

**FINAL REPORT
DIPA BIOTROP 2018**

**IMPROVING COOPERATION AND NUTRITION AMONG SPECIAL
NEED STUDENTS AT SCHOOL OF HUMAN BEKASI
THROUGH VERTICAL
AND RAISED BED ORGANIC GARDENING
WITHIN THE TEAMWORK METHOD OF LEARNING**

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1. Research Title: IMPROVING COOPERATION AND NUTRITION
AMONG SPECIAL NEED STUDENTS AT
SCHOOL OF HUMAN BEKASI THROUGH
VERTICAL AND RAISED BED ORGANIC
GARDENING WITHIN THE TEAMWORK
METHOD OF LEARNING

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- 5. Research Budget :

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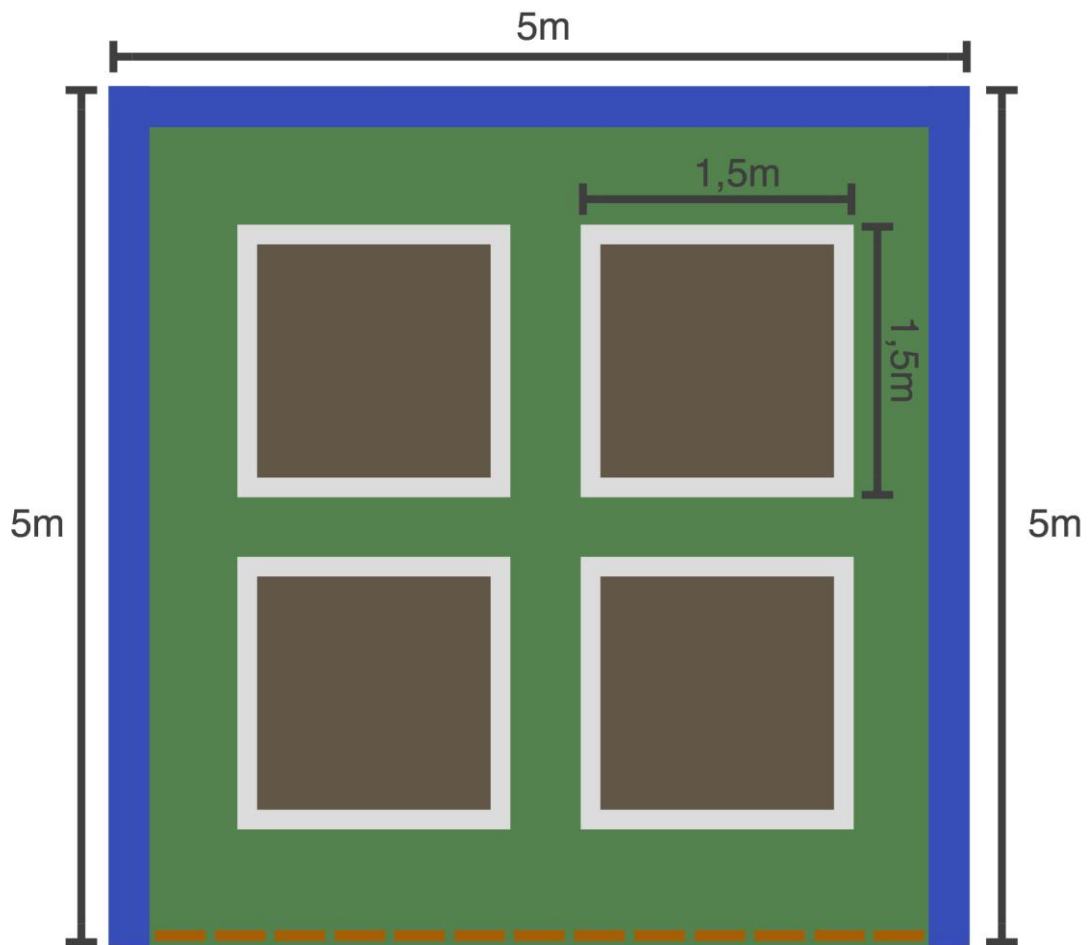
A. INTRODUCTION

1.1. Background

Based on data from the Central Statistics Agency or the Central Statistics Agency (BPS), the number of special needs students (ABK) in Indonesia reached 1.6 million children. To provide access to education for students who are not enrolled in special schools, Kemendikbud has run the School Inclusion Program.

School of Human is inclusive school where children with special needs learn together with the regular children. Every child has the same right to learn, socialize, and develop their talents and interest. School of Human recognizes that every child is a winner, every child is unique and has different talents. School of Human ensure that there is no God's creation is considered as a failed product, including children with special needs. They are like angels who will lead us to heaven. They are our inspiration. Learning about special needs students is like diving into the deep sea. In the 2017/2018 academic year, the School of Human has received 28 children with various special needs.

Raised bed garden is a method of gardening that uses land bounded bricks, wooden planks or other material that can hold the soil. Gardening method has been chosen for this project because of the area in the school consists of a pile of rubble thus infertile if planted directly. In addition, the school has a blank wall that can be maximized for a vertical garden with plastic bottles as a medium hanging plants. Bottles can also be simply placed on the ground. Organic Gardening aims to glorify the soil, reduces pollution due to chemical fertilizers and pesticides are not safe and healthy for students.



Raised Bed Garden

Figure 1. Model Raised Bed Garden

Special needs children generally have a high touch sensitivity. They would be very uncomfortable with dirty things like holding the ground, holding the worms and compost. With raised bed garden as a medium, students are expected to train their sensory and motor skills in digging or plowing the soil, make holes in the ground, put a seed into the hole, watering plants, and mixing fertilizer. In addition, like other students, special needs students do not consume enough vegetables as their diet. They tend to like fast food or processed foods. However, with this project, they are expected to grow their own vegetables in the school garden, and eventually they want to eat vegetables that they grow so they get adequate nutrition.

2.1. Objectives

1. General

To determine the usefulness of the team work method in learning about the vertical garden and raised bed garden and in enhancing cooperation and nutrition on special needs students in School of Human Bekasi.

2. Special

- a. To determine the initial ability of special needs students in raised bed garden and vertical garden in School of Human Bekasi.
- b. To implement the team work method within raised bed garden and vertical garden model to improve cooperation and nutrition of special needs students in School of Human Bekasi.
- c. To assess the ability of the learning process of special needs students on raised bed garden and vertical garden model after using team work method in School of Human Bekasi.
- d. To find out the benefits of team work methods to improve the nutrition of special needs students in School of Human Bekasi through raised bed garden and vertical garden model.

3.1. Expected Output

The expected output of this research is the improvement of nutrition and cooperation through the raised bed garden and a vertical garden method on special needs students in School of Human.

B. Benefits and Importance of research

The following are the expected benefits of this research:

a. for students

Can improve cooperation between them and improve their nutrition.

b. for teachers

It can be used for guidelines for teachers in teaching students, especially special needs students on specific skills such as gardening.

c. For school

It can be used as a new policy related to the learning process in order to improve the quality of education.

C. Methodology

I. Overview Setting Research

1. Research Place

Action research will be conducted at School of Human Jalan Mendut 126 Kranggan Jatisampurna Bekasi, West Java.

2. Research Time

This research will be conducted in the first half of the academic year 2018/2019 in July - November 2018.

3. Research Subject

This research will involve special needs students in School of Human amounted to 12, consisting of 6 men and 6 women. They are students with autism, ADHD, Down syndrome, cerebral palsy, and learning disorders.

4. Data source

a. Students

To obtain data about their activity and their ability to learn the outcome of the learning process. The students will be divided into 4 groups, each group consist of 3 students. They are grouped by different ability. One group consisted of 3 children with different abilities so that they can work together.

The students will perform gardening after school hour, which is when ekskul 14:30 until 15:30, once a week. Each group will get a raised box garden and for verticultur they do it together with other groups because we provide the 4 boxes of raised beds and a vertical garden for all students, especially for students who use wheelchairs. To create a garden verticultur, we use a plastic bottle and cut it so that it can help students improve their motor skills.

b. Teacher

To see the success rate of the method uses organic gardening team work on raised bed garden. There are 7 tutor or buddy involving these observations. They will guide the students during the process of gardening, preparing

equipment and materials, observing each student as an individual, and interviewing students.

5. Tools and materials

- a. Initial observation sheet
- b. Gardening equipments: hoe, soil, compost, liquid fertilizer, hebel, water hose, poly bags, bottles, scissors, knives, seeds, and metal wire.
- c. Seeds of vegetables such as green spinach, red spinach, kale, eggplant, cabbage, celery, pakchoy, scallions, tomatoes, basil, okra, bitter gourd, beans, lettuce, etc.
- d. The final observation sheet

II. Technique and Tools for Data Collection.

1. Data collection technique

a. Observation

Used to collect data about their activities and the ability of the child before the research and implementation of the use of team work method.

b. Interview

To obtain data on the success rate of implementation of the use of team work method in organic garden model and raised bed garden. The teachers will interview each student before and after the project so that we can compare the results.

c. Data collection tool

Data to be observed are as follows:

The cognitive aspect:

1. Children's knowledge about organic gardening.
2. Children's knowledge about organic gardening media.
3. Children's knowledge about organic gardening container.
4. Children's knowledge about the sequence of steps organic gardening such as:
 - a. Build raised beds and verticultur using Hebel and bottles.
 - b. Mixing soil and fertilizer
 - c. Seeding
 - d. Sprinkling

- e. Fertilizing
- f. Take care the plants
- g. Harvesting
- h. Cooking

Psychomotor aspects:

1. Children's skills in making the planting medium.
2. Children's ability to make organic fertilizer.
3. Children's ability to make organic pesticide.
4. Children's ability to mix soil and fertilizer.
5. Children's ability to choose good seeds.
6. Children's ability to seeding.
7. Children's ability to watering.
8. Children's ability to take care for plants.
9. Children's ability to harvesting.
10. Children's ability to cooking the crops.

Affective aspects:

1. Children have a caring attitude towards the environment.
2. Children have an attitude of cooperation.
3. Children appreciate their work.
4. Children are curious about new knowledge.
5. Children have an attitude of responsibility.
6. Children have an attitude of gratitude.

D. Results and Discussions

Based on preliminary observations, 7 students like to eat vegetables and always having vegetables per day, 3 students do not like vegetables and do not eat vegetables every day, two other students like vegetables but not every day eating vegetables. But all the children want to eat vegetables from their own harvests.

Special need students have different limitations, there are some children who can cooperate with his friend, others still need guidance from their buddies. Gardening is therapy to improve cooperation among students.

Some special needs students are also less active and exercise. Most of them like to eat fast food. This is causing special needs students to have weight problems and obesity. With gardening, they can be active, minimum once in a week. After harvest, they can cook vegetables and eat together with their friends. By cooking and eating together, they are more like to eat vegetables in a fun way, so for some students will eat vegetable more frequently and likes to eat vegetables, so that they can achieve balance nutrition for their body.

During the research, there are three aspects are observed directly, they are cognitive, psychomotor, and affective. The nutritional aspects using the data of height and weight, and interviews with students. The results of the observations are as follows:

1. Cognitive aspects

Most students do not know about organic gardening, they know the technique of raised bed garden for schools have been implementing the model. Students know the media for organic gardening, the soil and compost and manure. For the container itself, the students know the manufacture of raised bed using bricks and build like a bed and filled with soil, another container that is using container seedlings and polybags. We do not use plastic bottle or plastic cup for the vertical garden because the wall will be torn down. For planting, they still need guidance because they only know how to planting, watering, and harvesting. They do not know the treatment against pests and mowing.

2. Psychomotor aspects

For psychomotor, the buddy observe firsthand and to provide guidance to the students how to make the media, mix the fertilizer with the soil, making pesticides and applying it to the plants, weeding the weeds, choosing the good seeds, seeding, move the plant from the media to another media, watering, harvesting, and cooking the crops.

Here, students have been provided four raised bed garden plots, each plot size 2 x 1.5 meters. One plot for a group of 3 students and accompanied by two buddies. Students are grouped by ability level and their limitations, so they have the ability evenly in each group. In one group, students were given the same task, and each group must be responsible for their crops in their plot, so that they work together to plant on raised beds to grow with their group. Each group was also given a daily duty schedule to watering all plants.

Based on observations, special need students have different treatment and approaches. Students with autism should be reminded often of duties and responsibilities, they are rather difficult to work with their friend, but they can do their work quickly. Students with ADHD and Down Syndrome have a good cooperation with friends, but they are very slow in doing their job. For Cerebral Palsy students they need translators because they are somewhat difficult to communicate with their friends, they can cooperate but rather a long time to do their job, with gardening they can therapy their motoric and train their muscles.

Overall, it can be said special needs students can cooperate well with their friends, especially group mate. They did a good job, both accompanied and independently. They have a responsibility to take care for and maintain their plants daily.

They are most interesting in sowing, watering, and of course harvest. Male students harvest and wash vegetables, while women help teachers and buddy made seasoning and cooking. They are very voracious eating the vegetables they harvested. Students are less like to eat vegetables so fond of eating vegetables and want to plant more vegetables at home and school.

3. Affective aspects

Affective attitude is shown before gardening, during gardening, and after gardening. Before gardening, they come to the garden in time, sometimes there are some students who reminds the teacher and buddy for time gardening. This reflects good discipline. The cooperation is shown when gardening, they work together and do their job well. After gardening, they return the tools they have used in their place. They began to be responsible for the tools and their crops. Gratitude and appreciation is shown by watering, caring for, and finish their vegetables.

4. Nutritional aspects

We measure the nutritional aspects of weigh and height of their body. Students who join gardening are having problem with their weight, they belong to families who were able to fulfill nutrition. But what they eat are not nutritionally balanced, it can be seen from most students suffer from obesity due to consumption of foods high in fat and calories, they are also less active so that their weight is above normal. There are some students who previously

don't like vegetables or vegetable consumption is insufficient even daily needs. With gardening and cultivating vegetables for their own consumption, they became fond of eating vegetables. So the balance nutrition can be fulfilled. Below is a table of weight and height of students with special needs who follow extracurricular gardening in School of Human

No	Student's Name	Weight (kg)	Height (cm)
1	Arryo	62	173
2	Amel	96,5	158
3	Haisha	45,1	160
4	Khaira	44	149
5	Syifa	61,1	160
6	Samuel	85	190
7	Azzam	49,4	173
8	Auzan	63,8	168
9	Aby	78,3	165
10	Tegar	52	161
11	Andra	88	165
12	Billy	104	168

Table 1. Table of weight and height of students

E. Conclusions

The conclusion from the results and discussion above is with organic gardening techniques raised bed garden can improve the nutrition and cooperation of special needs students in School of Human. The cooperation, approaches, and nutrients need may vary every student.

F. Chairman and Team Members Researchers

The researchers in this study as follows:

1. Master Researcher

Name: Tri Mariyanti, S.Pd

Duties: 1. Make a Proposal

2. Implement the action research

3. Make a report

2. Collaborators

Name: Ima Rani

Dados Chaniago

Romy Noviandra

Ega Alfiana

Epon Rayadi

Iin

Dyna Yusniarti

Lulu Atun Nafisa

Yudis Nugraha

Duties: 1. Assist research assignment

2. Make observations

3. Provide advice and ideas for research.

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H. Appendix





