Journal of Applied Engineering and Technological Science
Vol 4(1) 2022 : 312-317

IMPLEMENTATION OF IOT-BASED HYDROPONICS FOR SLB PEMBINA PEKANBARU STUDENTS

Yulisman[1], Uci Rahmalisa[2], Khusnul Fikri[3], Arie Linarta[4*]
Universitas Hang Tuah Pekanbaru[1 2], Universitas Muhammadiyah Riau[3], STMIK Dumai[4]
yulisman@htp.ac.id[1], ucirahmalisa89@gmail.com[2], khusnul_fikri@stieindragiri.ac.id[3], arielinarta@mail.stmikdumai.ac.id[4]

Received : 15 September 2022, Revised: 25 October 2022, Accepted : 25 October 2022
**Corresponding Author*

ABSTRACT
Special schools are special schools for children with special needs who aims to provide opportunities for children in obtaining education. SLB Pekanbaru Pembina State is a special education and special service (PK-LK) which has goals and targets to a) Produce students who are able to compete in this era of globalization globalization b) Produce students who are able to apply the utilization of science and technology optimally. This school handles students who have mental and physical limitations and intellectuals or called with disabilities, this school is located at Jalan Segar No. 46 Rejosari Village, Tenayan Raya District, Pekanbaru City, was founded by the Ministry of Education and Culture National Education in 1998, the Decree on the Appointment of the Pembina State SLB was issued by Minister of National Education No.13a/O/1998. On January 29, 1998, SLB Negeri The supervisor of Pekanbaru is currently led by Mr. Moelya Eko Suseno, S.Kom, M.TI, M.Pd. This school has teacher educators from graduates of Special Education (S1, S2 and even S3) the current number of SLB teachers is 55 people (all majors of visual impairment), administrative staff 7 people. For students from the level (SDLB, SMPLB and SMALB) totaling 367 people (all disabilities). The development of the Pekanbaru Pembina State SLB from year to year experienced an increase, especially in the students, then the infrastructure, facilities and infrastructure other infrastructure. This SLB is in accordance with its vision and mission to prioritize student independence, then the Pembina SLB program is prioritized on student skills. If in percentage then, Academic (30%) and Skills (70%). To achieve goals, targets, with this vision and mission, it is necessary to develop skills for SLB students. The problems contained in the Pembina State SLB Pekanbaru are: 1) The results of the Agricultural skills are not maximized, 2) Agricultural skills are not yet based on IT and 3) Lack of knowledge of teachers and students related to IT-based Product Marketing Management. Based on these problems, the solutions offered include: 1) Will be carried out guidance to increase students' knowledge in agricultural skills, 2) Will implement IoT-based Hydroponic plant cultivation and 3) provide counseling, training and guidance to students how to do management marketing of products produced with IT.
Keywords: *Adruino Uno Automatic Scales, C language, Visual Basic, Databases*

1. Introduction

Nobody asks to be disabled but being a person with a disability is not means you can't do anything (Lecours et al., 2022). Many individuals who despite being disabled can be a life light for friends with other special needs (Rosenbaum et al., 2021). Term with special needs is explicitly addressed to children who are considered to have abnormalities / deviations from the average condition of normal children in general, in terms of physical, mental as well as the characteristics of social behavior. SLB Pembina Pekanbaru is a special education and special service (PK-LK) This school handles students who have mental, physical and intellectual limitations or referred to as a disability, this school is located on Jalan Segar No. 46 Rejosari Village, Tenayan Raya District, Pekanbaru City, was established by the Ministry of National Education In 1998, the Decree on the Appointment of the Pembina SLB was issued by the Minister of Education National No.13a/O/1998. On January 29, 1998, SLB Pembina Pekanbaru ever currently led by Mr. Moelya Eko Suseno, S.Kom, M.TI, M.Pd (2021-present). The development of the Pekanbaru Pembina State SLB from year to year has increased especially on the students, then the infrastructure, facilities and other infrastructure. SLB This is in accordance with its vision and mission to prioritize student independence, so the SLB program The coaching country is prioritized on student skills, if it is a percentage, that is, academics (30%) and Skills (70%). This school has teacher educators from Education graduates Extraordinary (S1, S2 and even S3) the number of

SLB teachers currently amounts to 55 people (all majors disability), administrative staff 7 people. For students from levels (SDLB, SMPLB and SMALB) totaling 367 people (all disabled) (Richard & Hennekam, 2021).

Children with emotional barriers or behavioral disorders are children who are unable to learn not caused by intellectual, sensory or health factors (Al-Beltagi, 2021). Children with barriers emotional or behavioral disorders unable to have good relations with friends and teachers, behaving or feeling inappropriately, generally they always in a state of unhappiness or depression and a tendency towards physical symptoms such as feeling sick or scared about people or problems at school (Schiltz & Young, 2022). Marketing Management is a managerial and process that makes individuals or groups get what they need and want by creating, offering and exchanging products of value to other parties or activities which involves the delivery of products or services from producers to consumers (Bastart et al., 2021). The objectives and targets of the Pekanbaru State PK-LK SLB Center are: 1) Produce students who are able to compete in the era of globalization and 2) produce students who are able to apply the utilization of science and technology optimally (Deveci Topal et al., 2021). Based on the results of the discussion with the Principal, there are 13 skills applied by SLB State Schools Coaches for Students, including:

1. Batik
2. Fashion
3. Beauty style
4. Automotive
5. Rattan
6. Second hand goods
7. Agriculture
8. Woodwork
9. Delivery
10. Catering
11. Acupressure
12. Flower Arrangement, and
13. Household Crafts.

The statement from the Principal is of these 13 applied skills, which have been it can be said that progressing and succeeding is the skill of batik. For other skills still need more effort to make it even better. Every skill There are products that are produced and then traded. However, the product promotion process still not optimal. The teacher also revealed that the lack of understanding and Student knowledge related to the world of IT (Baltà-Salvador et al., 2021). In this PKMS, the focus is on increasing independence and student skills in Agricultural Skills

Internet of Things (IoT) is a concept/scenario where an object that has the ability to transfer data over the network without the need human-to-human or human-to-computer interaction (Viriyasitavat et al., 2022). IoT has evolved from the convergence of wireless technologies, micro-electromechanical systems (MEMS), and the Internet. The term IoT (Internet of Things) became known in 1999 which was mentioned for the first time in a presentation by Kevin Ashton, cofounder and executive director of the Auto-ID Center at MIT (Albany et al., 2022; Kolhe et al., 2022).

Microcontroller is an Integrated Circuit (IC) which programmed using a computer to be able to read input from the circuit which will then be processed and output as needed (Saha et al., 2022). The pin used is 1 analog pin as input pH sensor, 8 digital pins i.e. 2 pins as sensor inputs, 6 pins as output 1 pin is connected to relay, 2 pin is connected to lcd, 3 pins connected to led, and Vin pin and Ground pin (Hussein et al., 2022).

2. Research Methods

This research was conducted by building a prototype first and then implemented it to related parties. Prototype models can be used to connect customer misunderstandings about technical matters and clarify the specifications of the customer's desired requirements to application makers. The steps of the prototype model are:

1. Researchers will collect the data needed in the process of making tools, and this stage is

alsothe first step to find a problem formulation related to how to design a Robot (T-BOT) as an effort to overcome speech disorders in children.
2. Then a prototype program will be made to provide an overview to the customer.

4. Results and Discussions

Theprototypes that will be provided are as follows:

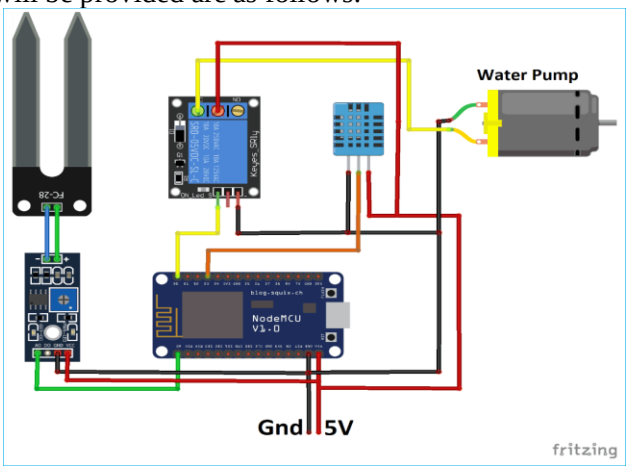

Fig 1. Robot Body Design

1. This Hydroponic Control System works using 2 types of sensors. That is sensor DHT11 and Water Sensor. The DHT11 sensor functions to determine the temperature and temperature conditions humidity of the air around the hydroponic plant, while the water sensor functions to control the supply of nutrients available in the tendon nutrition (Safira et al., 2022; Tatas et al., 2022).
2. If the supply of nutrients in the reservoir exceeds the sensor limit, the system will send data to a predetermined server via the internet. As well as TEMPERATURE and humidity conditions, if the TEMPERATURE exceeds the plant's tolerance limit certain conditions (eg plants with cold temperatures between 16-28 degrees Celsius, or plants have a hot temperature of 20 -32 degrees Celsius) then the water pump will be activated to normalize the temperature around hydroponic plants.
3. Information on the availability of nutritional supplies and information on temperature and humidity will be sent to the server via the internet using wifi network on the NodeMCU controller.
4. With this IoT-based control system, users can find out information and able to monitor hydroponic plants without being limited by distance and time (Untoro & Hidayah, 2022). The following is an overview of the IoT-Based Products that will be produced: The following is an overview of the Layout Control Unit Talking Robot (T-BOT) that will be made :

Fig 2. IoT Based Hydroponic Installation Design

1. Making hydroponic installation.

Fig 3. Hydroponic Rack Installation

2. Hydroponic Nursery Experiment Process without Hydroponic Installation

Fig 4. Nursery plant

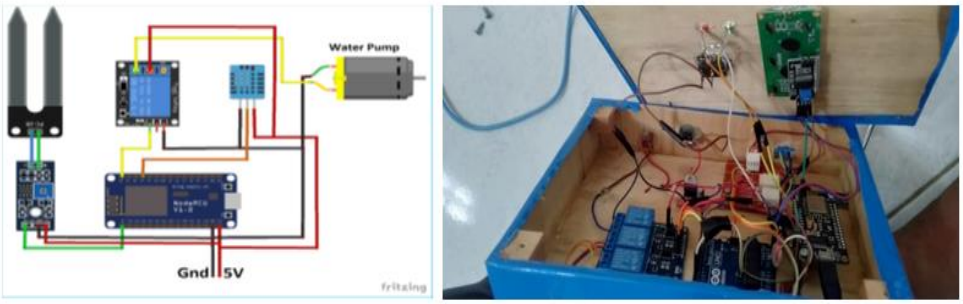

Fig 5. IoT-based hydroponic system design

Fig 6. IoT socialization activities Farming Workshops with hydroponics and digital marketing

5. Conclusion

The conclusion of this research is, the thing that really needs to be considered in hydroponic

planting is to pay attention to the nutrients that exist in plants, so that the presence of IoT-based hydroponics can be an alternative to plant nutrient deficiencies. Another impact is healthier plants, minimizing crop failures and maximizing crop yields.

Acknowledgement

The author would like to thank RISTEK-BRIN which has provided financial assistance related to this research, and thanks also to the academic community of Hang Tuah University Pekanbaru who have always supported in conducting this novice lecturer research.

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