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INTRODUCTION AND LEARNING OF ELECTRONICS BASIC SKILLS FOR ELEMENTARY SCHOOL CHILDREN IN SD SEKOLAH ISLAM IBNU HAJAR BOGOR

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Abstract

In daily activities the community is never separated from the name of electronic equipment, ranging from simple electronic equipment to complex equipment such as television, mobile phones, computers, printers and so on. With the many needs of the community for electronic equipment certainly creates opportunities for electronic equipment maintenance jobs, the interest in the electronics field can be grown from elementary school age so that they are more independent in caring for and repairing their electronic equipment such as toys, and it is expected that they will at least improve own other electronic equipment that is more complex, or make this electronics a hobby that certainly can generate income. The Community Partnership Program (PKM) aims to provide basic knowledge and skills in electronics to elementary school students at Sekolah Islam Ibnu Hajar. The target is elementary students who have an interest and curiosity about electronics.The method used in this PKM is in the form of an electronic workshop which includes the delivery of material, tutorials, and direct practice by the participants.This PKM program material includes the introduction of electronic components; using electronic assembly tools, assembling simple electronic circuits such as LED flip-flop and mini sirens. With this PKM program, participants are expected to be able to master basic electronic skills, so that participants can make simple electronic circuits and can learn advanced electronic skills.

Keywords: electronic, basic electronic,flip-flop kit, mini sirens kit.

I. INTRODUCTION

Electronic knowledge has an important role for everyday life, every day people will never escape from electronic devices, every human activity on average uses it, for example watching television, ironing clothes, using computers or laptops, mobile phones and gadgets others, certainly using electronic equipment, here can be clearly observed the importance of electronics in everyday life [1].

The introduction and learning of electronic skills are expected to be a vehicle for students to learn the basics of electronics and can further develop and apply electronic skills in their daily lives [2]. Electronics is needed in everyday life to meet human needs through solving identifiable problems, The application of introduction and learning electronic skills in the electronics field needs to be carried out carefully, understanding good material, so as not to have a negative impact on the implementation of practices in the field of electronics [3].

The application of introduction and learning electronic skills is carried out structurally from the basic to the higher level, so that students can better understand the material presented [4]. In this electronic learning students are expected to be able to think forward in terms of technology, especially electronic technology. Application of introduction and learning. This electronic skill aims to make students have the following abilities [3]:

1) Developing knowledge and understanding of electronics that is useful and can be applied in daily life.
2) Develop students' skills in the field of electronics.
3) Increase awareness of the importance of electronics in everyday life.
4) Developing students' curiosity in the field of electronics.
5) Developing the ability to think logically, critically and creatively in the field of electronics.
6) Improve the skills and creativity of students in the field of electronics.
7) Enhancing students' thinking for the future in the field of electronics.
8) Obtain knowledge, concepts and skills in the field of electronics as a basis for continuing education to a higher level

Background

Sekolah Islam Ibnu Hajar at this time is very minimal in the lessons that provide knowledge about electronics. So far, knowledge of electronics has only been obtained by students from Physics subjects, namely about electrical physics and even then very limited discussion.

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The introduction and learning of electronic skills are expected to be a vehicle for students to learn the basics of electronics and can further develop and apply electronic skills in their daily lives.

Electronics is needed in everyday life to meet human needs through solving identifiable problems, The application of introduction and learning electronic skills in the electronics field needs to be carried out carefully, understanding good material, so as not to have a negative impact on the implementation of practices in the field of electronics [6].

The application of introduction and learning electronic skills is carried out structurally from the basic to the higher level, so that students can better understand the material presented. In this electronic learning students are expected to be able to think forward in terms of technology, especially electronic technology [7].

Based on the results of surveys and discussions that have been conducted by the PKM proposal team with partners, namely Sekolah Islam Ibnu Hajar, it can be concluded that the problems faced by partners are as follows:

1) The absence of physical facilities / facilities to support electronic skills education
2) There is no teacher who has a qualification in the field of electronics
3) Lack of relevance of electronic knowledge with the existing curriculum
4) The high cost of practicing electronic skills.

II. METHODS

This Community Partnership Program (PKM) activity was held on February 21, 2019 and March 5, 2019 starting from 10:00 to 16:00. Located at SD Sekolah Islam Ibnu Hajar.

The methods of implementation of the Community Partnership Program activities are:

1) Explain the use of measuring instruments and how to use measuring instruments
2) Describe the electronic components that will be used to make the circuit
3) Explain how to assemble electronic components
4) Practice how to use a good and correct solder
5) Practicing assembling flip-flop electronic kit modules and mini sirens.

Equipment and Materials

The equipment and materials used in this PKM activity include:

1) Digital and analog AVO meters
2) Soldering
3) Flip-flop kit module
4) The mini siren kit module

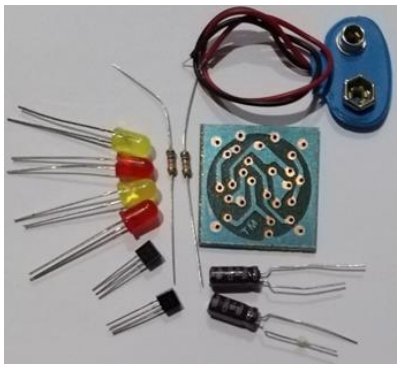

Figure 1. Component of a flip flop kit circuit

The components forming a flip flop kit as shown in Figure 1 consist of

1) Resistor
2) Capacitors
3) LEDs
4) Transistor
5) 9V battery button
6) PCB

Figure 2. Components of a mini siren kit series

The components forming a mini siren kit as shown in Fig 2 consist of:

1) Resistor
2) Capacitors
3) LEDs

4) Transistor
5) 9V battery button
6) PCB

III. RESULTS AND DISCUSSION

This activity is one way to provide basic knowledge and understanding of electronics to elementary school-age children so that the results are expected to foster interest and ability and skills about electronics and can also foster creativity to work using electronic technology. This can be seen from the results of the direct practice carried out in this activity, of which 18 flip flop kit modules were given all successfully assembled by the participants, while for the 18 modules the siren kit which was assembled by the participants only 17 kit modules, 1 The module kit was unsuccessful (did not emit sirens) but was successfully repaired by the service team to function normally. The flip flop kit that has been assembled by the participants of the activity looks like in Fig 3 below:

Figure 3. Assembled flip flop kit

Following this the mini siren kit has been assembled by the participants of the PKM activity as seen in Figure 4 below:

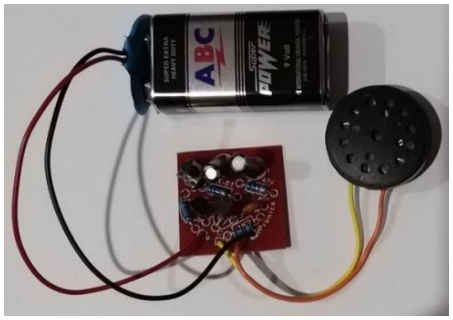

Figure 4. Assembled mini siren kit

IV. CONCLUSION

From the results of the Community Partnership Program activities that have been realized by the service team, the conclusions are as follows:

1) Participants in the activity become aware of how the electronic equipment they meet everyday is made up of electronic components which are arranged together and form a function.
2) With the provision of basic knowledge of electronics for elementary school children can increase their interest in the world of electronics
3) The practice of directly assembling electronic circuits can increase creativity and innovative ideas about electronic circuits.
4) This activity can provide a strong foundation for the provision of knowledge to determine continuing education in the fields of electronics and electrical engineering.

From the conclusions above, the proposal team gave the following suggestions:

1) PKM activities need to be held with the same theme for elementary school children in other schools.
2) Advanced PKM activities can be carried out on the same participants.
3) Basic electronic training activities for elementary school teachers are needed as materials for teaching electronic skills.

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