



# Increasing Knowledge and Skills of Disabilities through Training in Cultivation in Organic Vegetables and Ornamental Plants

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**Abstract.** The main need for people with disabilities is the provision of skills and confidence in realizing their interests and talents. Persons with disabilities should be prepared to have skills to support their independence and life. This study aimed to determine the increase of knowledge and skills through training in the cultivation of organic vegetables and ornamental plants for students with disabilities in Jember Regency. The study was conducted using the One Group pre-posttest design. The sample in this study was determined by purposive sampling. The results show that there is an increase in knowledge about the cultivation of organic vegetables and ornamental plants. Based on the results of student training obtained an average score of pretest 45.4 and an average posttest of 76.2. The results of the score gain test show that the results of the training given to students increases by an average of 0.58 and this value is in the medium average category. The results also showed that there was an increase in skills after being given training. Before the training was conducted, students in the unskilled category were 16.67%, 75% less skilled category, 8.3% skilled category, and 0% highly skilled category. After training, students in the unskilled category was 3.33%, the less skilled category was 36.67%, the skilled category was 50% and the highly skilled category was 10%. The results of the analysis shows that there are differences in students skills before and after training. The results show an increase the skills of students after training

## 1. Introduction

According to experts, diffables are someone who has a physical disorder or disorder that can interfere with activity. According to the Big Indonesian Dictionary (KBBI), diffable is a deficiency due to an accident or another that causes deficiencies or limitations in himself physically. Based on data from Badan Pusat Statistik, Population Census in the 2010 of Jember Regency showed that the number of people with disabilities is 183,386 people from a total population of 1,945,597 people. The problem of persons with disabilities, especially in Jember Regency, is still seen only from one side, namely that disability is one part of social welfare problems (PMKS), so that the handling still tends to involve the Office of Social Affairs.

Referring to data Directorate of PSLB in 2007, the number of children with special needs who have attended formal education has only reached 24.7% or 78,689 children from the population of children with disabilities in Indonesia, namely 318,600 children. This means that there are still as many as 65.3% of children with special needs who are still classified, marginalized and neglected the right to education. Even the figure is estimated to be far greater considering the small prevalence rate used is 0.7% of the population and the poor data collection system [1]. Based on the research [1] the study on

12 inclusion schools in Bandung City shows there are five groups of issues and problems of inclusive education at the school level, namely understanding and implementation, school policy, learning process, teacher conditions, and support system.

The disability of people with disabilities is caused by several factors including lack of access to information, lack of financial support, and lack of training [2]. As with normal people, people with disabilities also need job to maintain their survival. Knowledge is the result of finding out and this can occur after people perceive a particular object [3]. Skills are very important for them to improve the quality of their own lives, family and society. Basically, they need the provision of skills (soft skills and life skills) and confidence in realizing interests and talents.

Other research [4] stated that the development of training forms for children with special needs is adjusted to the characteristics of children with special needs and is flexible, practical and economical so to have high effectiveness. The environment can be used as a model for education, for example as a natural laboratory for learning science, especially biology. Children can take part in creating a better environment for the environment, one of them is through organic farming. Through the practice of farming activities in schools can increase knowledge and skills. This is part of eco-education. For people with disabilities, understanding about life science through direct practice will be more easily accepted. This study aims to determine the increase in skills of disabled students in Jember Regency through training in the cultivation of organic vegetables and ornamental plants.

## 2. Research Methods

The research was conducted in SLBN 1 Jember and YPAC Jember, Jember Regency. The data used are primary data obtained from observations with the responden. Respondents in this research were 30 students at the senior high school level who have physical disability, speech, and hearing impaired. The respondents were given training in the cultivation of organic vegetables and ornamental plants. The research method used was pre-experimental design with One-Group Pretest-Posttest Design [4]. The knowledge and skills of each student can be obtained by analyzing pretest and posttest.

**Table 1.** Research Design

Pre-test	Training	Post-test
O1	X	O2

O1 = Pre-test Score (Before Training)

O2 = Post-test Score (After Training)

X = Treatment

Data collection methods used are tests, questionnaires, and observation, while to analyze data use the normality test (to find out the data obtained is normally distributed or no), homogeneity test (to find out uniformity of sample variance or not taken from the same population), t test, gain test (to find out how much increase from pre test and post test results data). The test method used on this study is a formative test in form multiple choice as a cognitive aspect assessment (pretest and posttest). The instrument used in this study is a questionnaire. The questionnaire used in this study uses an answer with a Likert scale. Likert scale is used to measure attitudes, opinions, and perceptions of a person or group about something. Observation method in this study conducted to find out the activeness of students in cultivating organic vegetables and ornamental plants.

Student skills values can be obtained by analyzing the results of students's pretest and posttest. The results of the pretest and posttest were analyzed by giving a score for each indicator item of student skills in accordance with the assessment rubric that was made. The percentage of total scores of students's knowledge and skills is calculated using the formula [5]:

$$\text{Interpretase score} = \frac{\text{Score Obtained}}{\text{Total Score}} \times 100\% \quad (1)$$

Improved training results are analyzed using Gain score with the following formula :

$$NG = \frac{S_{\text{Posttest}} - S_{\text{pretest}}}{S_{\text{maks}} - S_{\text{pretest}}} \quad (2)$$

NG = gain score

NG 0,3, low

0,3 < NG 0,7 , medium

NG > 0,7, high

To categorize the skills of each student based on the percentage score obtained by following the following criteria [6]:

**Table 2.** Skill Category

Percentage Score (%)	Category
1-25	Unskilled
26-50	Less Skilled
51-75	Skilled
76-100	Highly Skilled

To analyze the skills of each indicator can be known by counting many students who get highly skilled categories, skilled, less skilled, and unskilled on each indicator item. Then calculate the interpretation of each category using the formula :

$$\text{Category Interpretation} = \frac{\text{Number of students in the category}}{\text{The number of students}} \times 100\% \quad (3)$$

### 3.Result and Discussion

Training activities for students with disabilities include training in the cultivation of organic plants and ornamental plants. The cultivation of organic vegetables is carried out in several stages of activities including preparation of planting media, seeding, planting, fertilizing, and harvesting. While for ornamental plants, there are multiplication of ornamental plants, planting and maintenance. The training was carried out for approximately two months. The training is given directly by being accompanied by their teacher to facilitate the communication. The training activities provided several thing including :

- Preparation of activities in both partners. Several things were prepared before the team conducted activities, namely the manufacture of verticulture shelves, provision of planting media for vegetables or media for cactus and succulent ornamental plants, vegetable seeds, polybags, pots and other garden tools.
- Briefing Activities. The activities in both partners began with a briefing in the class that discussed various planting media, the composition of planting media for vegetables and ornamental plants, the discovery of seeds, how to maintain and fertilize organic and how to harvest vegetables.
- Activity of vegetable nursery practices and propagation of ornamental plants. This activity was carried out by mixing nursery planting media for vegetables, planting seeds on trays or polybags, then continued with mixing planting media for cactus and succulent plants, planting seeds from plants and arranging on shelves.
- Transplanting practice activities. Beginning with mixing several kinds of planting media which are then placed on paralonals. Some models of verticulture shelves provided are used to grow vegetable seeds.
- Plant maintenance activities which include weeding by removing weeds that are around the plants, fertilizing with liquid organic fertilizer. Participants are taught about how to mix POC with water according to the dosage on the packaging.
- Harvesting activities. Participants are taught how to separate vegetable crops harvested with planting media. Vegetables that have been separated from polybags or paralon are washed with water to separate the soil that is still attached to the roots of the plant.



**Figure 1.** Planting Activities



**Figure 2.** Plant Maintenance

**Figure 3.** Planting Ornamental Plant

### 3.1. Increasing Students' Knowledge through Training

From the results of this research there are two groups of data, namely the pretest and posttest data. Pretest is given to students before training, and posttest is given after training. The results show that there is an increase in knowledge about the cultivation of organic vegetables and ornamental plants. Based on the results of student training obtained an average score of pretest is 45,4 and an average score of posttest is 76,2. The results of the score gain test show that the results of the training given to students increases by an average of 0.58 and this value is in the medium average category. Each students have different ability to understand training materials, there are some students who do not understand the material during the training process. This is appropriate with the Individualized Instruction theory [7], which states that a person has different basic abilities, interests, and learning speeds.

**Table 3.** Pretest and Posttest Scores

Variable	Pretest	Posttest
The number of students	30	30
The highest score	50	86
The lowest score	32	58
Average score	45,4	76,2

In the training process, students are given a cultivation guide module, and also play a cultivation video. This props or the visual aid is expected to facilitate the learning process and improve students' ability to understand training material. Some research [8] states that visual aids has some benefits including ; (1) learning will be more attract students' attention, so that it can grow motivation to learn; (2) clarify the meaning of learning material and make the student easy to learn, so that learning objectives can be achieved; (3) The teaching method will be more varies, so students don't get bored; and (4) Students can get more doing learning activities because not only listen to the teacher's description, but also other activities, like observing, practice, demonstrate, and others. By using visual

aids for students with disabilities, students are expected to be easier understand and remember the training material.

### 3.2. Increasing Students' Skill through Training

Based on observations of students' skills in cultivation practices and the results showed that there was an increase in skills after being given training. Before the training was conducted, students in the unskilled category were 16.67%, 75% less skilled category, 8.3% skilled category, and 0% highly skilled category. After training, students in the unskilled category was 3.33%, the less skilled category was 36.67%, the skilled category was 50% and the highly skilled category was 10%.

The skills of students in the cultivation of vegetables and ornamental plants are assessed from: (a) The ability to recognize and prepare the planting media correctly, (b) The ability to sow vegetable seeds, (c) The ability to plant properly according to instructions, (d) Ability to multiply ornamental plants, (e) Diligently taking care of plants and plants grow well. Plants that grow well indicate that students have been caring for and maintaining plants according to the correct procedure. Good care and maintenance is characterized by 85% of plants growing well from the number of plant populations. Evaluation and assessment activities are carried out regularly every 2 weeks.

Training provided to children with disabilities has many obstacles. Differences in the characteristics of each individual requires adjustment in the learning or training process. Children with special needs have differences in learning process [9]. So that, the influence of class teachers becomes very important in determining the success of the learning process. In this case, the teachers continue to be involved in the training and learning process that is carried out for 2 months.

In the process of empowering diffables through training, it is very important to foster their motivation. The motivation will shape their personality, which will encourage them towards independence. In the end it will foster a character that is confident, active and has extensive knowledge and the goal of independent living can be achieved [10]



**Figure 4.** Maintenance Activities

**Figure 7.** Plant Harvesting

Based on observations in this research, it can be said that the improvement of students' skills is also strongly influenced by their enthusiasm, motivation, and self-confidence. The active and enthusiasm students for training activities proved to be more skilled in the cultivation of organic vegetables and ornamental plants carried out in the school yard. Fun training methods and the participation of teachers also influence students' motivation to participating in training. Based on the observations, the things that become obstacles to the training process are communication constraints and the speed of receiving learning material that is relatively slower.

## 4. Conclusion

Training in the cultivation of organic vegetables and ornamental plants for students with disabilities can improve students' knowledge which can be seen from the comparison of pretest and posttest

scores. Based on the results of student training obtained an average score of pretest 45.4 and an average posttest of 76.2. The results of the score gain test show that the results of the training given to students increases by an average of 0.58 and this value is in the medium average category. The results also showed that there was an increase in skills after being given training. Before the training was conducted, students in the unskilled category were 16.67%, 75% less skilled category, 8.3% skilled category, and 0% highly skilled category. After training, students in the unskilled category was 3.33%, the less skilled category was 36.67%, the skilled category was 50% and the highly skilled category was 10%.

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