

**Modification of Sports Equipment as PJOK Learning Media by
Utilizing Used Materials at SD Tahfidz An-Najmiyatul Jannah
(RHQ)**

**Cintia Shella Diba^{1*}, Muhammad Fadhil Nada Fa'iz², Januar Abdilah
Santoso³**

¹²³Pendidikan Olahraga, UMKT Samarinda, Kalimantan, Indonesia.
cintiaselaa@gmail.com; nadafaiz96@gmail.com; Jas970@umkt.ac.id

*Corresponding Author: cintiaselaa@gmail.com

Received: 05-09-2026; Revised: 19-09-2026; Accepted: 30-09-2026

Abstrak

Kegiatan pengabdian ini dilatarbelakangi oleh pentingnya penggunaan alat pembelajaran yang menarik, sederhana, dan sesuai dengan kondisi lingkungan sekolah dalam mendukung pelaksanaan Pendidikan Jasmani, Olahraga, dan Kesehatan (PJOK) di sekolah dasar. Salah satu upaya yang dapat dilakukan adalah memanfaatkan bahan bekas menjadi alat pembelajaran olahraga yang sederhana dan memiliki nilai guna. Kegiatan ini dilaksanakan di SD Tahfidz An Najmiyatul Jannah dalam rangka Program Pengabdian dan Pengenalan Lapangan Persekolahan (P2LP) selama dua bulan. Tujuan kegiatan adalah memanfaatkan bahan yang mudah ditemukan di lingkungan sekitar untuk menghasilkan alat pembelajaran PJOK yang dapat digunakan dalam kegiatan olahraga dan permainan peserta didik. Metode pelaksanaan dilakukan melalui beberapa tahap, yaitu identifikasi kebutuhan alat, pengumpulan bahan, perancangan, pembuatan, dan pemanfaatan alat dalam kegiatan pembelajaran PJOK. Alat yang berhasil dibuat meliputi kun dari botol plastik bekas, tali lompat dari karet, tongkat estafet dari kardus yang diisi kertas, serta bola yang dibuat dari gulungan tali rafia dan dilapisi lakban bening. Hasil kegiatan menunjukkan bahwa bahan bekas yang sederhana dapat dimanfaatkan menjadi media pembelajaran olahraga yang praktis dan dapat digunakan dalam berbagai aktivitas gerak. Kegiatan ini juga memberikan pengalaman kepada mahasiswa dalam mengembangkan kreativitas, menyesuaikan media pembelajaran dengan kebutuhan peserta didik, serta mendukung terciptanya pembelajaran PJOK yang lebih menarik dan menyenangkan.

Kata Kunci: Bahan bekas; Alat pembelajaran; PJOK; Modifikasi alat olahraga; Sekolah dasar.

Abstract

This community service initiative was motivated by the importance of using engaging, simple, and context-appropriate instructional tools to support Physical Education, Sports, and Health (PJOK) instruction in elementary schools. One viable approach is to repurpose waste materials into simple yet functional

sports equipment. The project was carried out at SD Tahfidz An Najmiyatul Jannah as part of the Community Service and School Field Experience Program (P2LP) over a period of approximately two months. The objective was to utilize locally available materials to create PJOK equipment suitable for students' sports activities and games. The implementation process involved several stages: identifying equipment needs, gathering materials, designing, fabricating, and utilizing the equipment during PJOK lessons. The resulting equipment included cones made from used plastic bottles, jump ropes made from rubber, relay batons made from cardboard tubes stuffed with paper, and balls crafted from coiled raffia string wrapped in clear packing tape. The results demonstrate that simple waste materials can be effectively transformed into practical sports instructional aids suitable for various movement activities. Furthermore, the project provided students with valuable experience in fostering creativity, tailoring instructional media to student needs, and helping to create a more engaging and enjoyable PJOK learning environment.

Keywords: Repurposed materials; Learning aids; Physical education; Sports equipment modification; Elementary school.

INTRODUCTION

Physical, Sports, and Health Education (PJOK) is one of the important parts of education in elementary school because it provides opportunities for students to be directly involved in various movement activities, games, and sports. PJOK learning is not only oriented towards mastering knowledge about physical activities, but also provides a learning experience through students' involvement in physical activities directly. Physical activities in PJOK learning are influenced by various factors, including learning practices, learning environments, the availability of facilities and infrastructure, and the characteristics of students (Andika et al., 2026). Therefore, PJOK learning needs to be designed so that students can actively engage in movement activities in accordance with their learning goals and characteristics.

The implementation of PJOK learning also requires the support of appropriate learning facilities and media. Facilities and infrastructure are one of the factors that play a role in supporting the PJOK learning process because sports activities require space and tools that students can use during movement activities. Cahyani et al. (2024) show that facilities and infrastructure are an important part of supporting PJOK learning in elementary schools, while Fatihaturrahmah et al. (2024) explained that facilities and infrastructure are factors that can affect the quality of PJOK learning. Yusufi et al.'s (2022) research also shows that the availability of PJOK facilities and infrastructure in elementary schools is still not sufficient for ideal needs, so innovation is needed in providing learning tools. Thus, the availability of appropriate learning tools and media needs to be a concern so that PJOK activities can take place actively, variedly, and in accordance with the conditions of students.

Based on the results of initial observations conducted at SD Tahfidz An-Najmiyatul Jannah (RHQ), it is known that schools do not have sports equipment that can be used to support PJOK learning activities. Based on initial data collection, the number of sports equipment available for PJOK activities is 0 tools. This condition causes the implementation of sports and game activities to need to adjust to the resources available in the school environment. The unavailability of sports equipment is also an obstacle in providing a variety of activities, especially in learning activities that require tools as a supporting medium.

In addition to the unavailability of sports equipment, the condition of the school environment is also a consideration in the implementation of PJOK learning. The area or field used for sports activities is close to glass. This condition causes the selection of equipment used in PJOK activities to pay attention to the safety of students. The tools used should have a shape and material that is in accordance with the conditions of the school environment so that it can support movement activities without increasing the risk of damage to facilities or injuries to students.

These conditions show the need for PJOK learning tools that are simple, safe, economical, and can be adjusted to school conditions. One alternative that can be done is through modifying sports equipment by utilizing used materials that are easy to find in the surrounding environment. The use of used materials can not only be an alternative to provide learning tools at a relatively low cost, but can also provide added value to items that were not previously used. Modification activities also allow the shape and function of the tools to be adjusted to the type of PJOK activity to be carried out.

Modification of learning tools has been used as an alternative in dealing with the limitations of sports facilities. Modified tools can be adjusted to the characteristics of students, learning objectives, and environmental conditions where learning takes place. The use of simple tools can also provide opportunities for teachers and students to create a variety of learning activities without completely relying on standard sports equipment. Thus, the limitations of facilities do not always have to hinder the implementation of PJOK learning if there are creative efforts in providing appropriate learning media.

In this service activity, students use used materials and simple materials that are easy to obtain in the surrounding environment, namely used plastic bottles, rubber, cardboard, paper, raffia rope, and clear duct tape. These materials are modified into four types of PJOK learning tools, namely kun from used plastic bottles, jump ropes from used rubber, relay sticks from cardboard reinforced with paper, and balls from raffia rope rolls coated with clear duct tape. The manufacture of the tool is carried out by considering the function of the tool, ease of use, the condition of the school environment, and safety aspects in learning activities.

The four tools are then used as supporting media in various PJOK activities. Kun can be used in activities related to agility and coordination, jump rope can be used for movement and coordination activities, relay sticks can be

used in games or relay running exercises, while balls from raffia rope can be used in game activities and basic movement skills. With these tools, schools obtain alternative learning media that were not previously available.

In addition to producing learning tools, used sports equipment modification activities also provide experience to students in identifying school needs, designing tools, selecting materials, carrying out the manufacturing process, and adapting media to real conditions in the field. This activity also supports the reuse of materials that are no longer used so that they have a useful value in educational activities. Thus, modification activities are not only related to the provision of sports equipment, but also a form of creativity in supporting PJOK learning and the use of used materials more productively.

METHOD OF IMPLEMENTATION OF ACTIVITIES

The service activity was carried out at SD Tahfidz An Najmiyatul Jannah as a partner school in the implementation of the School Field Service and Introduction Program (P2LP). P2LP activities were carried out for two months. During the implementation of these activities, students were involved in various educational activities, including PJOK learning activities and the manufacture of sports learning tools.

Location and time

The service activities were carried out at SD Tahfidz An Najmiyatul Jannah as a partner school in the implementation of the School Field Service and Introduction Program (P2LP). P2LP activities were carried out for two months, from July 20, 2026 - September 20, 2026. During the implementation of these activities, students were involved in various educational activities, including PJOK learning activities and the manufacture of sports learning tools.

Stages of Implementation

The implementation of learning tool modification activities is carried out through five stages, the flow of which is presented in Figure 1 and described as follows:

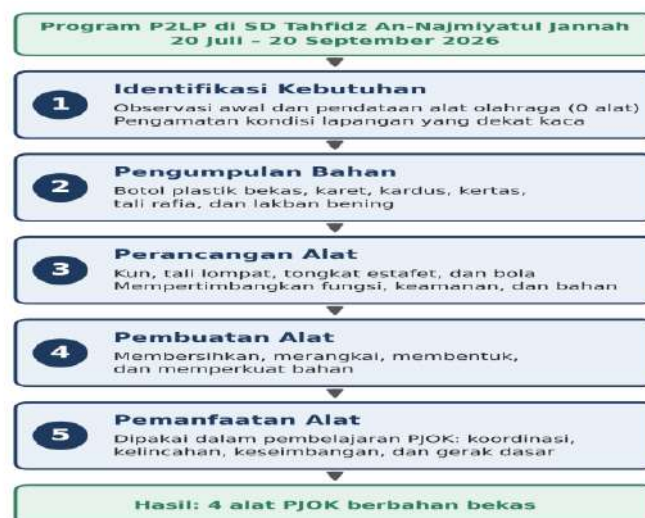


Figure 1. Flow chart of the implementation of used sports equipment modification activities

Activity Objectives

The target of the activity is the PJOK learning environment in elementary schools, especially students who participate in sports and game activities. The creation of tools is carried out to support learning activities so that simple sports media can be adapted to the activities carried out.

Identify Needs

The initial stage is carried out by paying attention to the need for tools that can be used to support PJOK learning activities. The tools made are adjusted to sports and game activities carried out at school.

Material Collection

The materials used are simple materials that are easy to find in the surrounding environment. These materials include used plastic bottles, rubber, cardboard, paper, raffia rope, and clear duct tape.

Tool Design

The tool design stage is carried out by determining the type of sports equipment that is in accordance with the needs of PJOK learning and the conditions of the school environment. The designed tools include kuns from used plastic bottles, jump ropes from used rubber, relay sticks from cardboard, and balls from raffia rope. The design is carried out by considering the function, ease of manufacture, safety, and availability of used materials in the environment

Tool Manufacturing

The stage of making tools is carried out by utilizing used materials that have been prepared and adjusted to the needs of PJOK learning. The tools made include cones from used plastic bottles, jump ropes from used rubber, relay sticks from cardboard reinforced with paper, and balls from raffia rope that are rolled up and coated with duct tape. The manufacturing process is carried out simply by cleaning, assembling, shaping, and strengthening the material so that it is safe and can be used in PJOK learning activities.

Tool Utilization

The sports equipment that has been made is then used in PJOK learning activities at SD Tahfidz An-Najmiyatul Jannah (RHQ). The tool is used to support various movement activities, such as coordination exercises, agility, balance, and basic movement skills. The use of used tools helps learning activities to be more interesting and varied, while providing an alternative to simple, safe, and economical sports facilities according to the conditions of the school environment.

IMPLEMENTATION OF ACTIVITIES AND DISCUSSIONS

The activity of modifying used sports equipment at SD Tahfidz An-Najmiyatul Jannah (RHQ) produced several tools that can be used as a supporting medium for PJOK learning.



Figure 2. Students' enthusiasm in making sports equipment

The activity of modifying used sports equipment at SD Tahfidz An-Najmiyatul Jannah (RHQ) produced several tools that can be used as a supporting medium for PJOK learning. The tools that were successfully made included kun from used plastic bottles, jump ropes from used rubber, relay sticks from cardboard reinforced with paper, and balls from raffia rope that were rolled up and coated with duct tape. These tools are made with simple materials that are easy to obtain in the environment around the school.

The results of the activity show that used materials that were not previously used can be processed into sports equipment that has a function in PJOK learning. The tools that have been made are then used in various student movement activities, so that learning can be carried out with simpler means and in accordance with school conditions. In addition, the use of modified tools also provides variety in learning activities and helps create more interesting activities for students.

Discussion

The results of initial observations showed that SD Tahfidz An-Najmiyatul Jannah (RHQ) did not have sports equipment to support PJOK learning (0 tools). After the modification activities were carried out, the school obtained four types of tools, namely kun, jump rope, relay sticks, and balls, so that the need for supporting media that was previously not available can be met simply. This condition is in line with the findings of Yusufi et al. (2022) who show that the availability of PJOK facilities and infrastructure in elementary schools still does not meet ideal needs, so innovation in the provision of learning tools is needed. The important role of facilities and infrastructure in supporting PJOK learning was also stated by Cahyani et al. (2024) and Fatihaturrohman et al. (2024).

Each tool made has a different function in learning. Kun from used plastic bottles can be used as path markers or points in activities that train agility and coordination. Jump ropes made of used rubber support jumping activities related to movement coordination. Paper-reinforced cardboard relay sticks can be used in relay games or running exercises, while balls from raffia rope rolls coated with clear duct tape can be used in games and exercises of basic movement skills.

The four tools cover a wide variety of activities so that teachers and students have more options in designing varied learning activities.

The selection of the type of tools and materials is also adjusted to school conditions, especially sports areas adjacent to glass. Therefore, the tools are designed with functions, ease of manufacture, and safety in mind so that they can support movement activities without increasing the risk of damage to facilities or injury to students. The materials used are easy to obtain in the surrounding environment and relatively economical, so that the tools can be remade by teachers or students if needed. This shows that the limitations of facilities are not always an obstacle as long as there are creative efforts in providing appropriate learning media.

From the student side, this activity provides experience in identifying school needs, designing tools, selecting materials, and adjusting media to real conditions in the field. From the environmental side, the use of used materials shows the application of the principle of reducing and reusing previously unused goods, so that the tools produced are not only useful for learning but also have educational value about caring for the environment.

This activity still has limitations. The use of tools has not been evaluated in a measured manner, for example through student involvement observation sheets or teacher assessments, and the durability of tools in long-term use has not been tested. Therefore, further activities are recommended to add evaluation instruments, training for teachers in utilizing and maintaining tools, and the development of other tools that are in accordance with PJOK materials.

Benefits of Activities for Students and Schools

Learning tool modification activities provide direct experience to students in planning and creating learning media. Students learn to identify the needs of tools, choose available materials, carry out the manufacturing process, and adapt the tools to learning activities.

These activities also support the development of students' abilities to be creative and collaborative. In the implementation of P2LP, students gain experience in teaching, communicating, cooperating, managing activities, creating, and being responsible for the tasks given.

For schools, the existence of modified tools can be an alternative learning media that is simple and easy to use. These tools can be used in PJOK activities and games according to learning needs.

CONCLUSION

The PJOK learning tool modification activity carried out at SD Tahfidz An-Najmiyatul Jannah (RHQ) is one of the efforts to utilize used materials and simple materials in the surrounding environment to support the implementation of sports learning in elementary schools. Through this activity, students succeeded in producing four types of learning tools, namely kun from used plastic bottles, jump ropes from used rubber, relay sticks made of cardboard reinforced paper, and balls from raffia rope rolls coated with clear duct tape. These tools have been

proven to be effective in various movement activities of students, such as coordination exercises, agility, balance, and basic movement skills.

The results of the activity show that the limitations of school facilities and infrastructure are not an obstacle in the implementation of PJOK learning, because used materials that are simple and easy to obtain can be processed into learning media that is safe, economical, and has a useful value. The use of used materials is also in line with the application of environmentally friendly principles (go green) through the reduction and reprocessing of unused goods.

In addition to producing learning tools, this activity also provides dual benefits: for students, this activity is a means of developing creativity, cooperation, and the ability to adapt learning media to the needs and conditions of the school environment; while for schools, the tools produced are alternatives to PJOK learning media that are simple, easy to use, and can be used sustainably in sports activities and student games. Thus, the modification of used sports equipment can be one of the practical solutions in supporting the implementation of PJOK learning that is more creative, interesting, safe, and fun, especially in schools with limited facilities and infrastructure.

THANKS

The author would like to thank SD Tahfidz An Najmiyatul Jannah for providing opportunities and support during the implementation of the School Field Service and Introduction Program (P2LP). The author also expressed his gratitude to the field supervisors, pamong teachers, all teachers and education staff, as well as students who have helped and supported the implementation of activities while in the school environment.

Gratitude was also expressed to the University of Muhammadiyah East Kalimantan, especially the Faculty of Teacher Training and Education, for providing opportunities for students to carry out P2LP activities as part of the process of developing student experience and competence.

REFERENCES

- Andika, I. P. H. W., Angga, P. D., Putra, G. P., Ramli, I. P., & Abdullah, C. P. E. P. (2026). Dinamika faktor yang mempengaruhi aktivitas fisik siswa sekolah dasar pada pembelajaran PJOK. *Jurnal Pendidikan Tambusai*.
- Cahyani, H. D., Sulaiman, A., & Fatqurrohman. (2024). Penilaian fasilitas pembelajaran PJOK di sekolah dasar negeri. *Sport Science and Education Journal*.
- Fatihaturrahmah, N., Dewangga, P. C., Tosaini, S. P., Mumtazunnisa, G., Yunus, M., & Mulyana, A. (2024). Observasi kelengkapan fasilitas olahraga sebagai pendukung pembelajaran olahraga di SDN 181 Sukamiskin. *Indo-MathEdu Intellectuals Journal*.
- Fitriana, E. L., & Muktiani, N. R. (2019). Penggunaan media pembelajaran PJOK oleh guru PJOK di sekolah dasar se-Kecamatan Kretek Kabupaten Bantul. *Jurnal Pendidikan Guru Sekolah Dasar Pendidikan Jasmani-S1*.

- Gumilang, Y. T., & Ramadan, G. (2019). Modifikasi alat terhadap kemampuan passing bawah dalam pembelajaran bola voli. *Journal of SPORT (Sport, Physical Education, Organization, Recreation, and Training)*.
- Hidayah, A. (2017). Modifikasi alat permainan woodball untuk pembelajaran pendidikan jasmani olahraga dan kesehatan. *Jurnal Pendidikan Jasmani Kesehatan dan Rekreasi*.
- Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. (2022). *Capaian pembelajaran mata pelajaran Pendidikan Jasmani, Olahraga, dan Kesehatan pada pendidikan anak usia dini, jenjang pendidikan dasar, dan jenjang pendidikan menengah*. Jakarta: Badan Standar, Kurikulum, dan Asesmen Pendidikan.
- Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. (2022). *Panduan pembelajaran dan asesmen pendidikan anak usia dini, pendidikan dasar, dan menengah*. Jakarta: Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.
- Kustiawan, A. A., Prayoga, A. S., Wahyudi, A. N., & Utomo, A. W. B. (2019).
- Mohamad, I., Budiman, D., & Suhendi, H. (2016). Penerapan modifikasi alat untuk meningkatkan keterampilan bermain bulutangkis. *Jurnal Pendidikan Jasmani dan Olahraga*.
- Ramadhani, M. H., Rahmadi, & Rakhman, A. (2024). Penggunaan media pembelajaran PJOK oleh guru PJOK di sekolah dasar se-Kecamatan Tapin Utara Kabupaten Tapin. *Jurnal Pedagogik Olahraga*.