several phases which are needs analysis phase, design phase and development and implementation phase. Assessment and evaluation needs to be done in every phase by using data collection method such as survey and the results from the collected data will be used as a mold to develop a product. Analysis and evaluation process needs to be done carefully in every development process so that any typical error could be avoided (Chrisstopher Pappas, 2016).

According to NurAisyah, Zamri, Afendi and Mohamed (2012), the development of learning resources using tutorial based on Hannafin and Peck model integrated with ASSURE model able to create an effective and creative learning process in fulfilling the students' needs in learning novel and enable them to do self-learning in understanding literature elements in Bahasa Melayu subject.
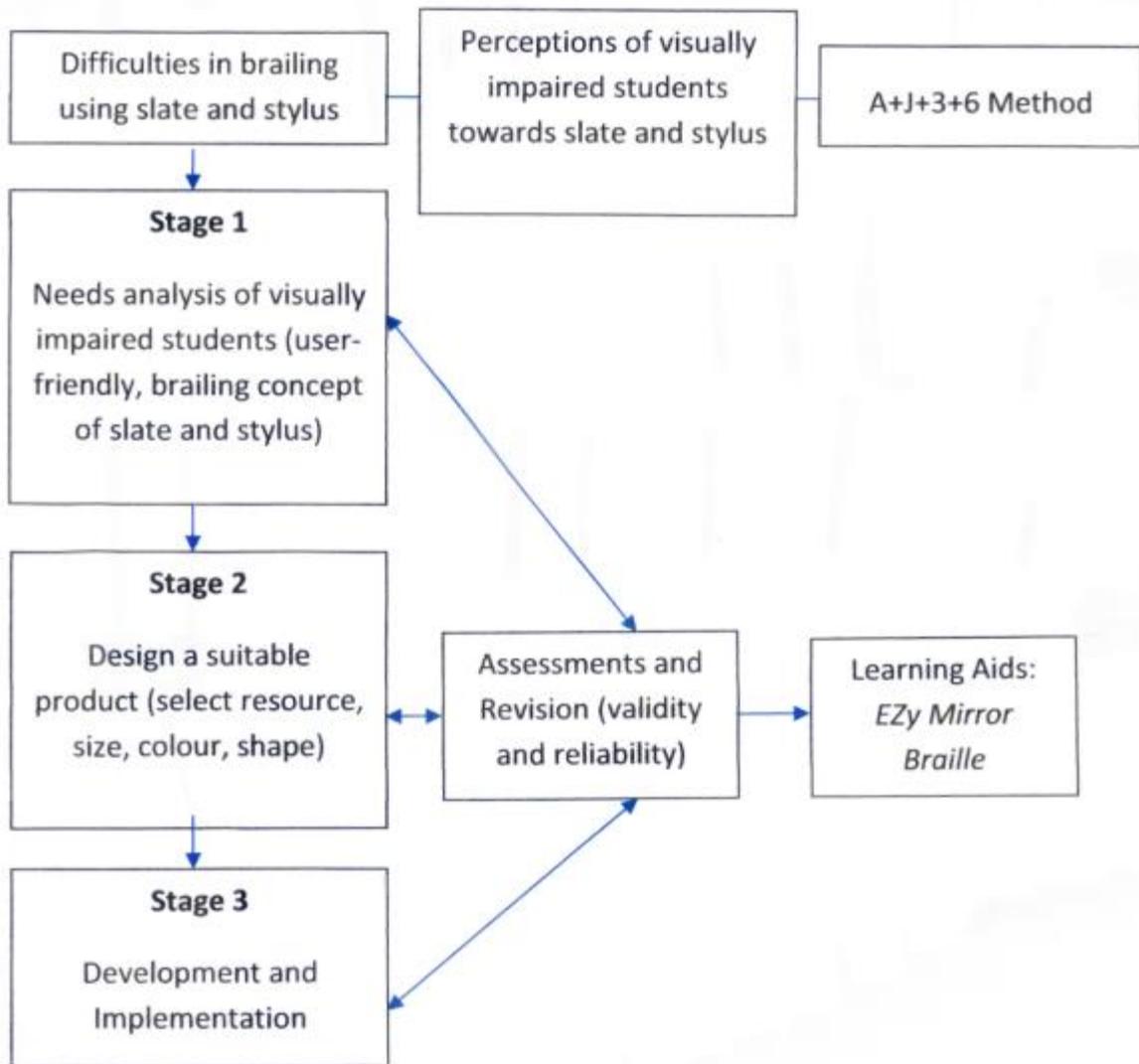
Diagram 1.0: The flow of methodology in developing EZy Mirror Braille learning aids for brailing concept using slate and stylus using Hannafin Peck Theory

Assessment process that will be conducted on the developed learning resources in order to gain validity and reliability is an effective way to ensure the success of this research. The EZy Mirror Braille learning aids is utilizing several research instruments in order to gain the desired valuation from its respondents. The research instruments are questionnaire, check list and structural interview. All of these instruments will be used during needs analysis stage, implementation stage and assessment and repetition stage.

1.3   Discussion

The usage of brailler and slate and stylus are seen as the conventional way of brailing. Research shows that learning how to braille whether using multimedia resources or conventional resources do not bring any consistent differentiation. Nonetheless, learning motivation will be higher with the help of electronic media such as notetaker (Bickford & Falco, 2012).

Slate and stylus is a type of lower technology tool in brailing, cheap, light and easy to carry along anywhere. This kind of tool does not make any noise while it is in use and it is the latest tool in the brailing history. In using slate and stylus, the braille dots need to be pressed from top to bottom; therefore they need to be pressed one by one to form braille codes. The brailing needs to be done from right side to the left side and after brailing is finished, the paper needs to be flipped in order to make reading from left side to the right side become possible.

Brailing method using slate and stylus is seen as flipped brailing since the writer needs to visualize the braille code outline in his mind before brailing away (Kway, 2007). Thus, it causes confusion to visually impaired students on the brailing concept of slate and stylus.

Brailler is a brailing tool that is considered high in tech but still requires the writer to braille manually. By using brailler, the braille dots will appear when the keys are punched. This happens because the stylus in the brailler are pushed up by the keys; thus creating the dots. Brailing method of brailler requires writer to perform it from left side to the right side and make it easy for the writer to check and read the braille code. The braille dots in a cell are

divided as: dots 1/2/3 / are on the left side while dots 4/5/6/ are on the right side (P. Lowrenfeld, Abel & Hatlen, 1977). Braille dots in a cell are as follow:

Figure 1.1: Arrangement of Braille Dots in a Cell

In A+J+3+6 Method, brailing using slate and stylus introduce dots 1/2/3/ are on the right side while dots 4/5/6/ are on the left side. This method reduces the confusion of the flipped code experienced by visually impaired students. All they need to do is just to rememorize the braille alphabet and then braille them using slate and stylus. The dots that have been said are as follow:

Figure 1.2: Arrangement of Braille Dots in a cell based on A+J+3+6 Method

Therefore, researcher has been adapted A+J+3+6 Method in developing EZy Mirror Braille learning aids where on its surface, every dot is labeled as 1/2/3/ on the right side and 4/5/6 on the left side. When the tool is flipped, it will appear as the usual braille code.
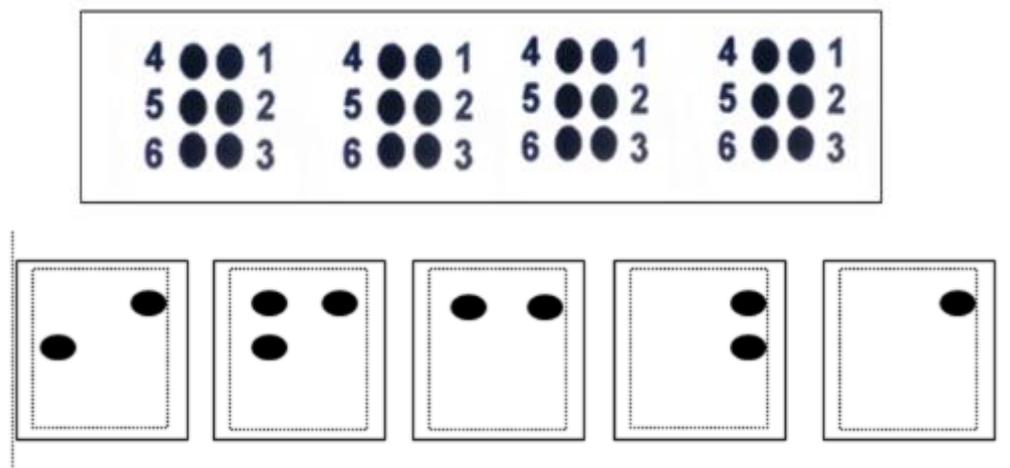

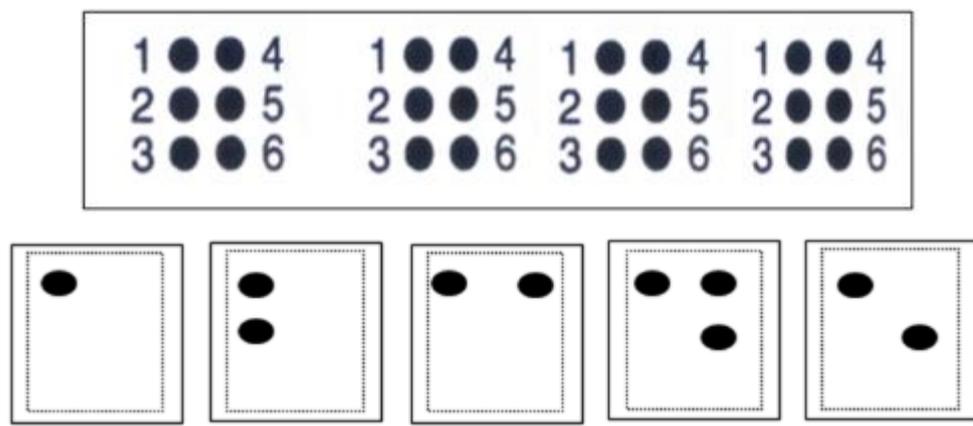Figure 1.3: Front Frame of Learning Aids : EZy Mirror Braille

Figure 1.4: Back Frame of Learning Aids : EZy Mirror Braille

1.4   Summary

The selection of Hannafin-Peck Theory is really appropriate in developing the EZy Mirror Braille learning aids with the purpose of increasing the brailing efficiency by using slate and stylus. In every development stage of this learning aids, the assessment and its implication towards visually impaired students' learning will always be brought into consideration. The validity of the developed learning aids has been evaluated by experts and receives validity percentage of more than 70 percent.

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