



# Indonesian Journal of Community and Special Needs Education



Journal homepage: <http://ejournal.upi.edu/index.php/IJCSNE/>

## Development of Traluli Program of Family-Resourced Early Intervention for Multiple Disability and Visual Impairment (MDVI) Children with Fine Motor Impairment in Inclusive School

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### ABSTRACT

This study aims to develop a family-resourced early intervention program for multiple disability and visual impairment (MDVI) children with fine motor impairments in inclusive schools. The research method in this study used a qualitative descriptive method to develop the traluli program. The subject in this study is a 6-year-old child with multiple disabilities and visual impairment (deaf and blind). The subject is currently in kindergarten in one of the inclusive schools in Bandung city. The result of this research is an early intervention program with family resources to overcome fine motor barriers experienced by children. The results of the development of a family-resourced early intervention program to overcome obstacles in fine motor skills are expected to help children develop optimally. This research is expected to be a reference for parents, teachers, and special education teachers, to develop potential optimally and overcome children's fine motor barriers.

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### ARTICLE INFO

#### Article History:

Submitted/Received 12 Oct 2023

First Revised 02 Dec 2023

Accepted 18 Feb 2024

First Available online 19 Feb 2024

Publication Date 01 Mar 2024

#### Keyword:

Early intervention,

Family,

Fine motor impairment,

Inclusive school,

MDVI.

## 1. INTRODUCTION

Having a child is a gift for parents. Parents always hope that their children get the best in all aspects, but not all children experience perfect developmental stages. Some children are born with several obstacles that they carry from birth or are caused by delays in developmental aspects. One example is children who experience multiple barriers. A child with a hearing impairment is someone who experiences hearing impairments, the impairments experienced range from mild to severe and are caused by damage or non-functioning of part or all of the hearing apparatus.

Deaf children experience verbal communication disorders. They have difficulty understanding complex and abstract information. They are visual learning students because they optimize their visual senses in the learning process (Rizqita, 2022; Maryanti et al., 2021). Blind children are divided into two categories, low vision and blind. These categories differ in terms of their education and overall life. They optimize their hearing function during the learning process. They have difficulty understanding abstract and complex things (Maryanti et al., 2021; Maryanti et al., 2022).

A person who has visual and motor impairments, or other multisensory impairments, that interact and have a combined impact on development is known as Multiple Disability Visual Impairment (MDVI). Compared to other impairments, MDVI with its characteristics of hearing loss and visual impairment faces more unique challenges, one of which is sensorimotor impairment (Correa-Torres et al., 2021).

Gross motor and fine motor are part of physical and motor development in children. Fine motor skills are a large part of a child's body. They require coordination and movement, in this case requiring more energy because they are carried out by larger muscles such as arms, legs, and muscles throughout the child's body. Meanwhile, fine motor only involves certain parts of the body consisting of small muscles (Mahmudah & Watini, 2022). Movements in fine motor tend to be movements that require hand-eye coordination (Hana et al., 2020).

Children who experience fine motor delays are often experienced in early childhood, not only children who experience special needs but children in general or typical children also experience. Often these fine motor barriers are not detected early because many assume that this is normal at the stage of child development. Developmental delays in motor skills greatly affect other skills. Because motor skills contribute to conceptual abilities, support social skills, and other key supporting skills in everyday life (Purwandari et al., 2022). Children with fine motor delays can develop their potential, one of which is through the development of educational programs. The development of educational programs is very important because if when the child is an adult, intervention is only started, the child will be less likely to acquire effective language and speech skills and if language and speech development is hampered, the child cannot become a real social being (Taqiyah & Mumpuniarti, 2022).

Inclusive education in Indonesia is organized with various objectives, one of which is to provide the widest possible opportunity for all children, including children with special needs, to get a proper education according to their needs. The Salamanca Statement and Framework for Action on Special Needs Education (in Alkhateeb, 2023) organized by UNESCO in 1994, states that inclusive education is one of the best educational practices to respond to the diversity of special needs for all students. Parents also have an important role as supporters of the successful implementation of inclusive education. Parents are the individuals closest to the child, who know best about the child's growth and development, the child's condition, and the child's strengths and needs.

Problems experienced by children with certain obstacles are not only experienced by the child himself but also experienced by the family, especially parents as the closest party to the child's life (Nurhidayah, 2020). As the closest party to the child, the family, especially the parents, is one of the sources that has the potential to help children develop more optimally. A form of family-based early intervention service is commonly called family-centered care, which is an intervention program for children with special needs where professionals work for families and encourage families to become important decision-makers in child development (Nurhidayah, 2020). Family-based programs are designed based on the needs of children and the potential of families in developing children's development to be more optimal.

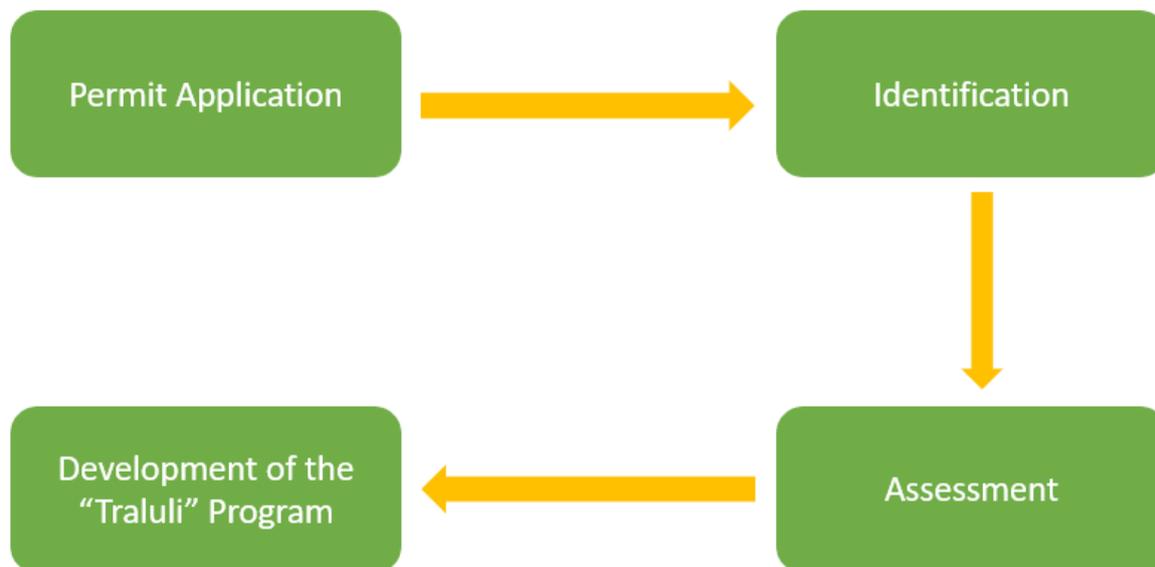
Currently, many studies discuss family-resourced early intervention programs, including early intervention research on learning difficulties (dyscalculia) for elementary school students (Ibrahim *et al.*, 2021), Implementation of family-based early intervention for children with special needs (Sidik *et al.*, 2022), Early childhood intervention for children with autism (Ismet, 2019), Increasing knowledge of early intervention in language and speech for children with special needs with an accommodative service model (Edyyul *et al.*, 2021), and Parental involvement in the intervention of children with special needs (Tantiani, 2020). However, until now there has been no research on family-sourced early intervention programs for those with delayed fine motor development in inclusive schools.

The purpose of this study was to develop a family-resourced early intervention program for MDVI children with fine motor impairments in inclusive schools. To develop the program, this study used a qualitative descriptive approach. A six-year-old child with multiple disabilities and visual problems was the subject of this study. In one of the inclusive schools in Bandung, the student is currently in kindergarten. An early intervention program using family resources was designed to help children overcome fine motor problems. It is hoped that the development of this family-resourced early intervention program to address barriers in fine motor will maximize children's development. The research is expected to be a reference for parents, teachers, and special education teachers to help children develop their best abilities and overcome fine motor barriers.

## 2. METHODS

The research method used in this study uses a qualitative descriptive method. Qualitative descriptive methods are used to assist in obtaining comprehensive data. This study focuses on a 6-year-old subject who experiences multiple disabilities and visual impairments (Deaf and blind) in one of the inclusive education providers in Bandung, Indonesia.

**Figure 1** is the flow used in this study. This research began with licensing the school that organizes inclusive education in the city of Bandung. The school has given permission, followed by identification in the kindergarten class to find one subject who experiences obstacles and needs intervention. The subject has been found at the identification stage and then an assessment is carried out to find the most basic and important obstacles for intervention. Families and class teachers have also carried out an assessment process with interview techniques to explore child and environmental data more deeply. The assessment results that have been obtained are then used as the basis for program development.



**Figure 1.** Program development flow.

### 3. RESULTS AND DISCUSSION

#### 3.1. Subject Demographics

Children with special needs can experience more than one barrier. Children with multiple disabilities experience visual impairment commonly referred to as MDVI. MDVI refers to individuals who have visual impairments and other disabilities, such as cognitive, motor, or sensory impairments (Sunardi, 2018). Children with MDVI often have other impairments such as fine motor skills. Pertokorpi (2023) suggests that children with visual impairment have complex conditions, usually with intellectual, sensory-motor, and auditory impairments.

The environment closest to the child is the family, so the early intervention process needs to involve the family as a potential to develop the child's potential optimally. Families can use internal and external resources effectively to make internal adaptive adjustments when facing difficulties or challenges. This allows the family to cope with problems more flexibly and efficiently, and intervene well (Ren et al., 2024). Best practice in early intervention involves parents and practitioners working together to set goals for the child's treatment and ensure parents can implement elements of the intervention at home (Estes et al., 2019).

#### 3.2. Program Development

The subject in this study was a child who experienced MDVI (deaf and blind) in one of the inclusive schools in Bandung, Indonesia. The family is involved in the development of this program as the individual closest to the child. The name of the program "Traluli" is an acronym in Indonesian that means tracing to develop fine motor skills for "Li" (initial subject name).

Motor skills are the process by which individuals develop their movement abilities into coordinated, controlled, and organized responses. Motor skills are the ability to coordinate the work of motor nerves carried out by the central nervous system to carry out activities. Fine motor development is very important, especially when the child holds a pencil or stationery properly and correctly. The child also can observe something and perform movements that involve certain body parts and small muscles and require precise coordination.

Children who experience MDVI often experience other obstacles such as fine motor skills. Through fine motor development programs, children can learn and gain knowledge and

experience in developing their fine motor skills. Many children's games have been tried by both schoolteachers and parents but do not pay attention to the developmental stages according to their needs. The activity of tracing or thickening the lines is one of the media to stimulate children. Fine motor skills in preschool children must be stimulated through a continuous and targeted training process. It can be proven that children's fine motor development is not the same between one child and another. Therefore, it is necessary to develop children's motor skills so that children can carry out daily activities (Pratiwi, 2017).

MDVI children who experience barriers with fine motor skills need to be given an intervention to overcome the barriers they experience. The intervention program needs to accommodate the needs of the child by considering the developmental stages of the child. The child as the subject in this study is 6 years old.

Mustafa and Sugiharto (2020) suggest the milestones of fine motor skills aged 5-6 years consisting of children can copy triangular images, use clothespins to transfer small objects, cut with scissors, write first names, draw diamonds, write family names, write short sentences, cut scissors simple shapes, copy shapes, color pictures in lines, use pencils with fingers, paste and glue correctly, can draw basic pictures, write in the form of letters, can color in pictures, can thread small beads. draw people or complete pictures that have missing parts, copy simple words, write their names, make puzzles that have up to 12 pieces, and play with building toys. Of these several stages, if a child misses any of them, the child will experience obstacles in fine motor skills.

Research conducted by Yiğit-Gençten and Jones (2021) suggests that in pre-writing activities as preparation for school age for children aged 4-6 years, early childhood needs to have skills, including holding writing tools, opening and closing books, using an eraser when you have to erase drawings or writing, how to sit properly, the ability to make scribbles, draw straight lines, oblique lines, curved lines, triangles, rectangles, and circles (Yiğit-Gençten & Jones, 2021).

In this study the subject experienced delays and fine motor development. Based on the results of the assessment with interview techniques, and observation with tests with several related parties, it was found that the subject was not yet able to write as expressed by Mustafa and Sugiharto (2020), and Yiğit-Gençten and Jones (2021). Of the three theories revealed by experts following the process of the subject's assessment results where the subject has not been able to write properly due to a lack of fine motor training to prepare for his pre-writing activities.

The child as the subject in this study requires an intervention program to overcome the obstacles he experiences. Training fine motor skills is the main thing in developing a program to train fine motor skills. The development of a family-resourced early intervention. The environment closest to the child is the family, so the early intervention process needs to involve the family as potential to develop children's potential optimally. Family-centered intervention is an approach that works together with the family to respect the family's values and choices (Pickard *et al.*, 2023).

Gracia-Grau *et al.* (2021) stated that the role of family-based early intervention includes giving families a role in program administration, collecting information about the needs of children and families, collaborating with families through equal relationships, planning interventions with families, giving families the possibility to determine success. intervention. Early intervention based on family resources also has important components, including the application of an ecological and systemic approach, considering the importance of the family's natural environment, family empowerment, and collaborative consultation with the family (Dalmau *et al.*, 2017). Huang *et al.* (2023) in their research stated that to achieve the goals of

an early intervention program based on family resources, it is important to understand the opportunities and challenges of the family.

The aspect of writing beginnings (tracing) using tracing card media and markers that are made interesting for children. Tracing cards consist of 2 materials, namely tracing lines with shapes. Tracing card lines with straight, zigzag, and wavy shapes. Tracing card shapes with triangles, rectangles, and circles. The method used in this program is the Montessori method. In Montessori activities, educators and/or parents play a passive, observational, or active role in guiding children's learning.

The material in Montessori activities is multi-sensory, involves the child, and maintains the child's interest in the task. The Montessori method has several key principles, one of which is giving them the freedom to choose how long and where (e.g. on the carpet, at a desk), and organizing the day into 2.5 to 3-hour uninterrupted work periods (Demangeon et al., 2023).

The steps for implementing the program are in **Table 1**. Different tracing cards are used for each exercise. Tracing cards have different levels of difficulty. The application starts with the easiest line tracing which is straight, zigzag, and wavy.

**Table 1.** Family resource intervention program.

Aspects	Program	Goals	Activities	Methods
Fine Motor	Beginning writing (tracing)	Parents have the skills to train children's fine motor skills in beginning writing (tracing).	Training fine motor skills in children: <ol style="list-style-type: none"> <li>1. Discussions are held in an environment with a supportive atmosphere.</li> <li>2. Parents have explained the child's ability and needs based on the results of the assessment.</li> <li>3. Parents are given explanations and training on the stages in training children's fine motor skills, namely starting writing by tracing lines and shapes. With details:               <ol style="list-style-type: none"> <li>a. Parents condition their children in a pleasant atmosphere, namely learning while playing with their parents.</li> <li>b. Parents provide stimuli for children to play by using work cards for reusable tracing and markers. The stimulus given can be by showing the child a card while playing</li> <li>c. Parents give directions to children on how to trace using work cards.</li> <li>d. Parents give children reinforcement by repeating directions or how to do things tracing if it's still wrong</li> <li>e. Parents give appreciation to children in the form of praise by clapping their hands and high-fiving them</li> </ol> </li> <li>4. Parents are explained how to assess children's tracing results.</li> </ol>	Drill Method

**Table 1 (Continue).** Family resource intervention program.

Aspects	Program	Goals	Activities	Methods
			5. Parents are explained other children's fine motor skills training if they are practicing fine motor skills in tracing/tracing activities with a plot: <ol style="list-style-type: none"> <li>a. If a child traces something that does not match the pattern, they are required to repeat it</li> <li>b. If the child traces according to the pattern but the dotted lines are not completely covered with markers then need to be repeated.</li> <li>c. If the child traces according to the pattern and the dotted lines are completely covered with a marker then it can be repeated to ensure the child can</li> </ol>	
Fine Motor	Beginning writing (tracing/	Parents have the skills to train children's fine motor skills in beginning writing (tracing).	6. Parents have explained the procedures for filling out progress reports.	Drill Method

Tracing lines with three different shapes needs to be completed perfectly. Children who have been able to do straight-line tracing perfectly on three different shapes are then continued to the shape tracing material with the same flow of application. **Table 2** shows the Criteria to determine the child's ability to do tracing needs to be recorded. The child's ability will be recorded on the program progress report card. Tracing activities on each worksheet requires assessment. The assessment can be done by the mother/father by filling in the assessment rubric below as a progress report.

Score 1 if the child can do tracing but wrong/not according to the pattern. Score 2 if the child can do tracing with help but there are still mistakes such as dotted lines that are not perfectly covered with markers. Score 3 if the child can do tracing independently but there are still mistakes such as dotted lines that are not perfectly covered with markers. Score 4 if the child can do tracing independently well.

**Table 2.** Assessment sheet.

Date	Material	Report				
		Trial Number	Score			
			1	2	3	4

#### 4. CONCLUSION

Based on the results of this study, it can be concluded that MDVI children with fine motor barriers need an intervention program as early as possible to avoid other obstacles that arise because of their fine motor barriers. The family is a very potential resource in implementing the intervention program as the individual closest to the child. The child's fine motor skills at the pre-writing stage of his age. The maturity of fine motor development will also help them to write better and not get tired when they must complete many school assignments related to writing. Through fine motor development programs, children can learn and gain knowledge and experience in developing their fine motor skills. Many children's games have been tried by both schoolteachers and parents but do not pay attention to the developmental stages according to their needs. The activity of tracing or thickening the lines is one of the media to stimulate children.

#### 5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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