



# Teachers' Level of Knowledge on Multisensory Learning Methods

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**Abstract.** This study aims to provide training to teachers on multisensory learning methods with the Orton-Gillingham approach to address specific learning difficulties in students at Sekolah Indonesia Davao. Specific learning difficulties, such as dyslexia, dysgraphia, and dyscalculia, can be an obstacle in students' learning process. The multisensory learning method utilizes various senses such as visual, auditory, kinesthetic, and tactile simultaneously to improve students' concentration in learning. This study used a quantitative approach by measuring teachers' knowledge and skills before and after the training. The study population consisted of 16 teachers in Sekolah Indonesia Davao, and the entire population was used as research subjects. The research instruments were pretest and post-test designed to measure teachers' knowledge and skills. The data were analyzed to measure the improvement of teachers' knowledge and skills after the training. The results showed that 69.44% of teachers have knowledge related to multisensory learning, and 65.2% have skills towards multisensory-based learning.

**Keywords:** Multisensory, Knowledge, Teachers

## 1 Introduction

Specific learning difficulties are learning difficulties that are often found in public schools. Individuals with specific learning disorder may continue to make numerous spelling mistakes and read single words and connected text slowly and with much effort, with trouble pronouncing multisyllable words [1]. They may frequently need to

reread material to understand or get the main point and have trouble making inferences from written text. Santrock [2] states that there are three types of learning difficulties in children: dyslexia, dysgraphia, and dyscalculia. Dyslexia is a category for individuals who have severe impairments in reading and spelling. Dysgraphia is a learning difficulty that includes difficulty in writing by hand. Dyscalculia is an arithmetic development disorder, which is a learning difficulty related to math calculations. Learning difficulties are one of the problems that are often found in the learning process. This problem can arise at school or outside school. In general, 5% and 8% of school-age children experience learning disorders of dyscalculia, students with impaired memory or cognitive deficits that interfere when learning mathematical concepts or procedures [3]. According to Sukarno (in [4] The prevalence of children with learning difficulties found reached) "the prevalence of students with learning difficulties is estimated at 16% of the school student population".

Santrock [5] describes the characteristics of learning difficulties, where children: (a) have normal or above average intelligence, (b) have difficulties in at least one or more subjects, and (c) do not have other problems or disorders, such as mental retardation, that cause difficulties (230). Mulyono Abdurrahman [6] suggests that children who have difficulty learning to read at the beginning experience various errors in reading as follows. a. Omission of words or letters b. Insertion of words c. Replacement of words d. Pronunciation of wrong words e. Pronunciation of words with teacher assistance f. Repetition g. Letter reversal h. Lack of attention to punctuation i. Self-bulging. j. Hesitation or stuttering.

Handling learning in students with learning difficulties can be done with many methods, one of which is the multisensory method. The multisensory method is a learning method that utilizes the functions of each sense tool, namely visual (vision), auditory (hearing), kinesthetic (movement), and tactile (touch) as well as other senses simultaneously to increase concentration in learning and understanding lessons [7]. The multisensory approach is based on the assumption that children will be able to learn well if the teaching material is presented in various sensory modalities. The modalities used are visual, auditory, kinesthetic and tactile, or abbreviated as VAKT [8]

There are two kinds of learning methods that use multisensory, namely the multisensory method developed by Fernald and Orton-Gillingham. The Fernald method is done by training learners to read as a whole, i.e. the words are chosen from the story that the learners make themselves. The Orton-Gillingham method is highly structured and oriented to the link between letter sounds and the combination of letters into words. The child uses a tracing technique to learn each letter and then the letter sounds are combined into words.

According to Learner [9] the initial activity applied using the multisensory method with the Orton-Gillingham approach is that students are focused on learning single letters and combining the letters. Students learn a single letter and its sound by using tracing techniques using colors and images. The single sound is then combined to

form short words. The application of the Orton-Gillingham approach is to use a multisensory approach. Each letter sound and letter symbol form is learned through hearing, speaking, seeing, and writing. These skills are learned and practiced simultaneously and in coordination with each other.

The Gillingham method is highly structured and oriented towards the link between sounds and letters. Each letter is taught using the multisensory method. Letter cards are made in different colors, for example, black for consonants and white for vowels, and each key word is accompanied by a picture. For example, the letter "b" is presented through a ball picture card with the word ball underneath, and the letter "b" is printed in bold. The teacher uses a lot of associations. In general, the teaching steps are as follows. 1. The letter card is shown to the child. The teacher says the name of the letter and the child repeats it many times. When it is mastered, the teacher says the sound, the child repeats it. Finally the teacher asks, "What does this letter sound like?" 2. Without showing the letter card, the teacher says the sound while asking, "What letter makes this sound?" 3. Slowly the teacher writes the letter and explains its shape. The child traces the letter with his finger, copies it, writes it in the air, and copies it without looking at the example [10].

Multisensory learning methods can be trained, for example with learning media, namely making crafts in the form of making pencil boxes using fabrics with natural beads on the top to help learning to trace letters for students with learning difficulties. Based on partner conditions, it is known that students who study at Indonesian schools in other countries will definitely have difficulties and are constrained by language problems. Students at the Indonesian School Davao are known to number 97 students and as many as 25 students have learning difficulties or around 25.7% of students at the school need special service assistance in the learning process. Students who experience learning difficulties will hinder the learning process so training in the application of this method is important to be given to teachers as an effort to help teachers deal with students with learning difficulties in their schools. This is because based on the results of a preliminary study of teachers, it is known that teachers at the Indonesian School Davao have difficulty determining learning methods for students with learning difficulties so they experience obstacles in providing learning services that are suitable for students who have learning difficulties.

Training on the application of multisensory learning methods to specific learning difficulties students at Sekolah Indonesia Davao can be provided to teachers to help teachers recognize one of the learning methods that can help students with learning difficulties in the learning process and be able to become a teacher's provision to deal with other students who may experience the same problems in the future. Thus, students with learning difficulties will get faster intervention than before so that it is expected to improve student learning outcomes because basic reading, writing and counting skills are the main capital in participating in learning activities and where learning outcomes are changes in overall behavior not just one aspect of human potential [11]. Methods

This research uses descriptive qualitative research participative namely research that

uses qualitative data and is described to produce an in-depth picture of the creative thinking of children aged 5-6 years, where researchers also took part in eliciting processes and products think creative. Descriptive qualitative research is research that describes or describes a phenomenon that occurs in the subject and is carried out in-depth (Arikunto, 2010). Respondents of this study involved 88 children 5-6 years old. Observation is the main data and interviews are used as secondary data.

## 2 Methods

This study uses a quantitative approach to investigate the level of teacher knowledge and skills in applying multisensory learning methods with the Orton-Gillingham approach for students with specific learning difficulties at the Indonesian School Davao. Sugiyono [12] explains that quantitative research methods are methods based on the philosophy of positivism, used in researching samples and research populations. Quantitative research is research that presents data in the form of numbers as the result of its research. According to Suharsimi Arikunto [13] that: "Descriptive research is research intended to investigate circumstances, conditions or other things that have been mentioned, the results of which are presented in the form of a research report". The quantitative approach was chosen because this research aims to measure numerically the extent to which teachers' knowledge and skills have improved after attending the multisensory learning method training.

The population of this study consisted of 16 teachers at the Indonesian School Davao who have the responsibility of teaching and assisting students. The sampling technique used in this study is a saturated sample, where the entire population of teachers who meet the inclusion criteria will be the subject of research. According to Sugiyono [14] that saturated sampling technique is a sampling technique when all members of the population are used as samples.

The research design used is One-Group Pre-test-Post-test Design. According to Sugiyono [14] this research design is carried out by looking for data before treatment and after treatment (p.110). This is done to determine the difference in values before and after treatment.

Data collection techniques regarding the level of teacher knowledge and skills in applying multisensory learning methods with the Orton-Gillingham approach for students with specific learning difficulties at Sekolah Indonesia Davao used observation, interview and questionnaire techniques. Observation is done to focus attention on an object by involving all senses to get data [15] (p.86). Interviews are conducted as asking questions and sources who provide answers [16]. and according to Sugiyono [12] a questionnaire or questionnaire is a data collection technique that is done by giving a set of questions or written statements to respondents to answer. The instrument for measuring the level of knowledge and skills in multisensory learning method training and its

application to teachers at Sekolah Indonesia Davao has been designed in accordance with the grid. Each item of the instrument refers to indicators that describe the aspects of knowledge and skills being measured. The lattice of the knowledge level measurement instrument includes aspects of remembering, understanding, applying, analyzing, evaluating, and creating which totals 18 items. While the lattice of the teacher skill instrument includes aspects of imitation, manipulation, precision, articulation and naturalization which totals 15 items. These instruments will be used to collect data in this study and will be the basis for analyzing the impact of training on improving teacher knowledge and skills in implementing multisensory learning methods.

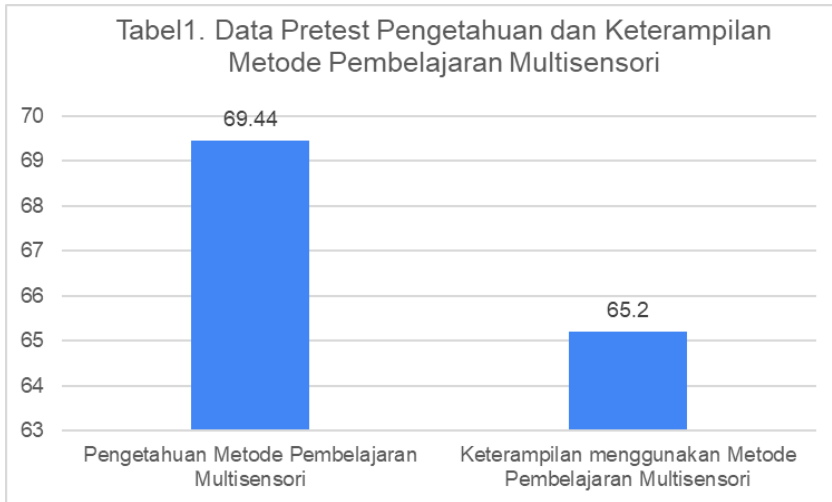
The implementation of this research consists of several stages. The first stage is to collect initial data through pretest on teachers' knowledge and skills in applying multisensory learning methods before the training begins. After that, training on the application of multisensory learning methods with the Orton-Gillingham approach was conducted. This training includes exposure to the concept of multisensory methods and teaching techniques using this approach.

The next stage is post-training data collection through a post-test of teachers' knowledge and skills after the training is completed. The data obtained from the pretest and post-test will be statistically analyzed to measure the improvement of teachers' knowledge and skills after the training. Data analysis will involve calculating the percentage increase in teachers' knowledge and skills.

### **3 Findings and Discussion**

#### **3.1 Findings**

The implementation of the training will begin with giving a pretest, then the test will be conducted again at the end of the training session to determine the increase in knowledge that teachers have after implementing training on multisensory methods for children with learning difficulties. In the knowledge aspect, there are several aspects including: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating. Where each aspect has 3 item questions. Furthermore, the implementation of the training program leads to teacher skills using multisensory methods carried out after filling out a knowledge test with several aspects which include the following: Imitation, Manipulation, Precision, Articulation, and Naturalization. Where each aspect also has 3 item questions. So that from the implementation of the test can be taken from the picture below.



A test on the knowledge and skills of multisensory methods among 16 Davao Indonesian School Teachers showed that 69.44% of the teachers had knowledge of multisensory learning and 65.2% had skills in multisensory-based learning

### 3.2 Discussion

In this study, the pre-test data on the level of knowledge obtained by teachers in training on the application of multisensory learning methods to students with specific learning difficulties in Davao Indonesian schools was 69.44%, while the level of skills obtained by teachers in the pre-test data was 65.2%. Which is in line with research conducted by [17] where training is carried out using multisensory methods with science learning programs. The training is carried out and can produce quite good results. However, there are also several evaluations where the multisensory learning program can be implemented more structured or structured and the spread of ideas that must be developed to be even better [18]. Some Orton-Gillingham programs can be effective because they depend on the skills, knowledge and dedication of teaching professionals. It is the only valid enhancement program for many children with learning difficulties.

Improving teachers' understanding through training also contributes to positive beliefs and adequate training. There are a number of diagnostic steps that teachers can take in order to identify learning difficulties in children. Some of these steps include: analyzing an existing diagnosis result, then determining certain strategies and skill areas that require improvement, and finally compiling an improvement program and then implementing the improvement program [19]. To fulfill the data needed in writing scientific journals, pretest and posttest data are needed, in the implementation of activities carried out online, the teacher's pretest results are known, to get the posttest results

after the teacher applies the multisensory method planning. The implementation of the posttest will be carried out in September week 2 offline at the Indonesian School Davao.

This study adds a new element to most of the previous research on knowledge and skills training through sensory learning methods for teachers in schools. The results showed that after the pre-test many teachers had significantly better knowledge and skills. And this training has a positive impact on teachers who teach in schools, thus creating a teacher who understands more about multisensory learning.

## 4 Conclusion

Based on the results of the study "Teachers' Level of Knowledge on Multisensory Learning Methods" the pre-test data on the level of knowledge obtained by teachers in training on the application of multisensory learning methods for students with specific learning difficulties at the Indonesian school Davao was 69.44%, while the level of skills obtained by teachers in the pre-test data was 65.2%.

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