

# Broadcast Studio Development for Supporting Online Learning and Community Counselling

**R. W. TRI HARTONO, MUHAMMAD YUSUF FADHLAN, MAYA RAHAYU, FENI ISDARYANI, DIANTHIKA PUTERI ANDINI, RIFA HANIFATUNNISA, GRIFFANI MEGIYANTO R, MARTIN**

Jurusan Teknik Elektro, Politeknik Negeri Bandung  
Email: [tri.hartono@polban.ac.id](mailto:tri.hartono@polban.ac.id)

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## ABSTRACT

*Universities have a role and function to educate the community in addition to conducting lectures. One form of activities from this role is to provide information to the community in the form of providing guidance, sharing knowledge or training. With the advancement of internet technology today, this can be done through online platform. However, this must be supported by qualified equipment in order to gain interesting and acceptable outcomes for the community as well as students. In this service, a studio that can be used to support teaching activities and community counselling for academic community in Politeknik Negeri Bandung is created. The making of this broadcast studio is divided into three stages. The first is the making of a three-dimensional model of the room using 3D modelling software. The second stage is the civil work to build a broadcast studio. The last stage is the completion of the broadcast studio with supporting equipment for video content creation. The results obtained are quite satisfactory. From the majority of answers obtained from the survey, students find this studio useful, quite comfortable to use and worthy of creating video content. For the audio section, the correspondents believe that this aspect still needs to be improved, while the room layout and visual equipment are considered good and attractive.*

**Keywords:** *Broadcast studio, online learning, community counselling.*

## 1. INTRODUCTION

Higher education is one of the educational institutions that have a transfer of knowledge and value function. Not only serves to educate students, universities are also required to provide benefits of knowledge to the community. The presence of universities in society should be able to contribute based on scientific values, so that people will be smarter in living the joints of life. It is the obligation of universities to be able to make this happen. **(Tachyan & Rosmadi, 2018)**

The strategic position and role of higher education requires this institution to be able to make changes and improvements in improving its quality and services to the community (Abbas, 2008). One of them, by utilizing the development of internet technology today. In this era, people are very dependent on internet technology. The need for the internet has become a primary need for every society. All circles of society from young people to the elderly feel the benefits of this technology. Internet technology has developed rapidly. Internet technology is now very influential in every aspect of life in society. One of the benefits is felt in the field of education. Internet technology that is currently developing allows people to get knowledge and information only through their devices **(Kampus Didorong Beradaptasi dengan Teknologi Digital, 2020)**

Learning methods using information technology today do not just a trend, but can improve better learning method **(Astuti, Fahmi, & Hubeis, 2015)**. The concepts and mechanisms of teaching and learning based on information technology are very important to be realized by educational institutions in Indonesia in order to improve their quality. This concept became known as e-learning. E-learning is a new information technology to support the success of the learning process. The current era of globalization requires every educational institution to accept e-learning in the education system **(Capogna, 2015)**.

E-learning as a medium can have an impact on changes in the learning process. This method provides flexibility for lecturers to provide access for students to obtain scientific references related to subjects that may not be obtained during class lectures **(Budi & Nurjayanti, 2012)**.

In order to take advantage of the advances in internet technology, universities should use internet technology. Bandung State Polytechnic as a university has a responsibility in educating people's lives. Moreover, this is in line with the mission of the Bandung State Polytechnic, which is to carry out community service activities through the use of science and technology to support improving the quality of life. The development of educational video content through the internet can be one of many ways to realize this mission.

To create video content, a proper studio is needed and the studio must be equipped with the right equipment. In the construction of the studio there are two models, namely the type of workstations and the modular model. Workstation models require a room to be used for a specific job. For example, there is a special room for sound recording, another room for taking videos, and a special room for editing. While the type of modular room allows for one room to be used for various types of activities. So that the items contained there are conditioned more easily to be moved **(Fisher, 2016)**.

Studio equipment must also be considered. The unit will provide all the necessary elements for long term sustainability for users. The equipment that is important in making a studio include: cameras, microphones, computers and lighting **(Cavalcanti, Goldsmith, & Tetreault, 2011) (Budi & Nurjayanti, 2012)**

In order to develop these contents, it is necessary to prepare professional facilities so that they can compete with similar content providers and can be well received by the public. The modular studio type was chosen because it corresponds to the size of the building in the electrical engineering department. Through online media, the Department of Electrical Engineering can share knowledge related to electrical engineering. The videos made can be

like tutorials, counseling, training or dialogues about electrical engineering science. Therefore, the need for a professional studio becomes very important.

## 2. METHODS

The solution offered from the observations and analysis of the problems is to create a broadcasting studio equipped with professional equipment. The method of implementing community service activities is divided into four stages, namely 1) Making studio rooms, 2) Installing studio equipment, 3) Training, and 4) Evaluation.

### 2.1. MAKING STUDIO ROOM

To make a broadcasting studio room, a large enough room is needed so that the supporting equipment can be installed properly. Spacious space is also important because the room needs to be divided into two for the control room and the broadcast room. The walls of the room also need to be lined with impermeable foam so that the sound captured by the microphone is clean and there is no noise from outside. In order to produce maximum sound quality, the floor of the room must be covered with carpet to reduce sound reflections. Figure 1. Shows the inside of the multimedia studio, while Figure 2. Shows the control room of the multimedia studio.



Figure 1. The concept of the broadcasting space to be built.

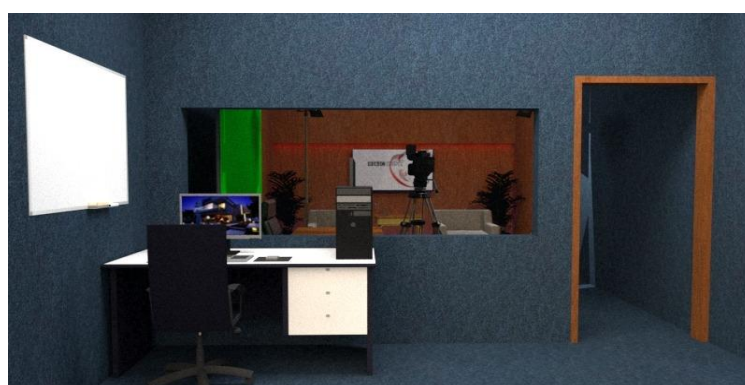


Figure 2. The concept of the control room to be built.

### 2.2. INSTALLATION OF STUDIO EQUIPMENT

To support good video production, it is necessary to have supporting broadcast equipment. Broadcasting equipment needed to make this studio include:

Lighting equipment, lighting is an important part of making a good video. A good studio has not only one light source but several other lighting sources. The types of light sources needed in making a professional studio include key light, fill light, day rim light and background light.

Condenser microphone, the use of good audio equipment is also an important aspect in making videos. The condenser microphone has a special function for processing vocal sound signals and can only be used in a room or studio. As a microphone that aims to capture vocal sounds, the condenser microphone has the ability to capture sound even with weak power.

Soundcard mixer, soundcard functions to process recorded voice data (sound input) either directly, through headsets or other devices such as microphones. Flat speaker monitor, speaker Monitor is a speaker that emits raw sound from the start of recording activities, or in many people's terms the sound sounds "flat" in terms of treble-bass. Then the sound produced from this speaker is the original or original result. Monitor headphones, monitor headphones have the same functionality as monitor speakers, only in the form of headphones. These headphones are useful for monitoring the incoming sound through the microphone in real time.

Display Monitor, this monitor is used to view in real time the output issued through the camera. A monitor display is needed so that the images produced by the camera can be seen in more detail through this display.

### **2.3. TRAINING**

Training on the use and maintenance of the installed equipment will be given to human resources in the Department of Electrical Engineering, both administrative staff and lecturers. The training will be like a workshop, conducted online and offline while still implementing strict health protocols. The training consists of an introduction to the studio room, an introduction to every equipment in it, and how to operate broadcasting equipment such as cameras, lighting settings, microphones and others. In addition to training in terms of equipment, training will be held on the use of several software that supports the equipment.

## **3. RESULT AND DISCUSSION**

### **3.1. IMPLEMENTATION**

The implementation of this service activity has been carried out for five months. There are several activities that have been carried out; The first is the preparatory step, the preparatory stage begins with a survey of equipment and needs for a broadcasting studio as shown in Figure 3., and a visit to an existing broadcasting studio.



**Figure 3. Survey Activities**

Next is to determine the room that can be built to become a broadcast studio. The room refers to the three-dimensional simulation that has been created. After the room has been determined, the civil work will be carried out immediately. Soundproofing foam is installed in all parts of the room as shown in Figure 4. Carpet installation is also done to maximize the soundproofing of the room as shown in Figure 5. A room separation is also made to separate the operator's station and the studio room. The situation of the studio with some equipment installed as shown in Figure 6.



**Figure 4. Foam Installation for Soundproof**



**Figure 5. The results of the installation of soundproof foam**



**Figure 6. The situation of the studio with some equipment installed**

### **3.2. STUDIO EQUIPMENT PROCUREMENT**

Studio equipment is installed in the broadcast studio that has been built. Existing equipment, installed in the studio following the three-dimensional design that has been made. The equipment includes cameras, lighting, audio equipment, backdrop equipment, computers and monitor displays.

### **3.3. TESTING**

In the context of student orientation, this broadcast studio has been tested for the video recording process for the Head of the Electrical Engineering Department to give a speech to new students. This is also a means of testing and seeing student responses. A virtual survey

was conducted to see if this studio was suitable for use for learning and counseling activities. The survey was given to 60 electrical engineering students. given 10 questions to them with multiple choice on the answers. Multiple choice consists of five levels of answers that indicate a positive or negative response to a question. Table 1 shows the results of the JTE Polban Broadcast Studio Survey. Broadcast studio experiment have done shown in Figure 7.

**Table 1. The Results of JTE Polban Broadcast Studio's Survey**

No	Questions	Response				
		1	2	3	4	5
1	Do you like JTE POLBAN multimedia room?	0%	0%	5.9%	35.3%	58.8%
2	Do you think the JTE POLBAN multimedia room will be useful for making learning media?	0%	0%	17.6%	41.2%	41.2%
3	Is the multimedia room large enough to make learning videos?	0%	5.9%	58.8%	29.4%	5.9%
4	Do you think the JTE POLBAN multimedia room has complete equipment?	0%	5.9%	58.8%	35.3%	0%
5	Do you think the layout of the JTE POLBAN multimedia room is ergonomic?	0%	0%	52.9%	35.3%	11.8%
6	Do you think the multimedia room is comfortable enough to make learning videos?	0%	0%	35.3%	41.2%	23.5%
7	As a POLBAN academic, do you feel confident if you invite well-known national speakers or guests to attend a talk show in the JTE multimedia room?	0%	0%	35.3%	58.8%	5.9%
8	As a POLBAN academic, do you feel confident if you invite well-known international speakers or guests to attend a talk show in the JTE multimedia room?	0%	5.9%	35.3%	52.9%	5.9%
9	In your opinion, is JTE POLBAN's multimedia room soundproof enough?	0%	0%	64.7%	35.3%	0%

Number description:

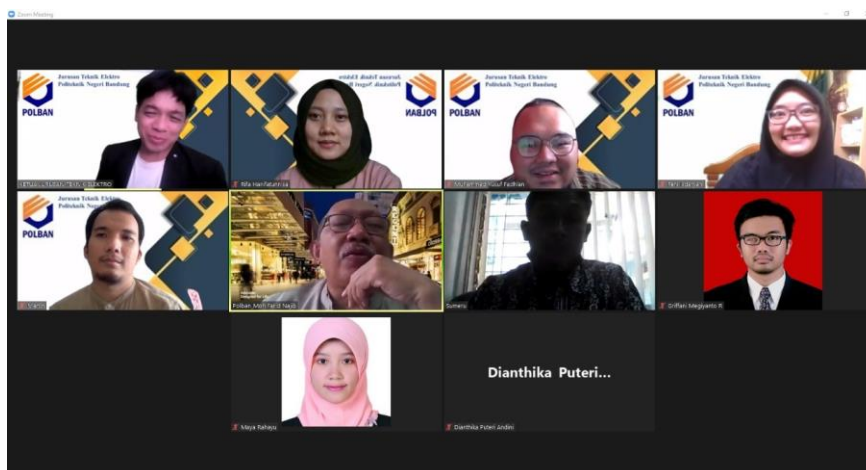
1. Very dissatisfied
2. Somewhat dissatisfied
3. Neutral
4. Somewhat satisfied
5. Very satisfie



**Figure 7. Broadcasting Studio Experiment**

#### **4.4. TRAINING and EVALUATION**

Training is given to members of the community service team so that in the future it can be forwarded to other lecturers or students. The training provided is about how to maintain a broadcast studio room, the use of equipment in the studio and how to use the software that supports studio equipment. Evaluation is also carried out with the polytechnic management so that the work of this service is monitored and in accordance with the predetermined targets. Evaluation held with the management of the polytechnic shown in Figure 8.



**Figure 8. Evaluation held with the management of the polytechnic**

#### **4. CONCLUSIONS**

The broadcast studio work has been successfully implemented. The realization of the studio has been carried out by being completely soundproofed. Audio and visual equipment has also been equipped to support content creation in the studio. Students as correspondents were also asked for their opinions regarding the construction and facilities of the studio. The results obtained are quite satisfactory. From the majority of answers obtained, students find this studio useful, quite comfortable to use and worthy of creating video content. For the audio section, the correspondent believes that this aspect still needs to be improved, while the room layout and visual equipment are considered good and attractive.

In the future, this studio still has a lot of potential for development. The device you currently own can be used to make non-live videos. By adding a few tools, this studio is very possible

for making live videos to be broadcast online or with a television signal. So that the making of a television broadcasting studio for the department or campus can be considered for further development.

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