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# Education on energy-saving behavior and electrical safety using the demonstration method at RA Al-Istiqomah GSI Serdang

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## ABSTRACT

The energy-saving and electrical safety awareness program at RA Al-Istiqomah GSI Serdang was designed to enhance children's understanding of electrical hazards and promote efficient energy use. The program used the demonstration method with safe electricity educational tools to deliver the material effectively. Children were taught preventive measures against electrical hazards, such as avoiding frayed cables and wet wires and safely using power sockets and electronic devices. Evaluation results showed an average questionnaire score of 4.66 points, which was categorized as very high, supported by interviews confirming participants' increased understanding. Energy-saving practices were presented through demonstrations, videos, and storytelling. This program effectively enhanced children's knowledge and positively impacted the educational environment at RA Al-Istiqomah.

## ABSTRAK

Penyuluhan tentang perilaku hemat energi dan keselamatan listrik di RA Al-Istiqomah GSI Serdang bertujuan meningkatkan kesadaran anak-anak terhadap bahaya listrik dan penggunaan energi yang efisien. Kegiatan ini menggunakan metode demonstrasi dengan alat edukasi listrik aman untuk menyampaikan materi secara efektif. Anak-anak diajarkan tindakan pencegahan bahaya listrik, seperti menghindari kabel terkelupas, kabel yang basah, serta penggunaan stop kontak dan perangkat elektronik dengan aman. Evaluasi menunjukkan rata-rata skor kuisioner sebesar 4,66 poin dalam kategori sangat tinggi, didukung oleh wawancara yang mengonfirmasi peningkatan pemahaman peserta. Materi hemat energi disampaikan melalui demonstrasi, video, dan dongeng. Penyuluhan ini terbukti efektif dalam meningkatkan pemahaman anak-anak dan memberikan dampak positif bagi lingkungan pendidikan di RA Al-Istiqomah.

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## 1. Introduction

### 1.1. Community Service Program: Promoting Safe and Efficient Electricity Use Among Children at RA Al-Istiqomah, Serdang

RA Al-Istiqomah is an integrated Islamic early childhood education institution (PAUD), kindergarten (TK), and Islamic elementary school (MIT) located in Serdang. The school accommodates over 100 students from across the Serang-Cilegon region of Banten, making it a representative microcosm of the area's population. With a teacher-to-student ratio meeting educational standards, RA Al-Istiqomah holds a B+ accreditation from the Ministry of Education and Culture.

Electricity is an indispensable energy source in modern life, powering household appliances such as air conditioners, refrigerators, and rice cookers. While beneficial, electricity also poses significant hazards if mishandled, including risks of fire, electric shock, and explosions [1-4]. In households, children are particularly vulnerable to these risks. As active household members who frequently interact with electrical devices, children may inadvertently face dangers even with routine tasks such as turning on lights or televisions. To reduce these risks, children must be equipped with knowledge about electrical safety, safe usage practices, and emergency responses to electrical hazards.



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### 1.2. Challenges Faced by Partners

Although information about electrical safety and energy conservation is readily accessible online, children's access to and understanding of such information remain limited. Despite their growing familiarity with the internet, children often do not seek out critical information unless its importance is emphasized. Furthermore, the methods used to convey this information must be tailored to their cognitive level and learning preferences, as standard approaches designed for adults are ineffective for younger audiences [5-6].

In addition to safety, electricity users must understand the importance of conserving energy. While increased electricity consumption often indicates improved societal prosperity, excessive usage can lead to negative consequences [7-8]. The growing demand for electricity strains supply, particularly in areas like Serdang, which frequently experiences power outages due to limited resources from the state electricity company (PLN). Educating the public about energy-saving measures benefits both the consumers and PLN by reducing production costs and ensuring equitable access to electricity nationwide [9-10]. For children, these energy-saving practices must be presented in simple and practical ways that they can easily comprehend and apply.

### 1.3. Community Service Program Objectives

This community service initiative aims to instill safe and responsible electricity usage habits in children from an early age. By fostering wise energy consumption behaviors, the program not only helps children reduce electrical hazards but also encourages them to assist their families in conserving energy. Furthermore, these children can become agents of change, spreading awareness about safe and efficient electricity use within their communities. Ultimately, this program seeks to create a broader, positive impact on society by promoting sustainable electricity use and reducing energy-related risks in the Serang-Cilegon region.

## 2. Methods

The community service program at PAUD, TK, and MIT Al-Istiqomah School, located in Serdang, Kramatwatu, Banten, applied a combination of demonstration, audiovisual media, and participatory approaches to promote safe and efficient electricity use. The activities included demonstrations and presentations on electrical safety and energy conservation, as well as technical guidance and training to equip participants with the skills needed to handle potential electrical hazards effectively, thereby reducing risks in households.

The program was implemented in four stages. The preparation stage involved a location survey, program socialization to partners, detailed discussions with partner groups regarding activity plans, obtaining necessary permissions, and preparing training materials. The implementation stage focused on delivering presentations, conducting demonstrations, and providing technical guidance to teach participants safe practices in using electricity and conserving energy. In the technical assistance stage, observations, demonstrations, and monitoring were conducted with children who had sufficient cognitive understanding. These children were given illustrative and educational materials to increase their awareness of energy efficiency and encourage their parents to adopt energy-saving habits. Finally, the evaluation stage included interviews with stakeholders such as participants, educators, and parents to gather feedback. Questionnaire data were also processed and analyzed to assess the program's effectiveness and outcomes. This structured approach ensured that participants gained a comprehensive understanding of electrical safety and energy conservation, fostering responsible behaviors among children and their families while promoting a culture of energy efficiency within the community.

## 3. Results and Discussion

### 3.1. Implementation of Energy-Saving and Electrical Safety Awareness Program

The energy-saving and electrical safety awareness program was conducted on Wednesday, June 5, 2024, from 08:00 to 12:00 at RA Al-Istiqomah GSA, Serdang, Banten. The participants included students from two PAUD classes, three TK classes, and one MIT class, along with their teachers, educators, and the school principal. The event began with an opening session, followed by training delivered by a team of lecturers and two students. The training materials featured interactive activities, including a question-and-answer session to engage participants, educational videos, and a demonstration of energy-saving and electrical safety tools. The content was tailored to the children's age and developmental stage, ensuring accessibility and understanding.

### 3.2. Preliminary Observations

A pre-implementation survey revealed that the participants, teachers, and school staff had never received similar training. As a result, no pre-test was conducted. Instead, interactive discussions on energy-saving and electrical safety practices were initiated directly, followed by the main training materials. The program featured an educational video titled "Hemat Energi Listrik", accessible via YouTube in [https://youtu.be/R8n\\_1AGTo7I?si=prdw6DEL1itWdj0U](https://youtu.be/R8n_1AGTo7I?si=prdw6DEL1itWdj0U).

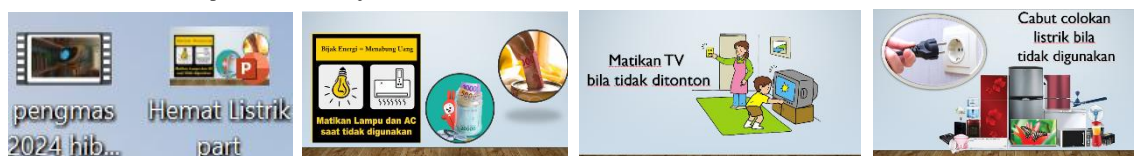


Figure 1. Video presentation on energy-saving and electrical safety.

### 3.3. Energy-Saving Tool Demonstration

A demonstration on the use of energy-saving tools was also conducted, with the demonstration video available at YouTube in <https://youtu.be/2ZQJyfdXRWM?si=6kaVk15HUs2I-5n7>. The program concluded with a group photo involving participants and organizers.



Figure 2. Demonstration of energy-saving and electrical safety tools.



Figure 3. Group photo with participants and organizers.

### 3.4. Results of Energy-Saving and Electrical Safety Awareness Program

The program evaluation utilized two methods:

1. Interviews: Conducted with participants, teachers, parents, and school staff. A video summary of the interviews is available on <https://youtu.be/pS7I2eVJbHU?si=OqliqgHErWe0ReZD>. The interviews revealed that most respondents reported positive behavioral changes in children and found the program beneficial for promoting energy-saving and electrical safety awareness.
2. Questionnaire: Distributed via WhatsApp to parents, with a response rate of 83% (102 out of 123 participants). The questionnaire consisted of six brief questions using a Likert scale (1 = lowest, 5 = highest).

The results of the questionnaire revealed that the energy-saving behavior counseling program conducted by the Community Service Team of Sultan Ageng Tirtayasa University was highly beneficial, with a majority of respondents rating the program as very effective. Specifically, 66% of participants gave a score of 5, 33% a score of 4, and 1% a score of 3, resulting in an average score of 4.64 points. These findings highlight the program's positive impact, not only for children but also for adults in promoting energy efficiency and electrical safety.

In terms of children's behavior, 68% of respondents noted significant improvements in their children's energy-saving practices, with an average score of 4.62 points. While the program has shown success in fostering better energy usage habits, continuous reinforcement is recommended to maintain and strengthen these behaviors. Additionally, parents' engagement in discussing energy-saving behaviors with their children at home was strong, receiving an average score of 4.58 points. This indicates that the program effectively encouraged family-level discussions on energy efficiency, as supported by a video summary provided as part of the evaluation.

Furthermore, the program demonstrated a notable impact on parents' energy-saving behaviors, achieving the highest average score of 4.73 points. While one respondent rated this aspect as 3, the majority found the program to be highly effective in influencing positive changes in parental behavior. Overall, the program successfully enhanced awareness and practices regarding energy-saving and electrical safety, benefiting both children and parents while fostering a culture of sustainability within households.

The data analysis showed an average score of 4.66 points, categorized as very high. These results aligned with the interview findings, demonstrating the program's success in achieving its objectives. The outcomes highlight the program's effectiveness in raising awareness about energy-saving and electrical safety practices, fostering positive behavior changes in children, and supporting educators and parents in promoting sustainable energy use within the community.

## 4. Conclusion

The participants of RA Al-Istiqomah showed great enthusiasm during the demonstration on safe electricity use. Interviews with participants, school staff, and parents yielded highly positive feedback. The questionnaire results also reflected this, with an average score of 4.67 points, categorized as very good in improving children's knowledge about electrical safety. The demonstration tool, a safe electricity education kit, proved effective as a medium for delivering material to enhance children's understanding of how to avoid electrical hazards. Topics included preventive actions such as avoiding frayed cables, keeping cords dry, handling power sockets properly, and turning off electronics when not in use. The questionnaire for this session yielded an average score of 4.66 points, further validating the tool's impact. Respondents also showed excellent feedback regarding wise energy use behaviors, such as turning off electrical appliances when not in use, with an average score of 4.62 points. The interview results aligned with the questionnaire findings, demonstrating the program's success. This initiative provided significant benefits, not only for the participants but also for their parents, contributing to equitable access to electricity across Indonesia, particularly in Banten Province.

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