Smart plants pot

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This report is a part of Independent Study 2 (IS2) I30202

Semester 2 / 2563

Satreesiriket School Sisaket

The secondary Educational Service Area office 28

## Preface

Report of Information technology project at the secondary school level 5 has prepared a project on smart plants pot prepared to solve the problem for those who have limited space, no space to grow vegetables. To facilitate the care of agricultural crops. To control the growth of agricultural products to have quality not to be damaged by aphids or disease. Students can think and solve problems from what they can learn according to the age of the students it use scientific processes and can apply the experience gained from learning to new events in daily life

The preparation of the project this time the author hopes that this publication will provide useful information to anyone interested in organizing a scientific experiment experience.

Teerayut and others

# Contents

Title        Smart plants pot

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Subject      Communication and Presentation IS2

School      Satreesiriket school

## Abstract

The smart plants pot aimed at 1). a problem of people that didn't have an area for plant 2). had easiness supervision of a product in area 3). production control had got a good quality. The population were members of Nong Daeng village, total 50 households. A sample was selected from Nong Daeng 23 M.6 Nongkrog subdistrict amphoe Mueang Sisaket province by simple random. The data collection tools are the satisfaction questionnaire of smart plants pot and measuring plant growth charts. The data were analyzed statistically by mean of sample group.

The satisfaction questionnaire of smart plants pot found that the population of Nong Daeng village was satisfied with the pot usage at a good level ( $\bar{X}$ = 3.8 ) with a good level of satisfaction in 5 points, The materials used are suitable ( x = 4.1 ) saving space for planting( x = 4.1 ) convenience of use ( x = 4.0 ) pot strength ( x = 3.8 ) and the other 2 items are all moderate.


Keywords : plants pot, control, sensor

Smart plants pot

**Introduction**

Thailand was agriculture. The planted soil is a very popular choice. Example soil had minerals for growth and got a lot of product because there was an area of farmland. Nowadays mostly consumers are interested in the quality of vegetables because the consumption is enough to get good health and strength. For these reasons customers like healthy exercise and want to eat vegetables but have many conditions. Example people didn't have area, affects the growth and time management. It's not all the same local people who had a lot of area for planting. Plants pot is the best choice for townspeople or who didn't have an area. Because these pot can move it around, set up the layout made for easiness, supervision a product and control these development processes. These factors are both intrinsic and extrinsic to the plant. Because this knowledge is important for assignment to success or failure. A factor that affects the growth has 3 groups of heredity, hormones and environment

(Kanittha Phongpricha,2010)

A sensor is a device that detects and responds to some type of input from the physical. Most sensors are electronic for input system or process with the next step. Sensor was a transducer of the type energy exchange. There was call sensor is transducer,

It was accord both objective and applied  soil moisture sensor. Take the soil moisture sensor or reusable water sensor. Can be used with Microcontroller . Used analog input read moisture or choose to use digital signal from module . Can adjust speed by adjust Trimpot, main work of the soil moisture sensor. In this soil moisture sensor module can be to 2 things , first can read as analog , it mean moisture and

give since 0 to 1024 read as digital. Will be compared with set values. If more then give logic HIGH. If low then give LOW. Before we read it will take that values put in IC LM393 (DUAL DIFFERENTIAL COMPARATORS) set values from Variable Resistor which adjust pressure use compared. To measure the soil moisture, an electrode rod must be applied to the soil where it is measured, which can read the soil moisture value. The principle is to measure resistance between two electrodes in case of low resistance readings, meaning that there is a lot of moisture in the soil or the soil is moist without watering. This means that there is less moisture in the soil or dry soil may need to be watered.

Light emitting diodes or LED were a semiconductor. Light had an influence to human-right. In particular,communication saves energy for the environment because of the electrical and LED boards. Nowadays people use light emitting. These journals are discovery and development. LED data structures of diode technology other than  that would explain color and light absorption are important for photosynthesis and growth plants.

(Naphat Wachanathepin, Chai Yan Bunmee,2017)

Smart plants pot is  a technology in order to provide a solution. These pot can make furniture for planting for a limited area. Inside has a sensor with in board control.

**objective**

1. To solve the problem for those who have limited space, no space to grow vegetables.

2. To facilitate the care of agricultural crops.

3. To control the growth of agricultural products to have quality  Not to be damaged by aphids or disease.

**Expected benefits**

1. Convenient for farming.

2. Get more quality agricultural products.

3. can control the factors affecting the plant growth.

**Research scope**

Population

Nong Daeng Village , Moo 6 , Nong Khrok Subdistrict , Mueang District , Sisaket Province 50 households.

Sample group

Nong Daeng Village , House number 23 , Moo 6 , Nong Khrok Subdistrict , Mueang District , Sisaket Province By simple randomness.

Tools for data collection

The record form for growing vegetables  using a pot plant controlled by a sensor system.

Satisfaction level measurement form a pot plant controlled by a sensor system.

Duration of research

22 August 2020 - 11 November 2020

## Research methodology

Specify the subject to be studied by 8 members meeting together. Think and plan about what subject we would study by the title is from problem questions, interest in various matters or observe things surrounding, inspect community problems. Choose the subject to study by choose from the story that members are most interested for motivation to find an answers by collecting data of community problems, study about problem solving ideas from various sources of research papers, name the title, meet the teachers and teacher advisor, make plans and listen to opinions, solving the problems that happened while doing work. Write an important, cause of the problem, purposes, scope of the study, hypothesis and expected benefits by studying information from the books, thesis and searching for information on the internet. And note it on the academic report draft. Create instruments that were satisfied with a measure form that had 8 numbers. Bring the improved tools to use with the population and sample to see the results of the changes and it follows the hypothesis or not. Collecting data, collecting the data from observation and evaluating results from satisfaction measures form. Data analysis separates the different parts of evidence or information that has been divided into categories to find the answer according to the purpose and the hypothesis that have been established. Summarize the study, presenting the work gives people a real  understanding of what we study.

## Instruments for collecting data

Instruments that used to study this time were 1). satisfaction measures form of using smart plant pot and plant growth measures form 2 copies. The details are as follows: design questionnaires about satisfaction of using smart plant pot by using the theory of likert scale and asking for advice from teacher advisor by preparing a question draft had a question 7 numbers, The scale was approximately 5 levels. Create a plant growth memo form by planting plant with smart plant pot 2). bring the improved and

fixed plant growth memo form by planting plant with smart plant pot to use with populations and samples and then get the results to find the average.

**Method to Collecting Data**

This study was conducted by using a satisfaction questionnaire that was built for the sample students to answer 50 households and collect information from member of the village that is a sample in which the study conducted the data collection by themselves.

**Analyzing Statistical Data**

Mean of sample group with the following formula

$$\overline{X} = \frac{\sum x}{n}$$

$\overline{X}$ is the arithmetiic mean

is sum of data

is number of villages in the sample

**Research results**

The satisfaction questionnaire of smart plants pot found that the population of Nong Daeng village was satisfied with the pot usage at a good level ( $\overline{X}$ = 3.8 ) with a good level of satisfaction in 5 points, The materials used are suitable ( $\overline{X}$ = 4.1 ) saving space for planting( $\overline{X}$ = 4.1 ) convenience of use  ( $\overline{X}$ = 4.0 ) pot strength ( $\overline{X}$ = 3.8 ) and the other 2 items are all moderate

The average number of leaves per plant, bush length and width of salad bush.

That is grown in a smart plant pot and with the use of bio-fermented water.

On average, there were 2-3 young leaves on average during the first week.

The length of salad vegetables in the second, third and fourth weeks was 4.20, 6.35, 10.75 centimeters respectively. Salad width at week 2, 3 and 4 were 8.25, 10.14, 13.40 centimeters Respectively.

## Conclusion

To measure the soil moisture, an electrode rod must be applied to the soil where it is measured, which can read the soil moisture value. The principle is to measure resistance between two electrodes in case of low resistance readings, meaning that there is a lot of moisture in the soil or the soil is moist without watering. This means that there is less moisture in the soil or dry soil may need to be watered. Saves watering time and is also comfortable to maintain. The sensor is accurate. Processed correctly diode light helps with plant growth because it is a factor that affects the growth and development of plants. After all, light is an important factor in the creation of food or photosynthesis of plants, with chlorophyll as a photo to be used as energy to turn carbon dioxide and water into carbohydrates and oxygen. Light has 3 properties that affect plant growth. Fermented water with white liqueur Poon Powder Vinegar Bio-fermented water is used to eliminate pests, from the stage of waxing, larvae, and adult insects. Bio-fermented water removes the smell of insect decoys from the wood. As a result, the insect strained antifeedant property, prevented the larvae from juvenile effecting and high mortality (Pascual-Villalobos and Robledo,1998). Depending on the type of remnants of the organism, the organism is used to make biodegradable fermentation.

## Recommemdation

1. Proposal to use
Placing is a nice decoration and can be placed in a place where the light is inaccessible as it will have diodes operating while in low light.

2. Suggestions in further research

It can be taken to the Blynk application to read moisture bills over the phone or can be ordered through the application.

**Social Sevices**

It is for watering  social services in the trees in the village. Individuals who do not have time to maintain vegetables can grow vegetables.

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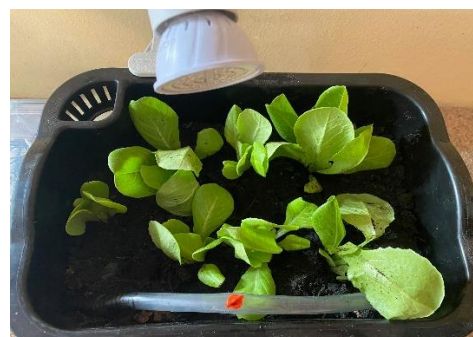Ratchabanthityasathan *(Phim khrang thī 5)* [Royal Thai
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# Appendix

Plant growth measures form

| weeks | Number of leaves | Bush length | Width of salad bush |
|-------|------------------|-------------|---------------------|
| 2 | 2 | $\bar{x}=4.20$ | $\bar{x}=8.25$ |
| 3 | 3 | $\bar{x}=6.35$ | $\bar{x}=10.14$ |
| 4 | 3 | $\bar{x}=10.75$ | $\bar{x}=13.40$ |

The satisfaction questionnaire of smart plants pot

| Assessment list | $\bar{X}$ | Level of satisfaction |
|-----------------|-----------|----------------------|
| 1.The materials used are suitable | 4.1 | Satisfied |
| 2.Saving space for planting | 4.1 | Satisfied |
| 3.Convenience of use | 4.0 | Satisfied |
| 4.Pot strength | 3.8 | Satisfied |
| 5.Helps yield the desired results. | 3.5 | Neutral |
| 6.Save time to use | 4.1 | Satisfied |
| 7.The design is appropriate. | 3.5 | Neutral |