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Research paper

Implementing Orton-Gillingham Method in Developing Application for Learning Hijaiyah Letters for Intellectual Disability Student: A Brief Analysis

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Abstract

Hijaiyah (Arabic) letters are the letter of Al Qur'an and the language of Shalat. It is crucial to be able to read Hijaiyah letters for moslem. Unfortunately, learning to read Arabic is not an easy task for intellectual disability students. Their special circumstance obstruct them in performing intellectual functioning, and they need distinctive approach. However, that is not the case in Indonesia. Teaching Hijaiyah letters is usually conducted in conventional approach, and there are few researches that propose alternative method. This paper discuss principles in developing application and implementing Orton-Gillingham (O-G) method for learning reading of Hijaiyah letters for intellectual disability student. O-G method is a multisensory approach for reading intervention that integrates VAKT modalities. Implementation will be made as learning application for smartphone for its mobility, accessibility and flexibility. The use of mobile application and O-G method provides diverse approach in learning Hijaiyah letters for intellectual disability student.

Keywords: *Intellectual disability, Orton-Gillingham method, Hijaiyah letters, Learning application*

1. Introduction

Hijaiyah is the letter of Al Qur'an, holy book of Islam. Muslim also recites in Arabic language in Shalat, religious obligatory duty which is accomplished daily. Even though the content of Al Qur'an and reciting in Shalat can be memorised without knowing Hijaiyah letters, it is better to have the ability of reading Arabic.

Unfortunately, learning to read Arabic is not an easy task for intellectual disability (formerly mental retardation) students. World Health Organization (2015) defined intellectual disability as "a significantly reduced ability to understand new or complex information and to learn and apply new skills (impaired intelligence). This results in a reduced ability to cope independently (impaired social functioning), and begins before adulthood, with a lasting effect on development".

ICD-10 classified intellectual disability in the block of F70 – F79. Four of them are well-known as mild intellectual disability (IQ range 50-69, F70), moderate intellectual disability (IQ 35-49, F71), severe intellectual disability (IQ 20-34, F72) and profound intellectual disability (IQ less than 20, F73). People with mild intellectual disability will likely to engage in daily conversation and independence in self-care as well as getting job and getting involve in society, despite their difficulties in academic work (WHO, 2014).

Learning reading process for intellectual disability (ID) student needs different approach. Allor et.al (2010) list several guidance to teach reading for student with intellectual disability: provide extremely intense instruction and practice; instruction should be conducted consistently, explicitly and systematically over a long period of time; teacher must be creative and persistent in delivering instruction; and progress in reading of ID student must be continuously monitored by the teacher.

Accomplishing the guidance is not an easy task, teacher should find appropriate method in teaching reading for ID student. Polloway at all in Alnahdi discussed three approached of teaching reading for student with intellectual disability (2015, pp. 80), namely Basal Reading Approach, Language Experience Approach (LEA) and Whole Language Approach.

As for learning reading Hijaiyah, in Indonesia, teachers still uses conventional classroom method (Siswanti, 2012; Hidayati, Amsyaruddin & Sopandi, 2013; Oktavia, Zulmiyetri, & Tarmansyah, 2014; Meria, 2015), where teacher give lecture and students listen to the lesson. Alternative methods have been proposed, but the number is still small. For example, Oktavia et.al (2014) uses method al Bayan for reciting ayah along with its tajwid for mild intellectual disability student whilst Siswanti (2012) proposes VAKT (Visual-Audio-Kinesthetic-Tactile) method using clay (Meningkatkan kemampuan membaca huruf hijaiyah). Both of them do not use ICT (Information and Communication Technology) in delivering the lesson. Hidayati et.al (2013) proposes ICT-related method with Macromedia Flash Player in teaching reading Hijaiyah letters for mild intellectual disability student.

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In this paper, implementing of Orton-Gillingham (O-G) method in mobile application is proposed. O-G method is a multisensory approach for reading intervention that integrates VAKT modalities. This method assumes that students will have a better understanding when they learn with all modalities. It is a structure language approach, oriented in association of sound and letter (symbol), and widely used as reading intervention for dyslexic student (Purkayastha, Nehete, & Purkayastha, 2012)

Thus, this paper presents a different approach for teaching reading Hijaiyah letters. O-G method is used to improve student comprehension and the use of mobile application will assure the compliance of teaching reading for ID student guidance as well as reciting lesson outside the class. This paper will discuss principles in developing mobile application for ID person, as well as O-G method for teaching reading. Recommendation in developing mobile application for teaching reading Hijaiyah letters and its implementation are also discussed.

2. Developing mobile application for intellectual disability

Students with intellectual disability need special education that suitable with their condition. The use of assistive technology – and ICT in general can help them to improve their performance in their school life. However, designing application for intellectual disability person is not an easy task, Lopez et al pointed out that there are non-functional requirements that must be provided (Fernández-López, Rodríguez-Fórtiz, Rodríguez-Almendros, & Martínez-Segura, 2013), that is easy to use, should take into consideration the therapist and/or educator of the students (usability/accessibility), can be customized and adapted based on both user and educational contexts (flexibility/adaptability) and it has an ability to be brought out anywhere (mobility).

Darejeh and Singh (2013) proposed seven principles in designing user interface for people with less computer literacy (children, elder and people with disability). Among those principles, the study emphasized on lessen the feature to reduce software complexity and avoid stress for intellectual disability people (Dajereh & Singh, 2013).

3. Orton-gillingham approached in teaching reading

Multisensory teaching approach comprises of tracing (tactile), hearing (auditory), writing (kinesthetic) and seeing (visual). All of them should be present in teaching to achieve optimum result in learning reading. Multisensory teaching should be support by proper tools. Teacher can make use of flash card with different colour (for example, use black card for consonant and the white one for vocal), picture flash card, paint, sand box, embossed letters, and any others tools that can be touched (Madden, 2002).

Teaching reading based on O-G method utilizing flash card is accomplished by following these steps (Komalasari, 2015):

1. A flash card is shown to the students. The teacher tell the students the name of the letter the students recite it several times. Afterwards, the teacher pronounce the letter, and the students repeat it. Then, the teacher ask, "What is the sound of this letter?"

2. Without the flash card, the teacher pronounce a letter, then asking the student what is the corresponding letter.

3. The teacher writes the letter little by little while explaining it. Students track the letter form with their finger, copied it, and then outline the letter in midair. After that, students write it down without looking at the example. Afterward, the teacher ask the students to write particular letter based on its sound.

4. Lastly, when the students have acknowledged several letters, they can be taught to form sentences.

The utilized of visual, auditory and kinesthetic-tactile altogether in learning process is intended to improve student's ability in memorizing and learning. Furthermore, the lesson should begin with the easiest one and advance to more difficult material (IDA, 2001)

4. Implementing O-G Method In Learning Application

O-G method can be utilized as an approach in developing application for learning reading for mild intellectual disability student. Even though the method is originally used for dyslexic student, its thorough approach that makes use all human senses is suitable for intellectual disability student. Besides, a study reveals that intellectual disability student does not need different reading instruction then his counterpart that does not have disability. Proper adjustment may be conducted for more severe level of intellectual disability (Kauffman & Hung, 2009).

To be complied with principles in developing application for intellectual disability student and O-G method as reading instruction, there are some guidance for developing application to learn Hijaiyah letter for intellectual disability student. The guidance are noted as follow:

1. Determining user's application based on user requirements and psychics

2. Determining learning process in an approach that are not stressful for intellectual disability student

3. Determining application's purpose; whether it can be used without an assist or assistance is still needed in using the application

4. Intellectual disability student is lack in concentration and memorizing, therefore, learning material should be delivered gradually and repeatedly

5. The application should be attractive and fun enough to avoid tediousness of intellectual disability student

6. In teaching reading, VAKT is implied as follows;

a. V: Supplying interesting picture, however it should not distract student from the letter that is currently studied.

b. A: Sound of the letter should be clear and slow enough for student to hear and try reiterating it. It will be helpful if the application can capture student's pronunciation to check its correctness, then giving feedback to the student.

c. K: Application simulates how to write a letter and student imitates it using a suitable pointing device. It will train student's hand motion in learning a letter.

d. T: Cards can be used as a supplementary tactile sense, as well as for amusement purpose as a game.

7. Student learning progress is shown by saving the letters that have been studied. The learning time for each letter should be recorded. Teacher/ parents can use these reports to keep in track and give special treatment when necessary.

8. Learning process in application is accomplished according to O-G method.

5. Discussion

Principles in designing user interface for intellectual disability student are taken into account in the development of Gramaca, application for learning Hijaiyah letters for mild intellectual disability student. Its user interface design is simple yet attractive with large icon (Fig.1), and it has "Sulap Kartu" menu, a game that is complied with tactile sensory.



Fig 1: Main Menu

Gramaca is built for mobile application, students can use it anywhere they feel at ease. In learning section, Hijaiyah letters is divided into several groups, each consists of 5 letters. The instruction and practice in application can be repeated as much as the user need, and teacher or parents can monitor student progress by checking out the report (Fig.2).



Fig 2: Report Menu

O-G method uses as an approach in learning menu. In the beginning, student will hear the sound of the letter, and is asked to repeat the spell. After student acknowledges the connection between the sound and the letter, Gramaca will explain how to write the letter whilst still pronounce it (Fig.3).

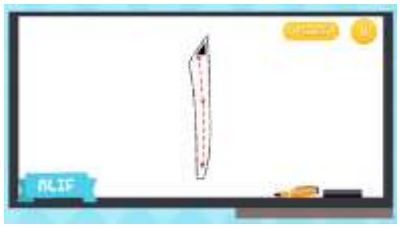


Fig 3: Writing demo

Then, student has to imitate the writing process. Student tracks and connects the red dot to form the letter (Fig.4). Therefore, student visual (seeing the letter), auditory (hearing the pronunciation of the letter) and tactile-kinesthetic (writing out the letter) have been utilized.

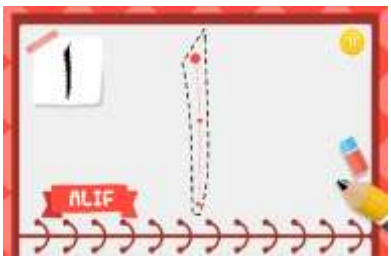


Fig 4: Writing Exercising

6. Conclusion

In this paper, principles in developing application for intellectual disability students are discussed. Orton-Gillingham method is taken as a teaching method since its thorough approach that makes use all human senses is suitable for intellectual disability student. Recommendations to implement O-G method in developing application for learning reading Hijaiyah letters are mentioned. Mobile application is chosen for its mobility, accessibility and flexibility. The recommendations are implemented in development of Gramaca, mobile application to help intellectual disability student in learning reading Hijaiyah letters.

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