

# Basic Electronic Instructional Media by Using Augmented Reality

Supat Boonyou and Khanchai Tunlasakun  
Electrical Technology Education , Department of Industrial Education  
King Mongkut's University of Technology Thonburi,  
126 Pracha Uithit, Bangmod, Tungkru, Bangkok, 10140 Thailand  
supat.boonyou@gmail.com

**Abstract** - This research is Electronic instructional equipment media by using augmented reality. The objectives of this research are to 1. Develop electronic instructional equipment media by using augmented reality. 2. To develop the study achievement of the students in the subject of electronic and circuit equipment and 3. To find the efficiency of the Develop electronic instructional equipment media by using augmented reality. A total of participants in this research were 46 which consisted of a teacher in subject of electronic and circuit equipment and 20 students in subject of electronic and circuit equipment from Chachoengsao Technical College which acquired from specific selection. The methods are to research the primary information, the procedures and the methods that related to the teaching of using electronic instructional equipment media by using augmented reality and determined the procedures in making the manual to achieve the requirement then took this using electronic instructional equipment media by using augmented reality to examine the participants both before and after teaching and studying for making the participants understood and to make it the most efficiency.

The results of this research showed that from using electronic instructional equipment media by using augmented reality found that the teacher satisfied in the highest level (4.53) and the students's averages scores had the statistically significant higher level at 0.05, had the most satisfactory (4.53)

**Keywords:** basic electronic augmented reality, subject of electronic and circuit equipment.

## I. INTRODUCTION

This research was adapted and developed from the work of Narongdet Kamenganna and Tunlasakun on *Instructional media of multimeter by using augmented reality*. In their work, they used the multimeter be the main element which is different from this research that using the Basic Electronic Instructional Media.

The idea of the development of this research was created to support the most effective instructional planning. It needs to be understood first, what does exactly the augmented reality work.

Augmented reality (AR) is using technology to superimpose information on the world to see [1]. It frequently presented as a futuristic innovation. Moreover it is really different from virtual reality that use computer-generated environment for the audiences to interact with and being immersed in [2] But with this innovation technology of Augmented reality could improve the instructional planning through the electronic instructional software to actualize information that the students have learnt in class to improve the students's knowledge.

The function of augmented reality can be worked on the computer, the mobile phones and other devices displays. The pictures will show to the users immediately. The procedures of the augmented reality are

1. Analysis picture.
2. The calculation of the data in three-dimensional.
3. The method of creating three-dimensional (3D)

So it's obviously that this research will provide the profit to the development of the instructional planning in the future.

## II. OBJECTIVE

1. To research the efficiency of the Basic Electronic Instructional Media by Using Augmented Reality.
2. To improve the study's achievement in subject of electronic and circuit equipment.

## III. THE ANTICIPATED BENEFITS TO BE GAINED

1. To guide the new method of the instructional planning by using augmented reality.
2. To inspire and support other teachers adapting this research in other related subjects.

## IV. RESEACH METHODS

This research aimed to design and create by Basic using these equipments.

### A. Tools used in research.

In this research, there are 2 equipments that have been used:

1. The instructional media by using augmented reality.
2. Worksheets demonstration.

### B. Development of teaching aids.

This research used application for development of basic electronic instructional media by using augmented reality that the students have learnt already in the class.

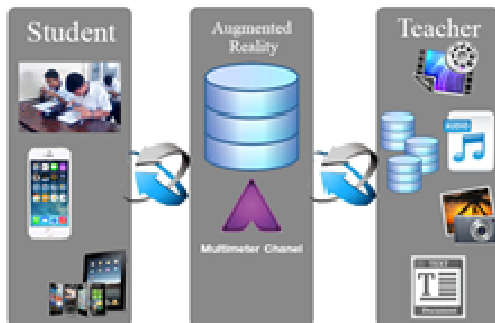


Fig.1. Structure of application

Teacher created the application for students to use in this subject then announce them to download on Play Store (Android users) and App Store (IOS Users) and install it on their devices.

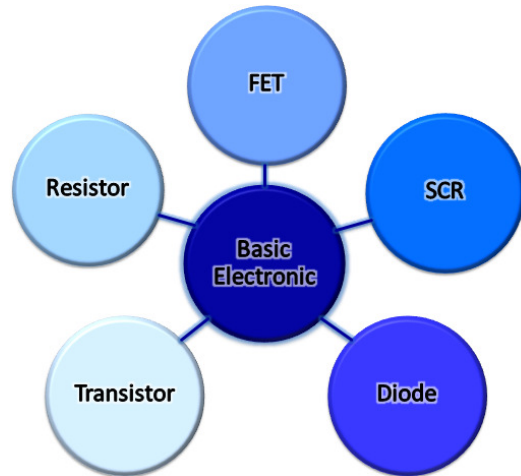


Fig. 2. Lesson Analysis

After finishing the installing, student open the page on the book that teacher has prepared for them. Open the application and lay above the image, the picture will show up on their devices.

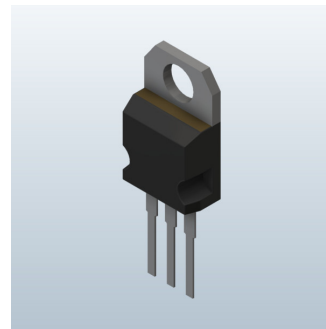


Fig.3. 3D object is show in application

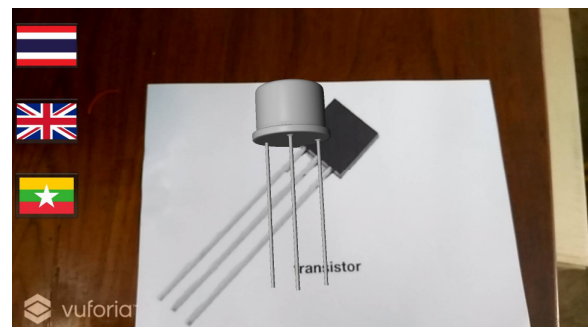


Fig.4. basic electronic instructional media by using augmented reality.

**C. Data Collection**

This research of Data collection methods follows

1. Pre-test

The 20 Anticipants will do the 30 multiple-choices' pretest.

2. After finishing the pretest. Then the teacher starts to teach all process on the book, explain how does the augmented reality work, exchanging the ideas and having interaction with students.

Then, let the students prepare the experiment by informing them to download and install the application. Open the page that teacher has prepared for it. Wait until the pictures show up as the augmented reality.



Fig.5. Students learning and Worksheets demonstration

3. Post-test

After finishing all experiments. Students need to do the post-test to complete the whole research.



Fig.6. Pre-test and post-test

**I. RESEARCH RESULT**

After finishing all processes and teacher already collected the information. Which show on the Table 1.

**Table 1. From the table show results of the 20 students of the first year in the high Vocational Certificate, Electric power department, Chachoengsao Technical college.**

No.	Pre-test (30)	Post-test (30)	D	D <sup>2</sup>
1	115	28	13	169
2	14	22	8	64
3	15	27	12	144
4	12	28	16	256
5	15	27	12	144
6	15	25	10	100
7	19	29	10	100
8	12	23	11	121
9	20	30	10	100
10	14	24	10	100
11	15	25	10	100
12	21	30	9	81
13	13	27	14	196
14	12	25	13	169
15	14	23	9	81
16	15	25	10	100
17	14	25	11	121
18	14	23	9	81
19	15	27	12	144
20	15	25	10	100
total	399	518	219	2,471
average	19.95	25.9	t = 25	

**II. CONCLUSION**

From this research was found that the study's achievement that used statistic in the t-test which was calculated from the table no.1, the value equal 25 and the value of "t" from "t table" provided the value of df=20-1=19 that had the statistically significant higher than the level at 0.05.

And from the One-tailed Test. T=1.729, so that the value of "t" from this test had more value than "t" from "t table" that indicated the post test's averages are higher than the pre-test which could be assumed that

students had a higher the study's achievement in statically significant at 0.05.

### ***References***

[1],[2] Jesse Emspak. (2016). *What is augmented reality?*. Retrieved august 13, 2016 from Live science contributor  
<http://www.livescience.com/34843-augmented-reality.html>