

## Appropriate learning media for mild mentally impaired students at inclusive vocational schools: A literature review

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### ABSTRACT

In inclusive vocational high schools, students with mild mental retardation have limited thinking and communication. This limitation needs to be overcome by teachers with aid. Students with mild mental retardation study using learning media to improve their knowledge. This study aims to determine what learning media are appropriate for mild retarded learners of Inclusive Vocational High School. This study is a literature review of documents. There are four stages in writing this literature review: determining research topics and questions, searching for literature, analyzing literature search results, and writing a literature review. The documents are journals, conference proceedings, books, thesis reports, and website pages on the internet. The number of documents analyzed is 32 documents. Learning media that is suitable for students with mild mental retardation can be seen from 1.) The text: i.e., short readings, common words used, not convoluted, Arial or Tahoma fonts with the size of 14 pt, non-italic sentences and underline, adding an illustration like image or table; 2.) The colors of the media take on the hot colors: i.e., red, orange, and yellow; 3.) The types of tests that can be used: i.e. multiple-choice tests, right-wrong choices, yes-no question, crossword, cause-effect, test descriptions, and essay; 4.) The shape of learning media is 3D; 5.) the types of aromatherapy that can be used: i.e. lavender essence, calm, citrus melablend, and Northwoods blend.



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### INTRODUCTION

Students with mild mental retardation are defined as having Intelligence Quotients (IQ) in the range 50-55 and 70 and have limitations in communication, self-care, daily or community skills, or social skills (Hoffenberg, 2011; Hyman, 2007). In several other countries in the world, mental retardation has different names, including; Cognitive limitation, Developmental delay, Learning disability, Slow learner, Mentally handicapped, and Intellectual disability (Hyman, 2007; Shea, 2012). Physical characteristics in this group are that they have an average slow physical development compared to children their age. In addition, school assignments cannot be adequately completed (American Psychiatric Association, 2013).

Currently, developmentally disabled students can not only continue their education at the special high school but also at the Inclusive vocational school (Cahya, 2014; Yuliyani & Juwita, 2020). Therefore, the limitations of inclusive vocational students need to be overcome with a guidance learning model. Mild mentally disabled students will be guided in learning by the teacher.

However, for students to gain skills, students must be taught to learn independently. Independent learning can improve students' skills. In this case, the role of the media is essential to aid the role of the teacher.

Various learning innovations have been carried out to help students with intellectual disabilities, including; Computer-assisted instruction (Jerome & Barbeta, 2005), online strategy instruction (Fitzgerald et al., 2012), eText (Douglas et al., 2009), word prediction and text-to-speech technologies (Silió & Barbeta, 2010), pentop computers (Bouck et al., 2009), and audio-video based reading learning model (Dharmawan & Wahyuni, 2017). Learning technology should be able to involve all the senses of students. However, mostly only one media. Even though the more diverse the media, the easier it will be for students to understand the material. For example, students who see and listen to learning have learning effectiveness of 50% (Meierhenry & Wiman, 1969).

Although various media have been developed, there are still obstacles to learning. Ishartiwi (2010) research provides an overview of the variations in the implementation of learning in special schools, namely: (1) the determination of teaching materials and material content does not fully refer to student needs, and (2) learning resources do not use replicas and or real environments. The learning media in most schools still seem modest and have not been managed effectively (for example, children bring equipment from home or use school equipment that has not utilized technology).

These problems need to be addressed. For this reason, this study aims to find out what kind of media is suitable for learning for mild mental retardation. The novelty of this research is that no specific research explains the criteria for learning media for mentally retarded people, especially mild mental retardation in inclusive vocational schools. Many researchers only discuss children with special needs issues, which are universal for all persons with disabilities at extraordinary schools.

## RESEARCH METHOD

This research is a literature study. The type of data collected is secondary data. There are four stages in writing this literature review: determining research topics and questions, searching for literature, analyzing literature search results, and writing a literature review (Fakultas Kesehatan Masyarakat Universitas Jember, 2020). The passwords used in the search on the google search engine are assistive technology, instructional technology, aromatherapy, 3 Dimension, texts, tests, colors, images, and combined with mental retardation, intellectual disability, disability, children with special needs, and special education.

The documents that have been collected were obtained from journals, conference proceedings, books, thesis reports, and website pages from the year 1969 until now. Document searches are done by going to the search website on Google Scholar, SpringerLink, ScienceDirect, and directly searched using the Google search engine. The documents collected are in Indonesian and in English. The collected documents are then categorized into publication type and publication year.

## RESULT AND DISCUSSION

In Indonesia, there are many inclusive vocational schools. Teachers need to facilitate every student, including students with mental retardation. Therefore, knowing the appropriate learning media for them is very urgent. Based on the results of a literature search through Google Scholar, SpringerLink, ScienceDirect, and directly searched using the Google search engine and using adjusted keywords. The researchers found 102 articles that matched these keywords. Then after checking the articles, there were 30 duplicate articles, so the articles were excluded, and the remaining 32 articles/documents were screened based on the title, abstract, and full text, the theme of which was adjusted to the theme of the literature review.

The collected documents or articles are then analyzed. Table 3 shows the publication type overview, Table 2 shows the publication year overview, and Table 3 shows the analysis results of each research document.

**Table 1. Publication Type Overview**

Publication Type	Amount
Paper Journal	17
Paper Proceeding	3
Thesis	3
Book	9
Web Page	1

**Table 2. Publication Year Overview**

Publication Type	Amount
2017-2022	9
2013-2016	3
2009-2012	7
2005-2008	4
< 2004	4

**Table 3. Research Document Review**

Authors	Samples	Collecting and Methods	Types of Research
Shea (2012)	12 documents	Document study	Qualitative
Taylor et al. (2018)	3 students	Observation and test	Quantitative
Evmenova and Behrmann (2011)	5 students	Observation and test	Quantitative
Fitzgerald et al. (2012)	53 students	Test	Quantitative
Douglas et al. (2009)	11 students	Participatory observation	Qualitative
Silió and Barbetta (2010)	6 students	Test	Quantitative
Bouck (2004)	3 students and 1 teacher	Test and interviews	Quantitative
Dharmawan and Wahyuni (2017)	3 <sup>rd</sup> grader and 4 SDLB	Observation, interviews, and document study	Qualitative
Ishartiwi (2010)	13 documents	Document study	Qualitative
Anjarsari (2018)	23 inclusive and extraordinary school	Questionnaire and documentation	Quantitative
Shearman and Sheehan (2000)	Students and teachers	Documentation study and observation	Qualitative
Ece and Çelik (2008)	25 students	Questionnaire an observation	Quantitative
Ramandi et al. (2012)	50 students	Questionnaire	Quantitative
Ranjan (2016)	50 students	Questionnaire	Quantitative
Witter (2020)	64 participants	Questionnaire, observation, and survey	Quantitative
Mustaji et al. (2019)	1st grade students	Questionnaire	Quantitative
Harrison and Ruddle (1995)	5 participants	Observation	Qualitative
Passig (2009)	Eighty-seven teenagers	Observation and test	Quantitative

Learning media is not only a teaching intermediary between teachers and students but more than that. Learning media can be used for independent learning in mild developmentally disabled students. In addition, the designed learning media must also accommodate and be accessible to students with mild mental retardation at inclusive vocational schools. Not all types of learning media are suitable for mild mental retardation. Teachers need to pay attention to this. Moreover, if mild developmentally disabled students study at inclusive vocational schools, teachers must be able to prepare learning media for them (Anjarsari, 2018). The media that can be used are movies, slides, videotapes, teaching machines, and charts (Altfest, 1975).

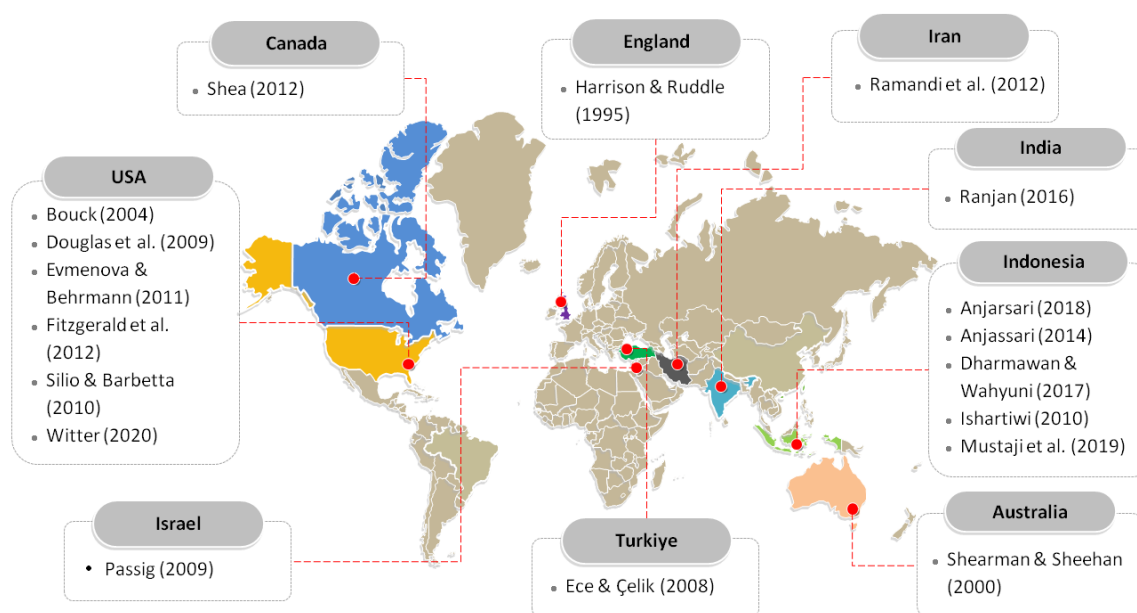


Figure 1. Geographical Distribution of Included Studies (Map Created by Authors Using an Open)

Learning media with text also need to pay attention to several requirements. Do not let mild developmentally disabled students cannot understand the written text. Learning media to have legibility for mild mental retardation requires requirements, namely: 1.) Short, where sentences only use words as necessary. For example: What I will do now is press the green button so the machine can start working (wrong). It should be press the green start button; 2.) Common words if possible. But sometimes there are technical words used in Industry. These words cannot be replaced. For example, pliers, screwdrivers, socket wrenches, pistons, and spark plugs; 3.) Easy or straightforward, which only provides what should be known. A false example is that hand tools must be in accordance with their function so as not to provide safety for the tool being used and the material being tightened. The correct example is to use hand tools according to their function; 4.) The use of sample units for specific work or concepts. For that, it is necessary to explain. The sizes are large, small, thick, and thin. Measurements are read on a unit scale, for example, kg or cm. shapes such as ovals, squares, and triangles; and 5.) Alternative formats other than writing are audio recordings, video recordings, and real picture sheets (Shearman & Sheehan, 2000).

Another opinion is to convey information to developmentally disabled people should use simple words and language and illustrate with pictures or other visual representations, especially for those with intellectual disabilities who are illiterate or intellectually limited (International Labour Organization, 2016). Furthermore, the words used must also have the appropriate size and font for the mildly mentally retarded so that they can read easily. Taylor et al. (2018) stated that the font type and size suitable for mild mental retardation is Arial with a size of 14 pt. While the Victoria Government State (2019) recommends (1) paper size A4 or A5, (2) font used is Arial or Tahoma, (3) do not use Times new roman or Serif, (4) font size is 14 pt, (5) reduce the use of sentences using capital letters, (6) only use 1 type of writing, (7) do not use italic sentences, and (8) sentences should not be underlined.

The design of instructional media should also pay attention to color. Everyone's favorite color is different, including mild mental retardation. Stated that mild mental retardation preferred hot colors (red, orange, and yellow) to cold colors (blue, green, and purple) (Ece & Çelik, 2008). The types of tests that can be used for mental retardation are draw a line, find a word, fill in the blanks (with or without alternative answers), true and false, and crosswords (Shearman & Sheehan, 2000). While mild mental retardation can use multiple-choice tests, true-false choices, yes-no, match-making, cause-and-effect, description tests, and essay tests (Rochjadi, 2016). For multiple-choice

tests, the number of alternative answers used needs to be considered of the age factor and the material tested (Mehrens & Lehmann, 1991).

Learning is not only through visual and auditory but also learning can also be done through touch and smell. Learning media can also be touched and have a taste/smell. Learning media should be not only two dimensions but also three dimensions or real objects. Three-dimensional media can improve the ability of developmentally disabled students (Mustaji et al., 2019; Passig, 2009). Learning media can also be added with aromatherapy. Aromatherapy can provide sensory stimulation, help develop communication, improve coping skills, and reduce aggression (Harrison & Ruddle, 1995; Ramandi et al., 2012; Ranjan, 2016; Witter, 2020). The types of aromatherapy that can be used are lavender essence, lemongrass, eucalyptus, geranium, cinnamon, calm, citrus melablend, and Northwoods blend (Harrison & Ruddle, 1995; Ramandi et al., 2012; Ranjan, 2016; Witter, 2020).

## CONCLUSION

Learning media for students with mild mental retardation in Inclusive vocational schools must be easy to understand and interesting. Several aspects need to be considered when designing learning media. These aspects are letters and sentence forms. Other media need to be added, such as images, display colors, types of tests, three dimension shapes, and aromatherapy. Further research suggests examining other theoretical studies such as images, videos, animations, and the metaverse.

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