www.bircu-journal.com/index.php/birci
Budapest International Research and Critics Institute-Journal (BIRCI-Journal)
Humanities and Social Sciences
ISSN 2615-3076 Online)
ISSN 2615-1715 (Print)
Budapest Institute

The effectiveness of the ASH Analog Experimenter as Electronic Learning Media for PIP Semarang Cadet

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Abstract

Electronics is one of the courses in the Engineering study program. In this electronics course, cadets or students are given knowledge about electronic components and how to assemble electronic circuits. For this reason, in studying electronics, lecturers not only provide theoretical material, but also must be able to guide cadets in carrying out practicum in the laboratory. ASH Analog Experimentar is a learning media that can be used for practical learning of Electronics in the Laboratory. The purpose of this study was to determine the effectiveness of the ASH Analog Experimenter as an Electronic Learning Media for PIP Semarang Cadets. The research method used in this study is a qualitative method. Data obtained from the results of distributing questionnaires to cadets. The results of the respondents' responses will be analyzed and concluded. Secondary data obtained from library studies, observation and documentation. From the results of data analysis, there are several things that can be concluded: For the Level of suitability or relevance, 49% stated that it was very suitable, 51% said it was suitable, For the appearance or performance of the ASH Analog Experimenter media, 53% said it was very good, 41% said it was good, 5% said they were in doubtfully, 1% said it was not good, for the level of security or safety of the tool, 50% stated that it was very safe, 46% said it was safe, 4% said it was doubtfully. For the level of efficiency, 47% stated that they were very efficient, 52% said they were efficient, 1% said they were unsure, for the level of understanding, 35% stated that they understood very well, 59% said they understood, 6% said they doubtfully. Thus, in general, ASH Analog Experimenter is very effectively used for electronic learning media for PIP Semarang Cadets.

Keywords
effectiveness; ASH analog experimenter; electronics

I. Introduction

PIP Semarang organizes 3 study programs, namely Nautika, Teknika and KALK. In carry training and education outside, PIP Semarang is supported by adequate facilities and infrastructure. As for the percentage of training and education activities, namely 40% learning is carried out in the classroom (Theory) and 60% learning is carried out in the laboratory and training ground. The not only read it and also must be accompanied by observations and experiments in laboratories and simulators. Both the nautical, engineering and KALK study programs are all supported by adequate laboratory infrastructure and simulators. Electronic is courses in the Engineering study program. In this electronics course, cadets or students are given knowledge about electronics how to make a circuit from electronic. For this reason, in studying electronics, lecturers do guide him cadets in

terms of theory, but a lecturer must also be able to guide cadets in carrying out practicals in the laboratory. ASH Analog Experimenter is one of the media or tools used for learning electronics courses. ASH Analog Experimenter is a learning device made by a PIP lecturer in Semarang in 2017. This media is based on a project board that can be used to make electronic circuits. The ASH Analog Experimenter is also equipped with AC and DC voltage sources that can be adjusted as needed. In addition, this device is equipped with a signal generator with a frequency that can be adjusted according to needs.

1.1 Objectives

The ASH Analog Experimenter as an Electronic Learning Media for PIP Taruna Semarang.

II. Review of Literature

2.1 Some of the results of previous studies that can be used as references in this study are as follows:

a. El Basthoh, Najmi Hayati, 2019, research entitled Effectiveness of Science Labor Utilization at Sma Negeri 1 Lubuk Alung, The research of the studying found that the use the science laboratory of SMA Negeri 1 Lubuk Alung as a whole got a score of 78.0% which was classified as effective category.
b. Yuliana, Yusminah Hala, A. Mushawwir Taiyeb, 2017, research entitled Effectiveness of the Use of Laboratories on Motivation and Science Learning Outcomes of Smpn 3 Palakka Students, Bone Regency, The results show that (1) the use of the science laboratory can increase students' learning motivation, this can be seen after learning biology by utilizing the science laboratory, students' learning encorager is in the high category with an average value of 96.91, (2) the use of the science laboratory can improve student learning outcomes, this can be seen after learning biology, student learning outcomes are in the high category with an average value of 82.70.

2.2 Definition of Effectiveness

Effectiveness has many meanings according to what is the focus of the effectiveness. However, broadly speaking, effectiveness can be interpreted as the success of an activity or organization in achieving its goals. The purpose of this study is that students can understand the learning materials given during the learning process well. This understanding is the meaning of effectiveness in terms of the goals to be achieved (Bash, 2015).

The effectiveness of learning activities can be seen from one of the indicators. The attitudes of students, the activities of students and teachers learning outcomes can be a number of things that are used as indicators of learning effectiveness (In'am, 2012).

Understanding related to the definition of effectivenesss can be represented in the effectiveness of learning, learning activities of learning devices such as models, methods, techniques and so on the ability to help students or educators for learning purposes. (Bash, 2015).

The suitability of the activities to carry out the learning process and objectives shows the effectiveness of the learning process. The implementation of all tasks, are also the focus to see the effectiveness of learning (Setiyaningrum, 2015).

2.3 Understanding Learning Media

Educational tool plays the importance of the role in learning activities. Using educational media can help lecturers in delivering lecture material. The success of learning is largely determined by two main components, namely teaching methods and learning media. These two components are interrelated and cannot be separated. The use and selection of one particular teaching method has consequences on the use of the appropriate type of learning media. The function of the media in the teaching and learning process is to increase the stimulation of students in learning activities. Ali, M (2005) stated that the use of computer-assisted learning media has a significant influence oon the attractiveness of students to learn the competencies being taught. The use of learning media can save teaching preparation time, increase student learning motivation, and reduce student misunderstandings regarding the lecturer. Motivation comes from the Latin word movere which means drive or driving force. Motivation in management is only aimed at human resources in general and in particular subordinates (Purba and Sudibjo, 2020).

Learning media can be defined for something that can be used to convey messages, cultivate student's mind, attention, willingness so that it can advance learning activities. Shape learning media are used to improve the learning experience to make it more concrete. Learning bi using learning media is not just using words. Thus, we can expect the results of the learning experience to be more meaningful for students (Sumiati, 2008).

Learning tools are an inseparable part of learning procedures. Various types of learning can be used. The use of learning tools depending on the appropriate choice. Soo that can enlarge the meaning and function to support the effectiveness and efficiency of learning activities. Learning media is expected to be useful, including (Sumiati, 2008):

a. Clarify the message so as not to be too verbalistic;
b. Overcoming the limittations of space, time, energi and senses;
c. Generating a passion for learning, more direct interaction between students and learning resources;
d. Allowing children to learn independentliy according to their visual, auditory & kinesthetic talents and abilities;
e. Give the same stimulus, equate experiencee & generate the same perception

2.4 ASH Analog Experimenter

ASH Analog experimenter is a project board-based learning media with an aattractive desigan for learning electronics practice. Some important parts the ASH Analog Experimenter are the power switch, DC Power Supply, AC Power Supply, Project Board, 1 KΩ Potentiometer, 9 volt DC Motor and Function Generator.

Figure 1. *ASH Analog Experimenter*

III. Research Method

This study uses a qualitative method. The qualitative method descriptive analytical approach using this research, as said by Sugiyono, (2012:3) is a qualitative method to obtain in-depth data, a data that contains meaning. Qualitative methods can significantly affect the substance of the study. This means that qualitative methods present directly the nature of the relationship between researchers and informants, research objects and subjects.

A situation is said to be effective if the similarity of the activity implementation and learning achievement indicates the effectiveness of learning activities. The implementation of all tasks with the estimated time available, the achievement of learning objectives, the participation shown by students and teachers, are also the focus to see the effectiveness of learning (Setiyaningrum, 2015).

This research was conducted at the Maritime Science Polytechnic Campus, Jl.Singosari 2a Semarang. Respondents from the questionnaire were PIP Semarang cadets. Sampling was done randomly with a total of 83 cadets from the Engineering study program.

IV. Results and Discussion

4.1 Results

Testing the validation and effectiveness of using the ASH Analog Experimenter was not only done by checking physically, but also using a questionnaire distributed to respondents, namely Taruna PIP Semarang, especially the Department of Engineering. The results of the questionnaire recapitulation are as follows:

a. General Reference Data

Respondents from the questionnaire were PIP Semarang cadets. Sampling was done randomly with a total of 83 cadets from the Teknika study program. The data obtained include:

1. Gender

The data obtained from the questionnaire showed that 82 respondents or 99% of PIP Semarang cadets were male and 1 respondent or 1% was female. Data tables and graphs can be seen in the image below:

Table 1. Gender

Gender	
Male	Female
82	**1**

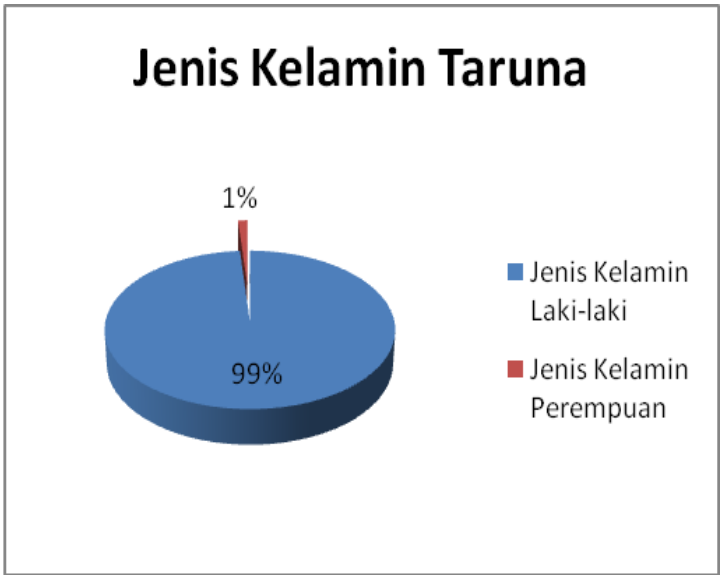

Figure 2. *Gender Grafik*

2. Study Program

The data obtained from the questionnaire showed that the respondents of PIP Semarang cadets were 100% from the Engineering Study Program, 0% from Nautika and 0% from KALK. This is because electronics courses are only available in the Engineering Study Program. The percentage of data can be seen in the graph below

Table 2. Study Program

Study Program		
N	T	K
0	83	0

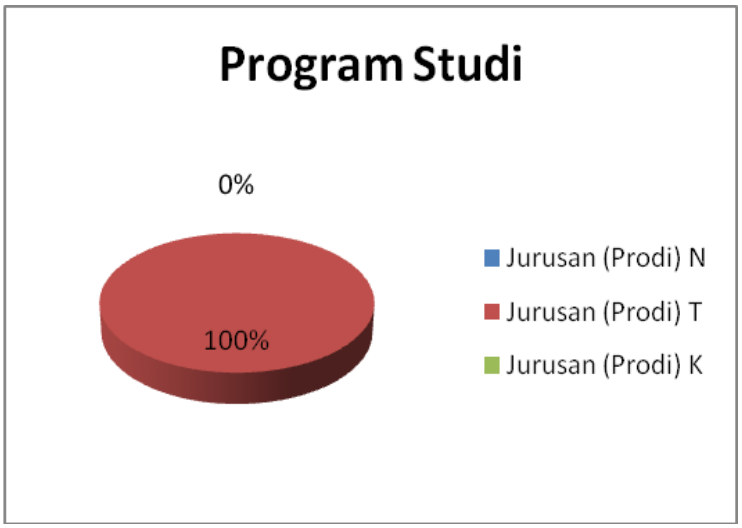

Figure 3. *Study Program Chart*

3. Semester Level

The data obtained from the questionnaire showed that the respondents of PIP Semarang cadets were 67% from Semester 3 and 33% from Semester 7. The percentage of data can be seen in the graph below:

Table 3. Semester Level

Semester	
3 (Third)	7 (Seventh)
56	27

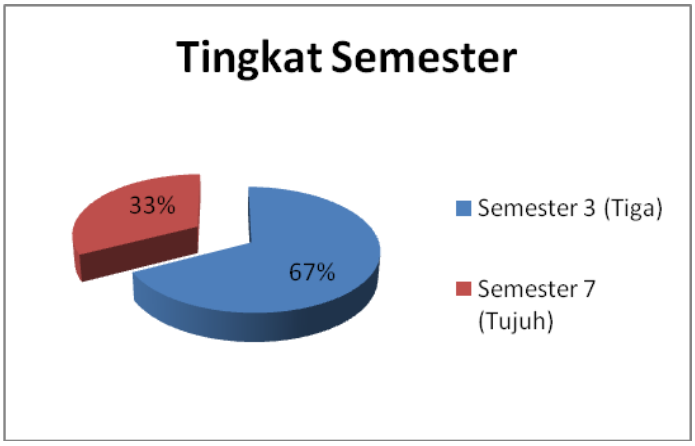

Figure 4. *Semester Level Chart*

b. Main Data Questionnaire Results

The questionnaire distributed to the cadets consisted of 5 questions for data to support the effectiveness of using the ASH Analog Experimenter learning media. The list of questions consists of multiple choice questions, where respondents are expected to answer questions according to their respective opinions regarding the ASH Analog Experimenter learning media. The list of questions includes 5 elements : the level of suitability (Relevance), Performance, Safety, Efficiency, and Understanding. The results of the questionnaire recapitulation are as follows:

1. Level of suitability (Relevance).

The results obtained from respondents regarding the level of suitability of the ASH Analog Experimenter tool with the material studied for electronics courses can be seen in the graphic image below:

Table 4. Level of suitability

Relevance (1)				
Very suitable	Suitable	Indecisive	Barely Suitable	Not Suitable
41	42	0	0	0

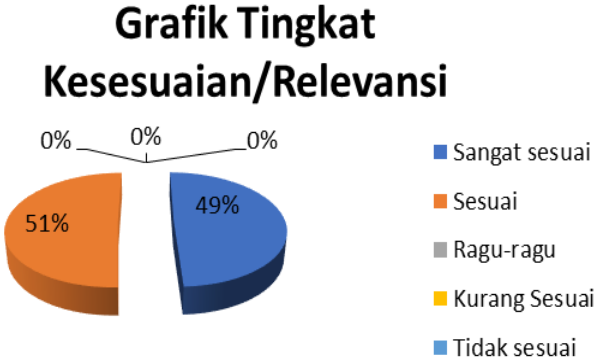

Figure 5. *Level of suitability chart*

2. Level of Performance

The results obtained from respondents regarding the performance or appearance of the ASH Analog Experimenter tool can be seen in the graphic image below :

Table 5. Performance data

Performance (2)				
Very good	Good	Indecisive	Barely good	Not good
44	34	4	1	0

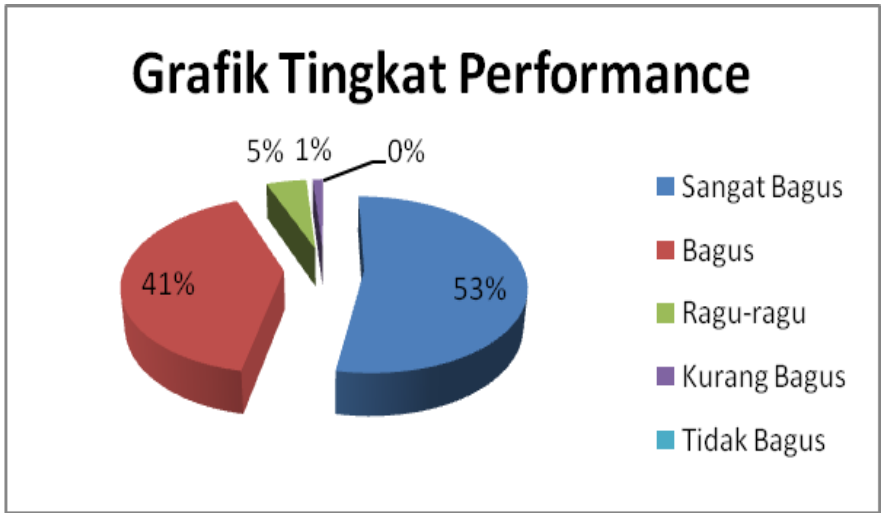

Figure 6. *Performance chart*

3. Level of Safety

The results obtained from respondents regarding the level of security (safety) of the ASH Analog Experimenter can be seen in the graphic image below :

Table 6. Safety data

Safety (3)				
Very safe	Safe	Indecisive	Barely safe	Not safe
42	38	3	0	0

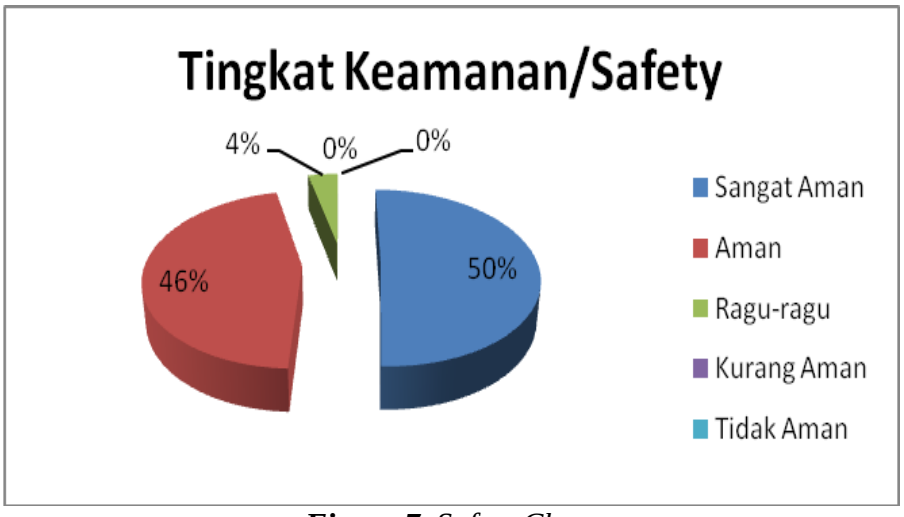

Figure 7. *Safety Chart*

4. Level of Efficiency

The results obtained from respondents regarding the efficiency level of making electronic circuits on the ASH Analog Experimenter can be seen in the graphic image below:

Table 7. Efficiency data

Efficiency (4)				
Very efficient	Efficient	Indecisive	Barely Efficient	Not Efficient
39	43	1	0	0

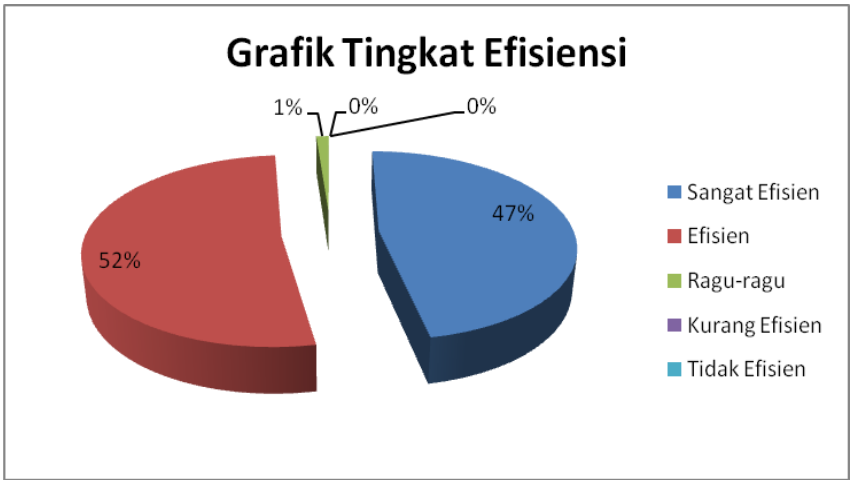

Figure 8. *Efficiency Chart*

5. Understanding

The results obtained from respondents regarding the level of understanding using the ASH Analog Experimenter can be seen in the graphic image below :

Table 8. Understanding Data

Understanding (5)				
Very Understand	Understand	Indecisive	Barely Understand	Not Understand
29	49	5	0	0

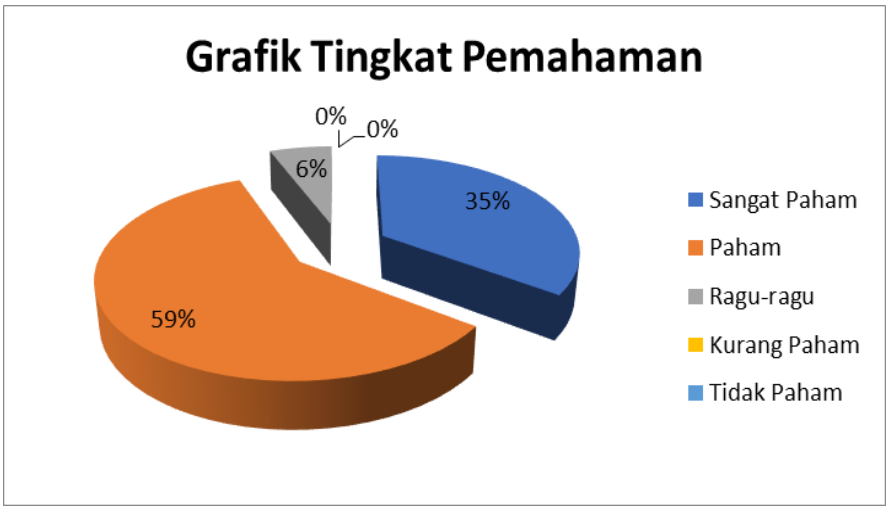

Figure 9. *Understanding Chart*

4.2 Discussion

a. General Reference

Based on data obtained from distributing questionnaires to cadets, it was found that the number of respondents with male sex was 82 and 1 female with a percentage of 99% male and 1% female. For study programs or majors, all respondents are cadets from the Engineering study program (100%). As for the semester level of the respondents, 56 cadets were in semester 3 or 67% and 27 cadets were in semester 7 or 33%.

b. Main Data Questionnaire Results

Based on the data obtained from the respondents, the following data were obtained: The level of suitability (Relevance) of the ASH Analog Experimenter learning media with the material studied for the electronics course was 49% stating it was very suitable and 51% stating it was appropriate, The level of performance or appearance of the ASH Analog Experimenter learning media 53% said it was very good, 41% said it was good, 5% said it was doubtful and 1% said it was not good. The safety level of the ASH Analog Experimenter is 50% stated very safe, 46% safe, and 4% doubtful. The efficiency level of making electronic circuits on the ASH Analog Experimenter media is 47% stating very efficient, 52% efficient and 1% doubtful. The level of understanding using the ASH Analog Experimenter media is 35% very understanding, 58% stating understanding, 6% doubting and 1% not understanding.

V. Conclusion

From the discussion that has been delivered, ASH Analog Experimenter media is very effective and efficient to use for electronic learning media for PIP Taruna Semarang. This can be proven by the results of responses from respondents that in terms of compatibility, the ASH Analog Experimenter is considered appropriate, in terms of performance or appearance it is considered very good, in terms of security it is considered very safe, and in terms of efficiency it can be considered efficient, and in terms of level of understanding using ASH Analog Experimenter is considered to understand by respondents or cadets. Thus, in general, ASH Analog Experimenter is very effectively used for electronic learning media for PIP Semarang Cadets.

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