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by Levi Staley

Developing Mind Mapping-Based Teaching Materials for Teaching Self-Care Skill Adaptive Behaviour to Students with Multiple Disabilities Visual Impairment (MDVI)

Dewi Juwita Susanti

Special Education, Universitas Lambung Mangkurat

Sari Rudiyati

Special Education, Universitas Negeri Yogyakarta

Abstract

Limitations on more than one aspect, cause multiple disability visual impairment (MDVI) students to experience obstacles in carrying out daily activities related to self-care skills. Students need adaptive behavioral learning to provide them with self-reliance. However, teaching materials for adaptive behavior learning are limited. Teachers need teaching materials that can accommodate the learning process of adaptive behavior for students with MDVI. This study aims to develop mind-mapping-based teaching materials for adaptive behavior. Research and development refer to the steps of the ADDIE model. The results of the study explain that the teaching materials are feasible based on assessments from material experts, media experts, and practitioners so that they can be used in the learning process. The teaching materials developed can be the solution for teachers in the process of teaching adaptive behavior for students with MDVI to be skilled in carrying out daily activities.

Keywords: *adaptive behavior, MDVI, mind mapping, self-care, teaching materials.*

Introduction

Multiple Disabilities Visual Impairment (MDVI) is the condition of individuals who experience visual impairment accompanied by other obstacles or known as double impairment. Individuals with MDVI are difficult to identify specifically, due to the complex condition. MDVI tends to be known as someone who experiences limitations in several functional areas such as communication, adaptive behavior, and mobility (Erin, J.N, Spungin, 2004). Complex functional barriers cause individuals difficulty in performing daily activities. Interventions can be done by providing adaptive behavior learning following the content of the MDVI curriculum which focuses on three scope aspects, namely the self-development area, social communication area, and work area (Perkins, 2014). Following the purpose of education for children with special needs, which is not only focused on academics but provides useful skills in daily activities so that individuals can run their adult lives independently (Bateman, D.F., Cline, 2016).

Teachers have an important role in the learning process. Ideally, teachers understand the characteristics of their students. Teachers who teach students with MDVI must have thorough preparation to deal with differences in each student (Spungin., Ferrell, 2007). Teacher readiness in providing learning for their students has an impact on optimizing student abilities. (Children, 2015) stating that professional special education teachers must understand basic concepts and tools used in learning, master the domain taught, and be able to develop memorable learning for students so that programs, services, and outcomes are optimally realized.

The task of teachers in providing appropriate educational services for students with MDVI is not easy. (Rudiyati et al., 2016) explained the obstacles experienced by teachers, parents, and assistants in dealing with students with MDVI is the lack of students' ability in the realm of caring for or helping themselves so teaching process needs to be done as early as possible. Learning process for blind is more

likely to be done by the verbal because their own limit in visual aspect and use their touch and hearing more in receiving information (HN et al., 2023) . This is a challenge for MDVI student teachers because in reality teachers still experience obstacles in teaching adaptive behavior in schools. Based on a preliminary study at one of the SLB in Yogyakarta that provides educational learning for MDVI students, there are obstacles experienced by teachers in the teaching process. Teachers have difficulty mapping the operational learning process that must be carried out in the classroom. Teachers are constrained in determining the material, steps, and ways of teaching students with MDVI so that learning can be carried out appropriately, directed and consistently. This obstacle has not received a solution because no teaching material can be used by teachers as a reference in the learning process in the classroom. The books available in schools are MDVI curriculum development books whose scope is still comprehensive so teachers need to analyze and readjust to be adaptive, operational, and practical to use.

Teachers as the center of learning in the classroom need teaching materials that can support the teaching process so that it has an impact on mastering self-care skills in students with MDVI. Teaching materials are used as learning guidelines so that learning is clear and directed (Arifuddin et al., 2022). Based on these cases, mind mapping-based teaching materials were developed so that teachers can use them operationally and practically in the process of teaching adaptive behavior. Mind mapping is a technique based on visual appearance to organize some data connected by lines, shapes, or other views, focusing on one topic of discussion in each mind mapping (Guerrero, 2023). The results of research from (Ambarita et al., 2022) regarding the development of mind mapping-based teaching materials are effective in improving learning outcomes with excellent criteria. Therefore, this study developed materials with the concept of mind mapping to be a guideline and facilitate teachers in the process of teaching students with MDVI.

Method

The research approach used is research and development or known as Research and Development (R & D). Research and development is a scientific way to research, design, manufacture, and test the validity of products that have been produced (Sugiyono, 2015). The development model used in this study is the ADDIE development model developed by Dick & Carry consisting of five stages: 1) analyze, to identify user needs; 2) design, to designing products based on the needs; 3) develop, to create and develop products by design; 4) implementation, to find out the usefulness of the developed product and 5) evaluation; to collect assessment results regarding developed products (Branch, 2010).

This research involved material experts to assess the material developed in teaching materials, media experts to assess media that being developed, and teachers as practitioners to assess the content and suitability of teaching materials to the learning needs of MDVI students. Data was collected using a questionnaire assessing the feasibility of teaching material products. The research produced a mind mapping-based teaching material product for adaptive behavior learning of self-care students with MDVI. The adaptive behavior material in this study included eating, drinking, defecating, urinating and bathing. Teaching materials can be one of the learning resources that teachers can use in the process of teaching students with MDVI.

Results and Discussion
Results
Analyze

Needs analysis becomes the basis and foundation of development research. The product developed in research is the answer to the needs analysis that has been carried out. The first stage carried out is to analyze the needs of teachers in teaching the adaptive behavior for students with MDVI, which is the need for operational and practical teaching materials. Teachers who teach MDVI need ready-to-use teaching materials because of the intense time and concentration in teaching MDVI children. The needs of teaching

materials are accommodated by applying the concept of mind mapping. The development of mind-mapping-based teaching materials is considered appropriate because it is easy to understand and focuses on certain topics of discussion. The concept of mind mapping in adaptive behavior teaching is applied by focusing on five forms of self-care skills, called eating, drinking, urinating (BAK), defecating (BAB), and bathing. The material in the teaching materials is obtained based on the focus learning needs which is needed by MDVI students. The teacher hopes the learning material to be presented operationally and there are teaching steps so that the teacher can be consistent in teaching the stage of activities that students need to do. The teacher suggested that the contents of the book be designed simply with operational instructions and stages so that it is easy for teachers to understand and do in teaching self-care skills.

Design

Teaching materials in the form of books for adaptive behavior learning with five self-care skills. Mind mapping-based teaching materials are mind maps by displaying core concepts to be focused and clear. Learning materials are displayed using a mind map containing self-care skills activities, tools and materials, ways and stages of teaching, and assessment of self-care skills. The use of mind mapping principles in displaying learning materials aims to make it simpler, clearer, and easier to understand for the teachers as book users.

Development

The process of developing teaching materials uses various software, namely Coreldraw X5, MindMaple Lite, MindMaster 6.2, and Microsoft Word. Coreldraw X5 is used to arrange the cover of the book page by combining images and writing that match the title of the teaching material book. MindMaple Lite and MindMaster 6.2 are mind mapping processing applications with varied layouts that are used to create concept maps of the contents of teaching materials books and self-care skills materials. Microsoft word is used to process the entire content of teaching materials, namely arranging the layout of learning materials, headers and footers, assessment tables, and the overall layout of teaching materials.
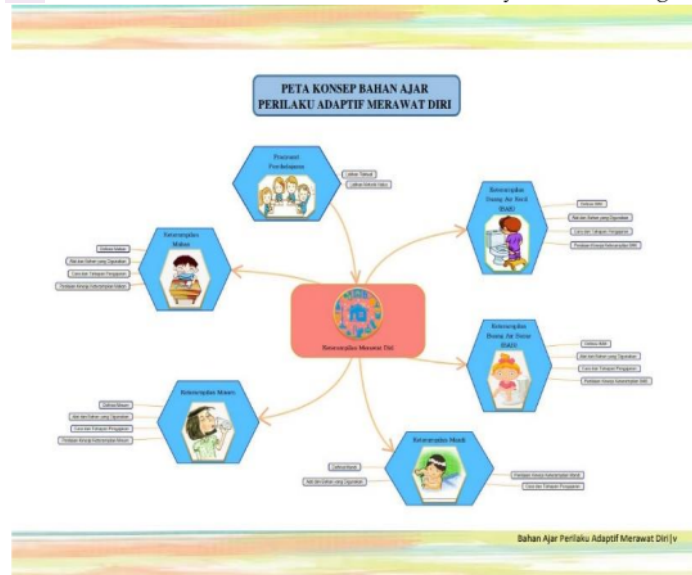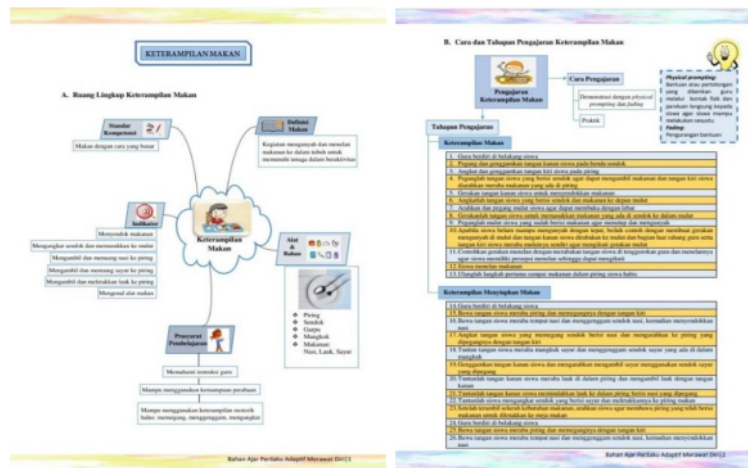
Figure 1. Display of mind mapping-based teaching materials

Textbook developed through the process of validating the eligibility of material experts and media experts. Validators consist of two professionals in each perspective of material and media assessment. The validation process goes through various revisions, with the final assessment results as follows.

Table 1. Material Expert Eligibility Assessment

No.	Assessment Aspect	Media Expert I	Media Expert II
1.	Curriculum Compatibility	4,85	4,15
2.	Language	4,20	4,00
3.	Eligibility of Presentation	4,30	4,00
4.	Application of Mind Mapping	4,30	4,60
Total		**17,65**	**16,75**
Average		**4,41**	**4,19**
Category		**Very Good**	**Good**

Table 2. Media Expert Eligibility Assessment

No.	Assessment Aspect	Material Expert I	Material Expert II
1.	Eligibility of Presentation	4,83	4,33
2.	Appearance	4,80	4,50
3.	Language	4,57	4,57
4.	Application of Mind Mapping	5,00	4,66
Total		**19,63**	**17,99**
Average		**4,91**	**4,50**
Category		**Very Good**	**Very Good**

Implementation

The development product is used by teachers in two schools, namely SLB-A Yaketunis and SLB Helen Keller Indonesia. Teachers who use teaching materials in the implementation process provide an

assessment of the feasibility of teaching materials from the user's perspective. The assessment is carried out accompanied by suggestions in the process of improving teaching materials. The product was piloted on five teachers, with the following assessment results.

Table 3. Practitioner Assessment

No.	Assessment Aspect	Average	Category
1.	Eligibility of Presentation	4,72	Very Good
2.	Language	4,40	Very Good
3.	Appearance	4,90	Very Good
4.	Suitability of teaching material content	4,40	Very Good

Evaluation

Products that have been validated by material experts and media experts as well as assessments of feasibility, usefulness, and practicality carried out by teachers, are reviewed and refined according to suggestions for improvement from various parties. In the final stage, teaching materials are handed over to teachers to be used in the process of teaching adaptive self-care behaviors to MDVI students.

Discussion

Textbooks developed based on mind mapping are based on the needs analysis. Analysis of teacher needs in teaching includes learning materials, teaching stages, competency achievements, learning methods, and evaluation methods adjusted to the learning characteristics of MDVI students. (Malahayati & Zunaidah, 2021) The development of teaching materials based on needs analysis is expected to contain appropriate topics, systematic presentation, interesting and use language that is easy to understand, flexible and can be accessed anytime and anywhere. The focus of teaching materials on adaptive behavior aspects is based on MDVI learning objectives in the form of being optimized to have self-relience in daily activities. The development of adaptive behavior is influenced by physical conditions, culture, environment, personality, education, and religion (Ratu Balqis, 2021). Physical conditions along with other obstacles experienced by MDVI, need to be teach adaptive behavior learning.

Mind mapping as a basis for developing adaptive behavior teaching materials. Mind mapping as a solution for developing teaching materials is based on the concept of mind mapping in the form of mind maps that focus on certain topics. (Dadi et al., 2019) Developing mind mapping-based learning media as a result of teacher needs analysis, which 100% states the need for mind mapping-based media used in learning. Mind mapping makes it easier for users to dig and remember things, providing the right perception flow to be used as support for teaching materials used by schools (Ulufah, 2021) (Arsyad et al., 2021). Mind mapping helps teachers understand the points to be conveyed and activities carried out according to the content of predetermined teaching materials (Rohita & Fitria, 2020). Adaptive behavior textbooks answer the needs because they are focused, simple, and practical for teachers to use in the learning process. Mind mapping provides the right perception of the teaching materials used in schools.

Teaching materials are considered feasible after going through an expert validation process. Validation is carried out by media experts and material experts consisting of 2 experts on each aspect of validation. The material validation score of 4.41 categories is very good and 4.19 categories are good. Material validation with a score of 4.91 and 4.50 with both data showing very good categories. Very good results by validators mean that teaching materials are considered suitable for use. Expert assessment is a measure of the feasibility and validity of the product produced by the needs (Arif & Andy Eddy, 2019). Teaching materials are applied to teachers to be assessed from the practitioner's perspective. Teachers give very good marks to the development of teaching materials used. Overall, mind mapping-based teaching materials for adaptive behavior learning self-care was declared suitable for use after several revisions based on expert advice.

Conclusions

The development of mind mapping-based teaching materials can be used by teachers in the process of teaching children with MDVI. Teaching materials that have been assessed by material experts, media experts, and teachers as practitioners obtain decent results with the majority of assessments in the very good category. Teaching materials get a good response from teachers so that they can be a solution to the problems experienced by teachers in the learning process. Teaching materials are expected to provide optimal benefits in the learning process that have a positive impact on MDVI students who are more able to be skilled in carrying out daily activities.

In this study, the mind mapping-based teaching materials developed was still limited in the scope of self-care material with five basic skills, called eating, drinking, urinating, defecating, and bathing.

Acknowledgment

This research can be carried out well because there is support and assistance from various parties, namely teachers at SLB-A Yaketunis and SLB Hellen Keller Indonesia, also Yogyakarta State University who have provided opportunities and facilities in the research process so that mind mapping-based teaching materials for learning adaptive behavior of students with MDVI can be developed and used by teachers in the teaching process.

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