

The Role of Less Contact Technology in the Covid-19 Pandemic

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Abstract. The Covid-19 pandemic requires people to change their behavior to interact with new normal conditions and with the concept of less contact economy, the trend of using technology will change towards optimizing the use of online technology or more widely known as digital transformation. Online and realtime remote practicum learning system that can facilitate students who are constrained by distance, facilities in schools that have inadequate practice equipment, and prevent direct contact with one another (Less Contact) so that learning outcomes in practicum can be fulfilled according to its competence during the Covid-19 pandemic. The concept of a Waste Bank based on Information Technology (using a Smartphone Application and based on IoT (internet of Things) can facilitate residents and prevent direct contact (Less Contact). The waste weighing device is placed into the homes of customers who are included in the BANK SAMPAH organization. every resident's house. If the plastic waste is in the position of transportation, the officer will carry out the transportation of the waste to be used as balance.

Keywords: Less Contact, Covid-19.

INTRODUCTION

The Covid-19 pandemic continues to infect countries around the world and also has an impact on the weakening of economic activity in several countries, including Indonesia [1]. With the current situation there are three important points that need to be underlined, namely the trend of reduced globalization and strengthening of localization, digital services will be very strong in everyday life, as well as economic pressure and the MSME sector. How can you see the impact of post-Covid-19 There are three points, the first is to reduce the trend of globalization and emphasize strengthening localization, secondly the presence of services based on digital data will be very strong in everyday life, then the third is the pressure on the economy and the MSME sector. Furthermore, the Minister of Research and Technology / National Agency for Research and Innovation, Bambang Brodjonegoro,

stated that the current situation would certainly be faced with a new normal, which needs to be prepared in a future scenario, because the economic impact is extraordinary. economy does not work with the existence of especially Large-Scale Social Restrictions (PSBB). So whether we want it or not, this condition cannot be continued with just the PSBB, what are the concrete solutions related to how to upgrade digital technology. AI can be developed by detecting that people enter a building, they don't need to use a thermometer anymore, but they automatically use AI, even though they have AI detection the protocol must be strong. One more thing that must be considered is the power of cash, now how to replace this cash flow as easily as possible through digital payments.

The Covid-19 pandemic requires people to change their behavior to interact with new normal conditions and with the concept of less contact economy, the trend of using technology will change towards optimizing the use of online technology or more widely known as digital transformation. Digital technology is considered as the right solution. 10 digital technology trends that can be used as a means of Less Contact Economy both during the corona virus pandemic and in an effort to improve the efficiency of the economic supply chain in normal times later. For this reason, the President of the Republic of Indonesia has issued Five Directions for Digital Transformation. The direction includes: access to and improvement of digital infrastructure, preparing a digital transportation roadmap in strategic sectors, preparing a Cloud Computing facility, preparing various digital start-ups, funding and financing digital transformation[2].

Remote Control

Remote Control Technology is an electronic device used to remotely operate a machine. The term remote control is also often shortened to just "remote". Remote also often refers to the term "controller, donker, doofer, zapper, click-buzz, box, flipper, zippity, clicker, or changer". In general, remote control is used to give remote commands to televisions or other electronic items such as stereo systems and DVD players. Remote controls for these devices are usually small, wireless objects held in hand with a row of buttons to adjust various settings, such as television channels, track numbers, and volume.

In most modern devices with this kind of control, the remote control has all the control functions while the controlled device itself has only a few basic main controls. Most of the remotes communicate with the device respectively via infrared signals and some via radio signals. The remote control usually uses a small AAA or AA battery as its power supply.

There are two types / kinds of Control Technology (Remote Control), namely:

Open-Loop Control System

The term controller is defined in national and international standards. In an open loop control circuit, one or more input variables, which are given by someone or the program transmitter, will determine the output variable of the control circuit.

Each element of the control circuit will form an open loop. This means that the command signal can only travel in one direction, from the start point to the end point of the control loop. Even though we are often unaware of processes, physical quantities are continuously controlled in our daily lives. Examples such as: turning on the electric motor; Driving a Vehicle; Opening and Closing the Water Faucet; and Using a Calculator

Closed-Loop Control System

It is a process in which the regulated variable (x) is always compared to the command variable (w). With appropriate measurements, any deviation is always returned to the zero position. There are three types of control systems: Feedback control systems; Inferential Control System (inferential control system); Feed-forward control system.

In addition, the application of Remote Control can be divided into two types, namely Analog and Digital. Analog is the process of sending signals in the form of waves. For example, when someone communicates by using the telephone, the sound that is transmitted over the telephone network is passed through the waves. And then, when this wave is received, it is the wave that is translated back into the form of sound, so that the recipient can listen to what other speakers say from the communication. Analog technology has advantages and disadvantages. The advantages are: It is not easy to eat, the cost used is cheap, and the results obtained can be tested for accuracy. While the weaknesses: Inefficient, and slow operation.

Digital communication technology is technology based on computer electrical signals, the signal is discontinuous and uses a binary number system. These binary numbers will form codes that represent certain information. Even digital technology has advantages and disadvantages. The advantages are: it provides ease of use; Errors can always be corrected; Producing limited data. While the weaknesses are: lazy to think; It doesn't last long; and Requires synchronization.

The benefits of the Remote Control Technology can help to facilitate daily work. Besides, it is more effective and efficient.

IoT (Internet of Things)

Internet of Things, also known as IoT, is a concept that aims to expand the benefits of continuously connected internet connectivity. As for capabilities such as data sharing, remote control, and so on, including objects in the real world [3].

Another similar meaning, Internet of Things (IoT) is a concept / scenario where an object has the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. "A Things" in the Internet of Things can be defined as the subject, for example, a person with a heart implant monitor, a farm animal with a transponder biochip, a car that has a built-in sensor to alert drivers when tire pressure is low. So far, IoT is most closely related to machine-to-machine (M2M) communications in manufacturing and electricity, oil and gas. Products built

with M2M communication capabilities are often referred to as smart systems or "smart". (example: smart label, smart meter, smart grid sensor).

The term IoT (Internet of Things) became known in 1999 when it was first mentioned in a presentation by Kevin Ashton, cofounder and executive director of the Auto-ID Center at MIT. With the development of internet infrastructure, we are moving towards the next chapter, where it is not only smartphones or computers that can connect to the internet. However, various kinds of real objects will be connected to the internet. Examples could be: production machines, automobiles, electronic equipment, wearables, and including any real object which is all connected to local and global networks using embedded sensors and / or actuators.

Benefits of IoT Various kinds of IoT implementations are in our daily lives. In fact, some we may have done, just don't think that it is part of IoT. The following are some of the benefits in several fields, namely: 1. Development Sector 2. Energy Sector 3. Household Sector 4. Health Sector 5. Industry Sector 6. Transportation 7. Trade 8. Security 9. Technology and Networks

Mobile application

Understanding the application is a software unit designed to serve the needs of several activities [4]. Mobile can be defined as an easy transfer from one place to another, for example a mobile phone means that a telephone terminal can move easily from one place to another without interruption or interruption of communication. The mobile application system is an application that can be used even if the user moves easily from one place to another without interruption or interruption of communication. These applications can be accessed via wireless devices such as pagers, such as cell phones and PDAs. [5]

Less Contact Technology In Education

Practicum Application Via Remote Lab

At the hardware design stage, the Remote Lab hardware consists of a basic logic gate trainer AND, OR, NAND, NOR, EX-OR and EX-NOR. Each consists of 2 inputs (orange light) and 1 output (white light) Figure 1. As well as 1 indicator light (White) which indicates the Active Gate is being tested (Figure 1).

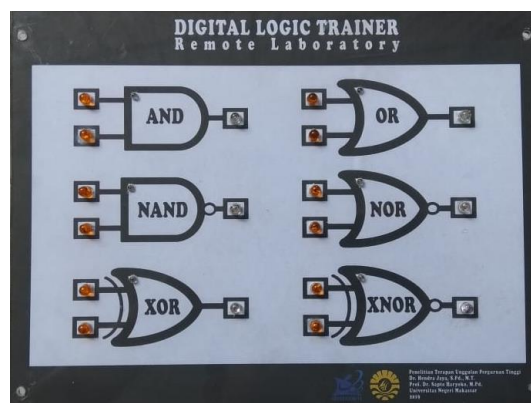


Figure 1. Remote Lab Trainer (top view)



Figure 2. Remote Lab view controlled via Webcamera

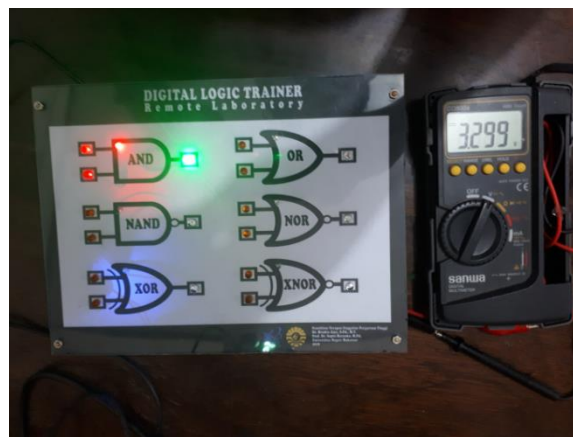


Figure 3. The results of the AND gate output voltage measurement display is in the output state of "1" with a voltage of 3,299Vdc (realtime)

Remote Lab Software consists of Arduino Uno Programming, Firebase, and Android Studio Application.

Software / Hardware devices used:

1. Using a Remote Control System / Internet Of Things (IoT)
2. Using Firebase as a cloud data place (clout) or data base using Firebase.
3. Using nodeMCU as a control medium that connects the database to electronic circuits
4. Using Arduino Nano as a medium to control IC Gate input.
5. Using the Android Remote LAB application created using the MIT APP INVENTOR V2

The Remote LAB application sends data to Firebase at any time when selecting Labs, selecting the Gateway, and selecting the input from the gate. The data sent is string and integer data.

In real time the Firebase database will read data that can only be read from the Remote LAB application, and in real time Firebase also presents data to be read by the nodeMCU device in the chain.

NodeMCU is a device that reads in realtime on Firebase where the database name is preset on the nodeMCU device.

NodeMCU will read the selected gate string variable or data and integer data from both remote input gates from the Remote LAB application and already in the Firebase data.

The data on the MCU node will be forwarded to the Arduino NANO by means of Serial Usart communication (rx and tx), the data that is now on the Arduino NANO will be forwarded again to the digital gate circuit.

The input and type of gate selected will be determined by arduino NANO, arduino nano will output the following data:

1. If data = 1 it will activate AND gate
2. If data = 2 it will activate the OR gate
3. If data = 3 it will activate the NAND gate
4. If data = 4 it will activate the NOR gate
5. If data = 5 it will activate the XOR gate
6. If data = 6 then it will activate the XNOR gate
7. If inputA = "false" it will provide LOW logic for input A.
8. If inputA = "true" it will give logic HIGH on input A
9. If inputB = "false" it will provide LOW logic for input B
10. If inputB = "true" it will give logic HIGH on input B

The output from the gate will be measured using a multimeter and oscilloscope and will be monitored directly via YouTube streaming, so that it can be monitored in real time on the Remote LAB application which has been loaded with a link from YouTube.

LESS CONTACT TECHNOLOGY IN ECONOMIC FIELD

Bank Sampah Application Based on Android and IoT

Environmentally friendly waste management has become a new culture in Indonesia. The collective awareness of the community to start sorting, recycling, and utilizing waste in order to have a fairly good selling value must be continuously stimulated and empowered. Solutions to solve problems in the form of a schema or description that are easy to read / understand are as follows :

1. Make improvements to SME partners in terms of financial and marketing management
2. Carry out the waste processing process (Collect, Recycle, Use)
3. Applying IT-Based Technology for BANK SAMPAH management

The concept of a Bank Sampah based on Information Technology (using a Smartphone Application and based on IoT (internet of Things) which makes it easier for residents.



Figure 4. IoT-based Automatic Waste Weigher

The waste weighing equipment is placed into the homes of customers who are part of the BANK SAMPAH organization. This tool is placed in every resident's house. If the plastic waste is already in the position of transportation (for example, the weight limit is 2 kg), the officer will carry the goods.



Figure 5. Automatic Garbage Weigher Tool with Garbage Collection Container

This digital weighing device consists of mechanical and electronic parts. The mechanical part consists of a plastic waste storage container made of lightweight materials made of a cylinder shape and a load bearing made of acrylic material. While the electronic part consists of a load sensor, proximity sensor, microcontroller, LCD and the zero button which is used to change the measurement towards other objects to be measured. Testing of this measuring instrument needs to be done to determine the performance of each mechanical part and electronic device.



Figure 6. Automatic Waste Weighing Tool using Digital Scales



Figure 7. Display of Android Smartphone Garbage Pickup system

When the trash is full, it will be picked up by garbage officers using an application on a Smartphone based on the pick-up location (Figure 7).

CONCLUSION

Online and realtime remote practicum learning system that can facilitate students who are constrained by distance, facilities in schools that do not have sufficient practice equipment, and prevent direct contact with one another (Less Contact) so that learning outcomes in practicum can be fulfilled according to its competence during the Covid-19 pandemic.

The concept of a Bank Sampah based on Information Technology (using a Smartphone Application and based on IoT (internet of Things) can facilitate

residents and prevent direct contact (Less Contact). The waste weighing device is placed into the homes of customers who are included in the Bank Sampah organization. every resident's house. If the plastic waste is in the position of transportation, the officer will carry out the transportation of the waste to be used as balance.

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