

SIMPLE ROBOTICS PRACTICE WITH *KAMPOENGR*OBOT AS AN EFFORT TO SHIFT CHILDREN'S DEPENDENCE ON GADGETS: A CASE STUDY IN DURENAN VILLAGE

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Abstract - *The increasing prevalence of smartphones among children represents a significant challenge in contemporary society. Consequently, there is a pressing need for the development of innovative solutions that are both accessible and appealing to young users. In order to address these issues, the researcher employed the action research method to develop a solution. This involved organising a "Simple Robotics Workshop," which was designed to address the identified problems. The series of events commenced with a concise overview of the subject matter pertaining to the constituent parts of the robot, followed by a practical session conducted in collaboration with the speaker. The team concluded that the simple robotics activity was an engaging and inspiring experience for children, fostering their interest in exploring new possibilities and making optimal use of their time.*

Keywords: *KKN, Proker, Robotik Sederhana, Simple Robotic, IT*

1. INTRODUCTION

In this modern age, children are confronted with a variety of cutting-edge technologies that offer different kinds of satisfaction and pleasure. One of them is the existence of social media platforms, which have spread to various circles of society. In addition to their benefits as the latest information media, these platforms are also a means of entertainment for the community. Entertainment in the form of content that is very useful and related to everyday life, as well as content that is created for the sole purpose of entertainment.

In utilizing these platforms, problems are often encountered, one of which ultimately makes many children victims. This is certainly driven by the level of internet usage among the younger generation which has increased since Covid-

19 broke out in 2020 (Protect Indonesian Children from the Negative Impact of the Internet, 2021). Based on the group's observation, Durenan Village is a village with a fairly high level of internet usage and this can be seen from several internet points facilitated by the village. However, due to the ease of accessing the internet, the possibility of children using cellphones excessively is quite high. Excessive screen time for children will affect their ability to maintain concentration on their activities (PAUDPEDIA - The Negative Impact of Excessive Screen Time for Early Childhood, 2024). Therefore, a new effective method is needed to protect children from internet misuse.

In this straightforward robotics exercise, we engage in a collaborative endeavour with *Kampoeng Robot* as our partner organisation. The *Kampoeng Robot* community was established in October 2001 in Surabaya, the capital city of East Java. Its objective is to develop simple, accessible, and cost-effective robotics projects, with the ultimate goal of providing all children in Indonesia with the opportunity to construct or assemble their own robots. This initiative is designed to contribute to the reduction of smartphone usage among children.

One approach to teaching and learning is through direct practice, whereby teachers apply the material they are teaching directly to their students (Munthe 2008, cited in Fatimah 2020). This method facilitates the creation of a learning process through the interaction between the teacher and students, enabling students to develop or enhance their skills. In accordance with the selected pedagogical approach, this exercise is designed to facilitate the development of a concentrated focus among the participants through the utilisation of

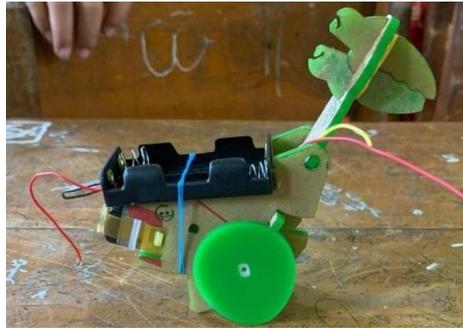
straightforward practical activities. Furthermore, this method is deemed appropriate for achieving the activity's objective of curbing gadget addiction in children through straightforward didactic techniques with immediate engagement.

2. METHOD

In this service activity, we employ the Action Research method, which is a method that examines social situations with a view to enhancing the quality of actions undertaken in a given social situation (Sugiyono, nd). This research, in other words, represents a methodology deployed with the objective of identifying avenues for improvement in a social context. In this robotics programme, the social condition under investigation is excessive screen time, which is a prevalent phenomenon among children.

The activities conducted in accordance with these methodologies are collectively referred to as the *Workshop Robotik Sederhana*. This initiative is undertaken in conjunction with *Kampoeng Robot* in Durenan Village. The event was conducted in three phases, occurring on the 2nd, 9th, and 10th of August, 2024. The workshops were conducted in multiple educational institutions, including Dharma Wanita I Kindergarten, SD N 2 Durenan, and SD N 1 Durenan in Durenan Village, Durenan District, Trenggalek Regency, East Java. The participants in this workshop are students from each school, but at the elementary school level, the attendees are students from grades 4 and 5. The event is overseen by members of Unit 262, with a single representative from the *Kampoeng Robot* community acting as the principal speaker.

In its implementation, this event went through 3 stages, namely preparation, implementation of workshops with practical methods and giving prizes to participants who completed their robot circuits first. In this practicum process, there are 3 stages, namely the introduction of material or introduction to the concepts and components that make up the robot, and the practical stage of robotic assembly and as for this assembly stage, the speaker demonstrates and explains the composition of the robot to be assembled.



Picture 1. Simple Robot Set

3. RESULT AND DISCUSSION

This straightforward robotics workshop activity is conducted through the utilisation of pragmatic methodologies and an active participant approach. The preliminary stage is the preparation of the event, which involves coordinating with *Kampoeng Robot* in the local village and discussing the teaching concepts to be applied to students. Additionally, the coordination with fellow members of Unit 262 is essential for the arrangement of the event and the division of tasks for each member, as illustrated in Figure 2. In determining the concept to be used, the children are divided into groups comprising one or two individuals, with unit members acting as assistants and Pak Danang (*Kampoeng Robot*) serving as the speaker. The equipment and materials utilized in the practical process will be provided by *Kampoeng Robot* in the form of 25 packages of simple robot components. Moreover, at the outset of the event, the speaker provided a concise overview of the robot components that would be utilized.



Picture 2. The process of Coordination with Unit



Picture 3. Brief explanation process from the speaker

Once each participant or group has been furnished with a package of components, the process of assembling the robot can commence. The assembly demonstration was conducted by the speaker with the assistance of unit members. The components of the robot consist of a yellow 3-6 volt DC gearbox motor, nine pieces of 3 mm acrylic body material (laser cutting), a battery holder, rubber, and 0.75 mm cable. The preparation of this robot component commences with the installation of a robot support body, followed by the addition of several pieces of acrylic as a robot motion tool. The installation of these acrylic components is facilitated by the presence of holes in specific body parts, allowing them to be affixed to other pieces through the use of an adhesive. Subsequently, the battery holder is positioned at the upper portion of the lower robot body and secured using rubber, as illustrated in Figure 5.



Picture 4. Robot components



Picture 5. The Completed Robot

In accordance with the relevant standards, the cables are marked with different colours: a pair of red wires, one yellow wire and one black wire. One red cable is wrapped around the inferior aspect of the mouth component at the posterior, followed by another red cable at the superior aspect of the mouth. The on/off button at the front of the robot mouth is glued with rubber as a buffer to enable the mouth to clamp objects inserted into it. This is the on/off mechanism of the robot. The pieces of components that fit and other simple complementary components contribute to participants' enthusiasm during the assembly process.



Picture 6. Participants have completed the assembly

At the conclusion of the practical session, participants were posed a series of questions pertaining to the power source of the robot and other robot components. Additionally, the speaker provided clarification on the ease of accessibility and affordability of the materials utilized. Prior to concluding the final session of the event, documentation was duly collected.



Picture 7. Documentation with Workshop Participants



Picture 8. Documentation with Workshop Participants

From the observations made by the organising team at the workshop, it was noted that a significant proportion of the participants displayed a high level of interest and enthusiasm in the robot assembly process. Furthermore, the team observed the teachers and guardians to be highly enthusiastic in observing the students during the assembly process. This indicates a very positive response to the activity. Additionally, this activity plays a significant role in motivating and inspiring students to develop their talents and interests in robotics. There is a

desire from several school parties for this activity to be carried out on a larger scale.

4. CONCLUSION

A basic introduction to robotics for students at the elementary level represents an optimal initial step for both students and parents. It allows students to explore their interests and provides parents with the opportunity to facilitate their children's engagement in constructive activities. The simplicity of the learning process in terms of the material and the practical process itself has resulted in highly enthusiastic participants, as evidenced by the accuracy of the students' responses to questions and their attention to the speaker. Furthermore, the activity proceeded as anticipated and was met with considerable approval from all stakeholders.

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