



EXPLORATION OF THE USE OF SCIENCE LEARNING MEDIA FOR BLIND STUDENTS AT SDLB NEGERI SEJAHTERA BOGOR CITY

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ABSTRACT

Education is a basic need for everyone, including people with disabilities, who have the right to education. Children with visual impairments are usually called "blind children" in the field of special education. Based on data from the 2012 National Socio-Economic Survey, the number of Indonesian people with disabilities was 2.45%, according to the Central Statistics Agency (BPS), the number of children with special needs (ABK) in Indonesia reached 1.6 million children in 2017. According to Ministry of Education and Culture, West Java has a total of 688 blind students in 2021. The method used in this research is a literature review. Literature review is the first and important step in preparing a research plan. Literature review is a search and research of the literature by reading various books, journals and other publications related to the research topic, to produce an article regarding a particular topic or issue. In the initial stage of collecting articles based on the variables contained in the title, out of 10 articles, 4 articles were obtained that matched the title topic. At the article reduction stage, there were 4 articles that were not included because there were variables that did not match the title topic.

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Introduction

Education is a basic need for everyone, including people with disabilities, who have the right to education. This is demonstrated by Article 54 of Law Number 39 of 1999 concerning Human Rights, which states that every child who is physically or mentally disabled has the right to special care, education, training and assistance at state expense to ensure a life in accordance with the dignity of progress. Article 5 paragraph 2 of Law Number 20 of 2003 concerning the National Education System states that citizens who have physical, emotional, mental, intellectual and/or social disabilities have the right to special education. Article 32 of the National Education System Law defines special education as education for students who face different levels of difficulty in following the learning process due to these disorders. So,

asedon the law above, every child has the right to education, including children with special needs. (Efflamengo & Asyrofi, 2020).

Children with visual impairments are usually called "blind children" in the field of special education. Blindness comes from the words tuna which means damaged or loss and netra which means eye (Wikasanti & Eista, 2014). One type of physical impairment called blindness is characterized by a person's inability to see in whole or in part, and although they can get help with special tools, they still need special education (SARI, 2008). Blind people themselves can be broadly classified into low-vision (still have residual vision) and totally blind. The role of senses other than vision can provide information such as orientation, dimensions, distance, objects, materials, temperature, texture, and so on (Baktara & Setyawan, 2021). Based on data from the 2012 National Socio-Economic Survey, the number of Indonesian people with disabilities was 2.45% (Pranata et al., 2021). According to the Central Statistics Agency (BPS), "the number of children with special needs (ABK) in Indonesia reached 1.6 million children in 2017" (Maulipaksi, 2017).

According to the Ministry of Education and Culture, West Java had a total of 688 blind students in 2021 (Kemendikbud, 2021). Blind students experience difficulty in obtaining complete information and establishing concepts, as a result they experience difficulty in forming concepts and understanding, especially in the field of natural sciences due to their limited vision. To provide appropriate educational services, teachers must understand that blind students have special characteristics, Apart from that, social contact will help blind students in learning, especially in obtaining information, thus, learning problems will not be separated from social contact problems (Atmaja, 2013). The obstacles they encounter cause them to experience failure or lack of success in achieving their learning goals (Rumantingsih et al., 2020). Thus, it can be understood that visual impairment is the reduced function or dysfunction of a person's sense of sight to see the shadows of objects in daily activities so that they require special education to support their learning activities (Kholidah, 2017).

Learning media is a component of learning resources or physical vehicles that contain instructional material in the student environment that can stimulate students to learn, apart from that, learning media is also a tool to help in the learning process (Diahratri, 2022). Learning media is the same as audio-visual aids used by instructors in carrying out their duties (Pagarra H & Syawaludin, 2022). Learning media is very useful for students because it can increase students' comprehension of the material presented by the microscope (Suparman, 2011). Apart from that, learning media is also useful for teachers because teachers can easily provide material and show concrete material (Pangestu, 2017).

Science learning is learning that allows students to gain direct experience so that it can increase students' strength to accept, retain and apply the concepts they have learned (Zubaidah et al., 2018). Based on the Attachment to Permendiknas number 22 of 2006, science subjects are related to how to achieve knowledge about nature systematically, so that science is not only mastery of a collection of knowledge in the form of facts, concepts or principles but is also a process of discovery (inquiry).) (Iswatun et al., 2017). The content of science lessons studies various changes that occur in the universe and demands students' ability to think scientifically and carry out activities related to it (Khoerunisa, 2013). Audio mediais

one type of learning media that best suits the characteristics of blind students because they depend more on hearing than sight, therefore in science lessons, learning media must be used frequently because science material really needs the help of learning media, especially for blind students (Saddhono, et al. 2019).

This research intends to describe how blind students use science learning media, by making comparisons with other journals. Apart from that, the aim to be achieved in this research is to find out the challenges faced in implementing science learning media during the learning process, and also to find out the impacts caused by the use of technology in schools.

Method

The method used in this research is literature review. Literature review is the first and important step in preparing a research plan (Andriyani, 2019). Literature review is a search and research of the literature by reading various books, journals and other publications related to the research topic, to produce an article regarding a particular topic or issue (Asbar & Witarsa, 2020). In literature studies for the purpose of producing scientific writing, such as theses, theses and dissertations, the writer explores literature related to the topic and problems of his research, about society and the research area, about theories that have been used and produced by people related to our research topic. about the research methods used in the study and so on (Asbar & Witarsa, 2020).

The literature review was carried out because of the awareness that knowledge continues to increase, that our research topics, society and research areas have been explored by previous people, and that we can learn from what previous people have done (Saputra & Cahyono, 2022). Therefore, we are not the first researchers to investigate these subjects, communities and regions. The literature review has two main objectives. First, literature research is carried out with the aim of writing a paper that introduces new research on a particular topic that is unknown to those involved in the field. In the public interest, this research may be published at any time. For the purposes of the research project itself, the second purpose of the literature review is to expand knowledge about the research topic, assist in defining the research problem, and determine appropriate theories and methods to use in the research.

Based on this explanation, as a research method, researchers used a literature review to analyze scientific articles from national journals published from 2015 to 2022. The stages of the literature review can be seen in Figure 1.

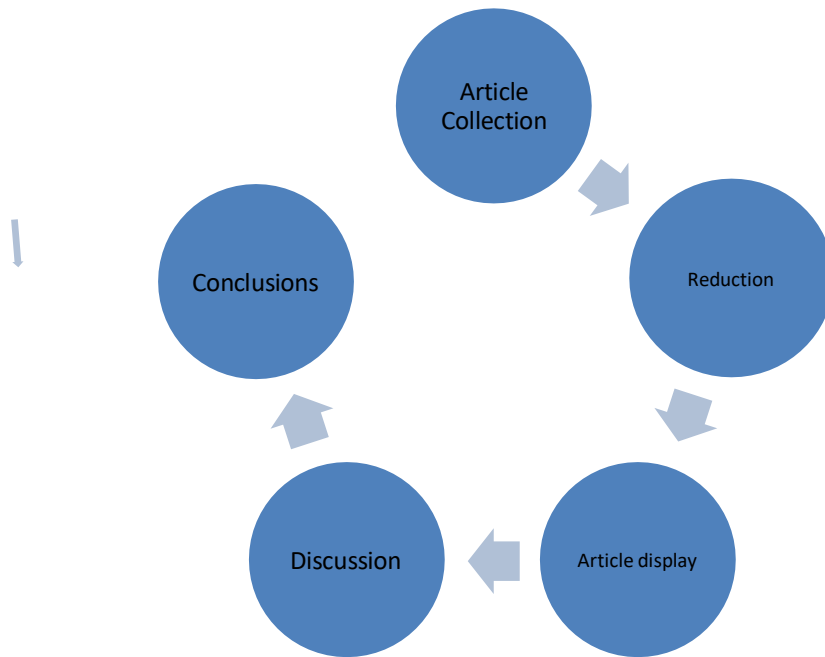


Figure 1. Stages of Literature Review (Source: (Asbar & Witarsa, 2020))

1. Article Collection

At this stage, this is done by searching and downloading articles via Google Scholar by searching for keywords that are appropriate to the research, namely the use of learning media for blind students. Reduksi Artikel

2. Reduction

Reduction means summarizing, selecting the core things, focusing on the important things, then looking for themes and patterns and discarding what is not needed. In this way, the reduced articles will provide a clear picture and make it easier for researchers to collect data.

3. Article display

After carrying out data reduction, the next stage is displaying or presenting the article. This article is presented in the form of tables, brief descriptions and relationships between variables.

4. Discussion

After displaying the article, the researcher then conducted a discussion based on the type of literature study used. In this case, the selected literature study is a theoretical study in which the author explains several theories centered on a particular topic and compares these theories on the basis of assumptions, logical consistency, and scope of explanation.

5. Conclusions

Conclusions are drawn based on the results of the organization and discussions that have been carried out previously.

Result

Utilization of Learning Media

In the initial stage of collecting articles based on the variables contained in the title, namely Exploration of the Use of Science Learning Media for Blind Students at SDBLB Negeri Sejahtera Bogor City, out of 10 articles, 4 articles were obtained that

matched the topic of the title. At the article reduction stage, there were 6 articles that were not included because there were variables that did not match the title topic. Articles on the use of science learning media for blind students are displayed in the following table:

No	Name/Title	Year	Journal	Volume,Number of pages
1.	Prasetyo, (Nature Based Science Learning Media for Blind Students in Character Education)	2015	National Seminar on Science Education	Vol- 5 Pages
2.	Mutia Khairani and Murtadlo, (Braille Flashcard Media on the Early Reading Ability of Blind Children).	2016	Journal of Special Education	Vol - 5 pages
3.	Rr.Rina Kusumawardhani (Utilization of Innovative Learning Media for Students with Special Needs).	2020	Proceedings of the National FKIP Education Seminar	Vol. 3, 9 Pages
4.	Rory Ramayanti, Agung Iranda, 2022. Adversity Quotient for Blind Students in Improving Literacy.	2022	Journal of Integrative Psychology	Vol 10, 16 Pages

Table 1 *Display Article*

DISCUSSION

In article 1, the application of learning media to blind students uses a single-pointed case study approach, in other words this research is viewed from the objects studied by blind children using science learning media in the form of clay in learning at SDLB-A Negeri Semarang to form values. character. The results of the research show that visually impaired children at SDLB-A Negeri in Semarang who have different visual impairments are adjusted in the way they communicate media and use clay media to create works. The character values of blind children at SDLBA Negeri in Semarang show limited visual sensitivity, touch, guided hearing, and smell of objects through the medium of clay which is one of the natural materials (Prasetyo et al., 2015). In article 2, the use of learning media for blind students use a quantitative approach with a pre-experimental research type with a "One group

pre-test post-test design" design. Based on the research results, it shows that braille flashcard media has an influence on the reading ability of blind children. The results of the pre-test on the influence of braille flashcard media on the initial reading ability of blind children show that the initial reading ability of blind children is not good, this is shown by the pre-test data with $n=6$, the number of scores obtained is 252.5 and the average pre-test score obtained was 34. Meanwhile, the results of the post test on the influence of braille flashcard media on the initial reading ability of blind children showed that the final observation data of the post test was $n=6$, the total score obtained was 495 and the average sample score was 82.5. Data analysis of the initial reading abilities of blind children before being given treatment to recognize letters, vocabulary and braille words using flashcards showed low average scores. This shows that blind children have difficulty recognizing braille letters, vocabulary and words, so it is necessary to apply braille flashcard media in their learning to overcome the difficulties or obstacles experienced by blind children (Khairani & Murtdlo, 2016).

In article 3, the use of learning media for blind students uses a qualitative approach. The research discusses how learning media is for blind children. Obtained in more detail, namely 1) Human-based media, included in this media category are teachers, instructors, tutors, role-playing and group activities. Teachers and tutors act as mediators in the student learning process (Kusumawardhani, 2020). This media is the main media that is really needed by totally blind children. Teachers or tutors can help totally blind children overcome or minimize their limitations, besides being able to replace their impaired vision, teachers or tutors can provide direct explanations and guidance. 2) Print-based media, which includes books, guides, exercise books, work aids and loose sheets. Aids for reading and writing, including reglet & pen (stylus), Braille typewriter, letter board and optacon (a tool that can change printed letters that can be touched). 3) Tactual-based media, because children's visual (vision) functions are not functional, visual-based media intended for children in general, for totally blind children must be modified in such a way as to become tactual-based (civilization) media. Books, work aids, charts, graphs, image maps can be modified into tactual media. 4) Audio-based media, which includes media such as video, film, programs, slide-tape, television. This category of media is generally presented dominated by visual information, the audio elements often cannot be representative (Kusumawardhani, 2020).

In article 4, the use of learning media for blind students uses qualitative methods with a phenomenological approach. This research aims to determine the experiences of blind students regarding the adversity quotient in improving literacy skills. The presentation of the results includes a description of the adversity quotient of blind students in improving literacy skills and the factors that influence the adversity quotient in improving literacy skills, namely theme 1. overcoming difficulties, theme 2 motivation, theme 3 perseverance, theme 4 independence, theme 5 control. This research can be concluded that the adversity quotient for blind students in improving literacy is in the form of overcoming difficulties, perseverance, motivation, independence and control. Almost all the themes obtained show the novelty and uniqueness of the main theory. The factors that influence the adversity quotient are parental encouragement, social support, facilities and future orientation (Ramayanti & Iranda, 2022).

Conclusion

Based on the results of a literature review regarding the use of learning media for blind students, it can be concluded that of the 10 articles published in 2015-2022, there are 4 articles whose variables match those in the title. The use of learning media in its implementation is in accordance with the theories used as a reference. The use of learning media for blind students is suitable for use and worthy of development to provide learning resources for blind students.

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