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Utilization of the STEAM Method Through Loose Parts Media in the Learning Activities of Group B3 Children at TK Tunas Harapan, Baubau City

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ABSTRACT

This study aims to describe the utilization of the STEAM (Science, Technology, Engineering, Art, and Mathematics) method through loose parts media in the learning activities of Group B3 children at TK Tunas Harapan, Baubau City. The background of this study is based on the lack of variation in learning media and the minimal active involvement of children in the learning process, which affects the development of their creativity and independence. The research method used is descriptive qualitative with a Participatory Action Research (PAR) approach. The research subjects consisted of 10 children aged 5–6 years. Data collection techniques were carried out through observation, interviews, and documentation. The results of the study show that the application of the STEAM method using loose parts media—such as water propagation experiments, stamping color, painting, color mixing, and creating artworks using recycled materials—can increase children's active involvement, creativity,

problem-solving abilities, and socio-emotional skills. Children were more enthusiastic, explorative, and independent in completing learning tasks. Thus, the application of the STEAM method through loose parts media is proven effective as an innovative approach in early childhood education.

Introduction

Various innovations and developments in the field of education, particularly in early childhood learning, are now increasingly encountered. This reflects the growing awareness among educators and society regarding the importance of providing education from an early age. Teachers continuously strive to design learning experiences that are both effective and enjoyable through a variety of strategies, methods, and media to achieve learning objectives. Since STEAM learning is a breakthrough relevant to the challenges of the industrial revolution era, teachers utilize various supporting media, one of which is the use of loose parts in early childhood learning activities (Fadillah, 2024; Maghdalena, 2025). Loose parts themselves are flexible and easily obtained media because they come from unused items that can be repurposed into something useful. This advantage makes them highly appropriate for STEAM learning, as they allow children to create or transform waste materials into educational and engaging learning tools (Syafi'i & Dianah, 2021).

STEAM is a learning approach that encourages children to

understand the integrated concepts of science, technology, engineering, art, and mathematics. This method is designed to create enjoyable and meaningful learning experiences by connecting these concepts to everyday life situations. STEAM-based learning encourages children to actively ask questions, solve simple problems, and develop critical, creative, and innovative thinking skills (Muawanah & Harjani, 2024). Triani et al. (2020) explain that STEAM is a form of contextual learning that encourages children to understand events directly related to their personal experiences. In the context of 21st-century learning, the development of soft skills and holistic understanding is highly relevant when linked to science, technology, art, and mathematics through the STEAM model.

According to Wahyu et al. (2022), the STEAM learning method is highly suitable for educating children amid the rapid development of the digital era today. This learning model becomes even more optimal when combined with the natural environment, allowing children to experience learning that is both real and relevant to daily life (Fauziah et al., 2022). STEAM fosters curiosity and motivation in children to develop higher-order thinking skills, such as problem-solving, collaboration, independent learning, project-based learning, and challenge-based learning. This approach can be introduced from an early age using simple materials easily found in the surrounding environment—namely, loose parts.

The use of loose parts in STEAM learning for early childhood has been proven to improve children's skills and abilities (Putri et al., 2021), support their freedom to create (Rahardjo, 2019), and contribute positively to various aspects of development (Flannigan & Dietze, 2018). Through loose-parts play, children's thinking abilities are sharpened, making it an effective medium to stimulate cognitive development (Shabrina & Lestariningrum, 2020).

STEAM learning that utilizes loose parts encourages children to think critically and become highly creative because they are given the freedom to learn actively without pressure or rigid rules from adults, although still under proper guidance and supervision (Mariana et al., 2022). The essence of STEAM education is to provide children with space to shape and reconstruct their world through an approach that begins in early childhood. Mashudi (2021) emphasizes that the teaching and learning process should be able to develop life skills relevant to the environment and the needs of students in accordance with the development of the times. This approach brings concrete benefits because it helps children think efficiently and practically and encourages them to act and interact positively in facing real-life situations (Karlina et al., 2023).

Loose-parts media are collections of loose items or materials that children can use flexibly to manipulate, arrange, combine, and use according to their desires (Ramadhan, Ihlas et al., 2024). These materials

may come from nature—such as stones, wood, and leaves—or from man-made objects, such as bottle caps, buttons, or pieces of fabric (Leonia, Handayani, & Putri, 2022). Loose parts provide opportunities for children to explore, experiment, and create various shapes or structures according to their imagination (Triyawati et al., 2025). Through loose-parts play, children can refine technical skills such as building structures, understanding balance, and problem-solving. In addition, this media also stimulates children to think systematically and innovatively—qualities essential in the field of engineering (Nurmawati et al., 2025).

According to Damayanti et al. (2020), the benefits of using loose parts include:

1. increasing children's creativity and imagination,
2. encouraging cooperation and social skills,
3. increasing children's physical activity, and
4. strengthening communication and negotiation skills, especially during outdoor play.

The components of loose-parts media are flexible, allowing them to be dismantled, arranged, combined, moved, aligned, used individually, or combined with other components. These components are usually scattered randomly and easily found in the children's environment. Objects or materials belonging to this category are called loose-parts components. According to Andriyani and Indhra (2022), loose-parts

media consist of two main types: natural components and components made from recycled materials. Flannigan and Dietze (2018) also state that this media may come from natural or artificial materials. Furthermore, Casey and Robertson (2016) classify loose-parts media into five categories: natural resource components, construction materials and tools, recycled goods, wood and leather materials, and accidentally found objects. Meanwhile, Haughey and Hill (2017) note that there is no fixed classification or exact number in grouping loose parts because the materials can be classified into seven more varied groups: natural materials, metal, plastic, thread and fabric, wood and bamboo, recycled packaging, and glass and ceramics.

A number of previous studies show that integrating STEAM learning with loose parts contributes significantly to various aspects of early childhood development. Najamuddin et al. (2022) found that developing STEAM-based loose-parts teaching materials significantly improves children's problem-solving skills. With an R&D approach, this study demonstrates that flexible loose materials can provide rich and challenging learning experiences for children. These findings are supported by Ratna et al. (2023), who explain that the use of loose parts in STEAM learning not only increases children's enthusiasm and curiosity but also enhances their active involvement in the learning process. Using a qualitative approach, this study emphasizes that freedom in exploration is a crucial aspect in supporting children's

quality of learning.

Furthermore, Hayati and Zurianti (2024) assert that the implementation of STEAM-based loose-parts learning in early childhood institutions offers more meaningful learning experiences. Through observation and in-depth interviews, this study finds that loose parts make learning spaces more creative, contextual, and closely connected to children's daily experiences. Similarly, Maromi et al. (2025) present empirical evidence through quasi-experimental design that STEAM learning using loose parts directly impacts the improvement of fine-motor and cognitive abilities of children aged 4–5 years. Children who participated in this learning approach were found to be more capable of building structures, solving problems, and demonstrating better coordination than the control group.

Research by Sativa and Buahana (2024) further strengthens these findings. Through classroom action research, they demonstrate that applying STEAM with loose parts significantly enhances children's critical thinking skills from the pre-cycle stage to the final cycle. This indicates that loose parts not only stimulate creativity and imagination but also develop higher-order thinking skills. Overall, the range of studies suggests that STEAM-based loose-parts learning is an effective and relevant approach to improving essential competencies in early childhood, including cognitive skills, motor abilities, critical thinking, and problem-solving.

Despite the various previous studies showing that STEAM-based loose-parts learning can enhance creativity, active involvement, problem-solving ability, and cognitive and motor development in early childhood, these findings have not fully addressed the issues observed at TK Tunas Harapan. Initial observations revealed that children continue to experience difficulty concentrating, become easily bored, and lack motivation to learn due to limited and less varied learning media. Children tend to rely heavily on the teacher's examples and lack opportunities to learn through direct, free, creative, and contextual experiences.

On the other hand, existing research has focused more on cognitive, creative, or motor improvements, yet has not specifically highlighted the issue of children's low concentration and dependence on teacher instructions in daily learning. Furthermore, most studies have been conducted in early childhood institutions with different conditions, characteristics of children, and learning environments compared to TK Tunas Harapan. Therefore, further investigation is needed to determine how the implementation of STEAM learning with loose parts can directly address the issues of limited concentration and low independence among children in the learning process.

Thus, there is an important gap between the findings of previous studies and the real needs in the field. Although STEAM and loose parts have proven effective in various contexts, few studies have specifically

explored the effectiveness of this approach in increasing concentration and reducing children's dependence on teacher-provided examples. This situation highlights the need for further research at TK Tunas Harapan to determine whether STEAM-based loose-parts learning can serve as a suitable and contextually relevant solution to the identified problems. As Wahyuningsih et al. (2020) note, loose parts can be used as STEAM learning materials because they align with the characteristics of children, can be adapted and manipulated in various ways, support creativity and imagination, and help develop children's ideas.

Methods

This study employed a descriptive qualitative approach using the Participatory Action Research (PAR) method. This approach was chosen because it aligns with the characteristics of early childhood learning, which are explorative, participatory, and holistic. Through the PAR method, the researcher was able to be directly involved in the learning process while observing and accompanying the children's activities during the experiments. This study aims to explore how the STEAM method implemented through loose-parts media can enhance children's participation and creativity in learning activities.

The study was conducted at TK Tunas Harapan, Kadolomoko Village, Kokalukuna District, Baubau City. The research subjects consisted of 10 children from Group B3 aged between 5 and 6 years old. The research took place over the course of one month, starting from May

15 to June 9, 2025. The selection of subjects was carried out purposively based on the need to explore data from a group of children relevant to the research objectives.

Data were collected through participatory observation, semi-structured interviews, and documentation. Observations were carried out directly on the children's activities during the learning process, particularly during experimental activities such as water propagation (capillarity), color stamping, and painting using loose-parts materials. Interviews were conducted with classroom teachers and parents to obtain supporting information related to the children's development and responses. The instruments in this study included observation guidelines and interview guidelines. The researcher served as the main instrument in interpreting data and the learning dynamics that occurred. Data validity was ensured through source and time triangulation techniques to guarantee the accuracy and reliability of the collected data.

Data were analyzed using the interactive model of Miles and Huberman (in Madya, 2007), which consists of three main stages: data reduction, data display, and conclusion drawing. The data reduction stage was carried out by filtering and selecting relevant data. Data display was presented in descriptive narrative form illustrating the learning processes and outcomes. Meanwhile, conclusions were drawn inductively based on field findings, which were connected with theories and relevant literature on the STEAM approach and the use of loose

parts in early childhood learning.

Result and Discussions

The utilization of the STEAM method through loose parts media has had a positive impact on the engagement and learning development of children in group B3 at TK Tunas Harapan, Baubau City. Through a series of activities such as water absorption (capillarity) experiments, color stamping, painting with loose materials, and color mixing, the children demonstrated increased active participation, exploratory ability, and creativity in understanding scientific, technological, engineering, artistic, and mathematical concepts in an integrated manner. Observations conducted over one month showed that the children were able to engage independently as well as collaboratively in the activities, express ideas, and display high learning interest. These results indicate that the STEAM-based learning approach using loose parts media is highly effective in creating enjoyable and meaningful learning experiences aligned with the developmental characteristics of young children.

The results of the observational activities in this study are as follows:

Planning Stage

At the planning stage of learning activities using the STEAM approach through loose parts media, the researcher designed four types of activities that were different yet integrated: a water absorption (capillarity) experiment, color stamping, watercolor painting, and color

mixing combined with creating paintings. Each activity was designed to stimulate children's cognitive, fine motor, socio-emotional, and aesthetic aspects, in accordance with the developmental characteristics of early childhood.

The first activity was the water absorption (capillarity) experiment. At the planning stage, the researcher prepared various tools and materials such as glasses, water, food coloring, tissues, cotton, cloth, leaves, sponges, straws, wool yarn, and magnifying glasses. All materials used were selected from types of loose parts that were safe, easy to access, and appealing to children. The purpose of this activity was to introduce basic scientific concepts about how water can move through certain media.

Next, the color stamping activity was designed with the aim of exploring shapes and patterns through stamping techniques using various loose parts such as vegetable pieces, leaves, sponges, bottle caps, and used tissue rolls. At the planning stage, the researcher prepared tools and materials such as food coloring, small containers, drawing paper, and various objects with interesting textures and shapes. Children were directed to dip the objects into the coloring liquid and then stamp them onto paper, allowing them to observe different stamping results from each object.

Action and Observation Stage

Water Absorption (Capillarity) Experiment Using Loose Parts

Based on the results of the study on the water absorption (capillarity) experiment using loose parts media, it was observed that the children were actively involved and showed varied development. This activity is part of the STEAM approach which incorporates scientific observation (Science), the use of simple tools (Technology), the design of experimental media (Engineering), the selection of colors and visual aesthetics (Arts), and measuring and observing flow patterns (Mathematics).

A child with the initials **AGM** carried out the activity well. He selected the colors he preferred (Arts) and appeared calm in completing the experiment, demonstrating logical thinking and problem-solving processes (Engineering), and was therefore categorized as beginning to develop.

A child with the initials **AR** showed the ability to observe and pay attention to the direction of water movement and its interaction with the media (Science and Mathematics), and completed the activity well, thus categorized as developing very well.

A child with the initials **AKV** was very enthusiastic (Arts), able to choose colors he liked, and created a well-organized experiment setup, showing understanding of planning and observing results (Engineering and Science), thus categorized as developing as expected.

A child with the initial **A** demonstrated increasing creativity (Arts). Although still needing assistance in completing the experiment

(Engineering), he was able to explain the experimental process he had carried out (Technology – communication of results), and was therefore categorized as beginning to develop.

A child with the initials **MA** appeared highly capable and meticulous in arranging the media and completing the experiment, showing the application of Engineering and Science concepts, thus categorized as developing as expected.

A child with the initials **HUS** was able to complete the activity well, retell the experiment he had conducted (Technology), and showed high enthusiasm in choosing colors and following the experimental steps (Arts and Science), thus categorized as developing as expected.

Color Stamping with Loose Parts Media

Based on the results of the study on the color stamping activity using loose parts media, it was found that the children demonstrated varied development, with active engagement in aspects of STEAM-based learning.

This activity encouraged children to explore colors and the properties of coloring agents (Science), use simple tools such as containers and stamping media (Technology), arrange and attach materials such as sponges, used tissue rolls, leaves, vegetable pieces (such as mustard greens and carrots), bottle caps, leaves, and seeds appropriately (Engineering), express ideas and imagination through printed color artworks (Arts), as well as observe shape patterns and

repetition (Mathematics).

Painting with Watercolors Using Loose Parts Media

The activity began with the teacher inviting the children to sit together in a circle. The teacher greeted the children enthusiastically and then introduced the day's activity: painting with watercolors and unique objects known as loose parts. The teacher showed various objects that would be used as painting tools, such as sponges, plastic forks, tissue rolls, cotton, vegetable pieces, used toothbrushes, and bottle caps. The children were invited to observe the shapes and textures of each object while engaging in light discussion: "If we dip this object into paint, what kind of shape do you think it will make on the paper?" The purpose of this stage was to build enthusiasm, curiosity, and introduce children to the various media they would creatively explore.

In the core stage, the children began painting freely using their chosen loose parts. The teacher provided watercolor paints in various colors, small trays for holding paint, and drawing paper for each child. Children freely dipped objects into the paint and created patterns, shapes, or textures on the paper. Some children used sponges to create broad color strokes, while others created dots or lines using bottle caps or forks. The teacher encouraged children to experiment and express their creativity without fear of making mistakes.

Painting Activities Using Watercolors with Loose Parts Media

Based on the findings of the study on the painting activity using

watercolors and loose parts media, the children demonstrated active engagement and diverse developmental progress. This activity integrates the STEAM approach, which involves exploring colors and materials (Science), using tools such as containers, brushes, sponges, plastic forks, tissue rolls, cotton, vegetable pieces, used toothbrushes, seeds, and bottle caps (Technology), designing and arranging painting elements (Engineering), expressing themselves through visual artwork (Arts), as well as introducing shapes, color sequences such as rainbows, and patterns in media arrangement (Mathematics).

A child with the initials **AGM** appeared highly enthusiastic, immediately selecting colors and pouring them into containers (Technology), and was able to paint a rainbow shape in sequence (Mathematics and Arts), then retell the process of his work (Science – result reflection), and was therefore categorized as developing very well.

A child with the initials **AR** appeared calm and able to collaborate with a friend while completing the artwork (Engineering and Arts), showing emotional control and good social coordination, and was categorized as developing very well.

A child with the initials **AKV** also demonstrated calmness and concentration during the activity, capable of arranging the painting creatively and adding seeds as decoration (Engineering and Arts), thus categorized as developing very well.

A child with the initials **A** showed high enthusiasm from the

beginning, took initiative, and selected colors based on personal preference (Arts), was able to paint and explain the result (Technology and Science), thus categorized as developing as expected.

A child with the initials **MA** was able to complete the activity well and explain the painting (Science and Arts), thus categorized as developing as expected.

A child with the initials **HUS** initially appeared hesitant (Science – self-observation and adaptation), but gradually became accustomed and eventually painted a rainbow well (Mathematics and Arts), thus categorized as beginning to develop.

A child with the initials **Z** appeared highly enthusiastic, capable of drawing a rainbow and adding seeds based on imagination (Arts and Engineering), and explained the result well (Science – communication), thus categorized as developing very well.

A child with the initials **NHN** showed independence and was able to complete the painting (Technology), but was still inaccurate in choosing colors based on the object (such as choosing blue for leaves), indicating symbolic understanding that is still developing (Science and Arts), and thus categorized as beginning to develop.

Meanwhile, a child with the initials **GJA** completed the activity diligently and calmly, able to independently explain the painting (Science, Arts, and Technology), thus categorized as developing as expected.

Mixing Colors and Creating Artwork

Based on the findings of the study on the activity of mixing colors and creating artwork, it was observed that most of the children showed high enthusiasm and creativity, reflecting very good development. A child with the initials **AR** demonstrated significant curiosity, asking questions such as, "Teacher, what if we mix three colors?" and immediately trying it out. This behavior reflects exploration and experimentation, which are part of the Science aspect of STEAM, where children learn through observing and experimenting with color changes. This supports the view of Tri Munandar (2022), who states that creative children are characterized by high curiosity.

Children with the initials **AKV** and **A** were able to complete the activity well, create artwork according to their ideas, and explain the results.

A child with the initials **AGM** was able to finish independently, demonstrating an understanding of how new colors can be formed and how to apply them to artwork, indicating development in the areas of Science and Engineering.

A child with the initials **MA** showed gradual progress: although initially needing help, the child eventually managed to create a desired piece of artwork. This indicates a process of independent learning and problem-solving, related to the Engineering element in the STEAM framework.

A child with the initials **HUS** was very enthusiastic and independent in mixing colors and forming visual artwork, aligning with Susanto's (2019) definition of creative children, which includes independence, bravery, and curiosity.

Other children such as **NHN**, **GJA**, and **Z** also showed abilities in selecting colors, forming shapes, and explaining the results of their work, strengthening the Art component within STEAM. Overall, this activity naturally integrated STEAM elements, encouraging children to think critically (Science & Mathematics), experiment (Engineering), express themselves (Art), and complete tasks independently, strongly supporting cognitive, social-emotional, and creative development in early childhood.

Reflection

Water Absorption (Capillarity) Experiment Using Loose Parts Media

This activity provided a highly meaningful science-based learning experience for the children. They were invited to directly observe a scientific phenomenon—water spreading through various materials such as tissue, cotton, sponges, and wool yarn. Children showed high curiosity and active exploration, strengthening the Science aspect.

The use of tools such as magnifying glasses and flashlights to observe color changes introduced elements of Technology, while arranging materials and designing experiments reflected the Engineering aspect. The choice of water colors and the resulting visual

expression strengthened the Art element, and observing the speed and patterns of water flow offered early experiences in Mathematics.

Thus, this activity shows strong STEAM integration, supporting children's critical thinking, teamwork, and communication, as well as their understanding of simple scientific concepts.

Color Stamping with Loose Parts Media

The stamping activity using loose parts provided a highly enjoyable space for children to express creativity. Children freely selected materials such as sponges, used tissue rolls, leaves, vegetable pieces, and bottle caps to create unique color stamps, which relate closely to the Art aspect.

During the stamping process, children understood how shapes and textures of objects created different patterns, sharpening their sensitivity to forms and supporting pattern recognition within Mathematics. Children also used basic dipping and pressing techniques, showing early Engineering understanding, while becoming familiar with simple tools (Technology).

With the STEAM approach, this activity not only stimulated visual imagination but also trained fine motor skills, collaboration, and the ability to express ideas using shapes and colors.

Painting Using Watercolors and Loose Parts Media

Painting with watercolors and loose parts broadened the children's exploration of art and technique. In this activity, children not only

expressed ideas in images but also used various objects such as leaves, cloth, and pieces of cardboard as unique painting tools. This supports the development of Art in an innovative way and stimulates creativity.

Children experimented with painting techniques such as pressing, sliding, and color sweeping, reflecting simple Engineering applications and fostering awareness of cause-and-effect relationships, which are part of Science. They also used simple tools to produce specific effects, such as sponges or paper rolls, linking the activity to Technology.

This activity strengthened children's ability to compare shapes and image sizes and to estimate spatial composition, supporting early Mathematics skills. Through STEAM integration, this activity effectively nurtured confidence, self-expression, and reflective thinking in children.

Painting Activities Using Watercolors with Loose Parts Media

Based on the findings of the study on the painting activity using watercolors and loose parts media, the children demonstrated active engagement and diverse developmental progress. This activity integrates the STEAM approach, which involves exploring colors and materials (Science), using tools such as containers, brushes, sponges, plastic forks, tissue rolls, cotton, vegetable pieces, used toothbrushes, seeds, and bottle caps (Technology), designing and arranging painting elements (Engineering), expressing themselves through visual artwork (Arts), as well as introducing shapes, color sequences such as rainbows,

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A child with the initials **MA** was able to complete the activity well and explain the painting (Science and Arts), thus categorized as developing as expected.

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The use of tools such as magnifying glasses and flashlights to observe color changes introduced elements of Technology, while arranging materials and designing experiments reflected the Engineering aspect. The choice of water colors and the resulting visual expression strengthened the Art element, and observing the speed and patterns of water flow offered early experiences in Mathematics.

Thus, this activity shows strong STEAM integration, supporting children's critical thinking, teamwork, and communication, as well as their understanding of simple scientific concepts.

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With the STEAM approach, this activity not only stimulated visual imagination but also trained fine motor skills, collaboration, and the ability to express ideas using shapes and colors.

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Painting with watercolors and loose parts broadened the children's exploration of art and technique. In this activity, children not only expressed ideas in images but also used various objects such as leaves, cloth, and pieces of cardboard as unique painting tools. This supports the development of Art in an innovative way and stimulates creativity.

Children experimented with painting techniques such as pressing, sliding, and color sweeping, reflecting simple Engineering applications and fostering awareness of cause-and-effect relationships, which are part of Science. They also used simple tools to produce specific effects, such as sponges or paper rolls, linking the activity to Technology.

This activity strengthened children's ability to compare shapes and image sizes and to estimate spatial composition, supporting early Mathematics skills. Through STEAM integration, this activity effectively nurtured confidence, self-expression, and reflective thinking in children.

Conclusion

Based on the results of the research conducted over one month in Group B3 at TK Tunas Harapan, Baubau City, it can be concluded that the use of the STEAM approach through loose parts media has a positive impact on the learning development of early childhood. The learning activities designed—such as water absorption (capillarity) experiments, color stamping, watercolor painting, and color mixing—helped stimulate various aspects of child development, including cognitive, social-emotional, creativity, and fine motor skills.

Throughout the learning process, children showed high enthusiasm, independence, and active participation. They were able to explore materials, express ideas creatively, and collaborate with peers. Through STEAM-integrated activities, children learned scientific concepts, used simple tools, designed experiments, appreciated art, and recognized patterns and simple measurements.

In addition, the use of loose parts media effectively supported children in exploring and experimenting freely without limitations. Children demonstrated critical thinking abilities, problem-solving,

communication, and increasing confidence in their learning. Overall, this study concludes that STEAM-based learning using loose parts media is very suitable for early childhood education and can be applied as an innovative learning strategy to create meaningful, enjoyable, and developmentally appropriate learning experiences.

References

Andriyani, A., & Indhra, F. M. (2022). Meningkatkan Kemampuan Motorik Halus Anak Dengan Menggunakan Media Loose Parts Pada Anak Kelompok B TK Tunas Inti Dusun Tebo Jaya Kecamatan Limbur Lubuk Mengkuang Kabupaten Bungo. *ALAYYA : Jurnal Pendidikan Islam Anak Usia Dini*, *2*(1), 1–23. https://doi.org/10.51311/alayya.v2i1.406

Casey, T., Robertson, J. (2016). *Loose parts play*. Inspiring Scotland.

Damayanti, A., Rachmatunnisa, S., Jakarta, U. M., & Parts, L. (2020). *PENINGKATAN KREATIVITAS BERKARYA ANAK USIA 5-6 TAHUN MELALUI PEMBELAJARAN JARAK JAUH BERBASIS STEAM*. *7*(2), 74–90.

Fadillah (2024) *Peran Guru PAUD dalam Mengoptimalkan Pembelajaran Jarak Jauh Dengan Pendekatan Steam Di Tk Sakina Bojo*. Undergraduate thesis, IAIN Parepare. https://repository.iainpare.ac.id/id/eprint/7787/

Fauziah, N., Irbah, A. N., Islam, U., Sunan, N., & Yogyakarta, K. (2022). *PENGARUH MODEL PEMBELAJARAN STEAM BERBASIS LOOSE*. *9*(c).

Flannigan, C., & Dietze, B. (2018). Children, Outdoor Play, and Loose Parts. *Journal of Childhood Studies*, *42*(4), 53-60. https://doi.org/10.18357/jcs.v42i4.18103

Haughey, S., & Hill, N. (2017). *A Start Up Guide Loose Parts: A Start-Up Guide. 1 – 27*.

Hayati, N., & Zurianti, N. A. (2024). Implementasi Pembelajaran Science, Technologi, Engineering, Arts, & Mathematic (STEAM) dengan Memanfaatkan Media Loose Parts . *Jurnal Pendidikan Anak*, *13*(1),

100 – 113. https://doi.org/10.21831/jpa.v13i1.306

Karlina, T., Purwanti, D., & Femica, N. A. (2023). *Pendekatan Pembelajaran STEAM Untuk Mengoptimalkan Perkembangan Anak Usia Dini di SKB Kota Serang*. *1*, 584–595.

Madya, S. (2007). *Penelitian tindakan kelas*. Bandung: Alfabeta.

Maghdalena, D. (2025). *Upaya Meningkatkan Kreativitas Anak Melalui Pembelajaran Berbasis STEAM di SPS Anak Bahagia*. Undergraduate Thesis, UIN K.H. Abdurrahman Wahid Pekalongan. http://etheses.uingusdur.ac.id/12265/

Mariana, A., Nurbani, B., & Istiqlaliyah, H. (2022). Penerapan Model Pembelajaran Steam Berbasis Loose Part untuk Meningkatkan Kreativitas Anak Usia 5-6 Tahun. *Tadrusuun: Jurnal Pendidikan Dasar*, *1*(2), 88–94. https://doi.org/10.62274/tadrusuun.v1i2.18

Maromi, C., Setyowati, S., & Matheos Lasarus Malaikosa, Y. (2025). Pengaruh Pembelajaran STEAM Berbahan Loose Parts terhadap Kemampuan Motorik Halus dan Kognitif pada Anak Usia 4-5 Tahun. *Murhum : Jurnal Pendidikan Anak Usia Dini*, *6*(1), 329–338. https://doi.org/10.37985/murhum.v6i1.1190

Mashudi, M. (2021). Pembelajaran modern: membekali peserta didik keterampilan abad ke-21. *Al-Mudarris (Jurnal Ilmiah Pendidikan Islam)*, *4*(1), 93-114. https://e-journal.iain-palangkaraya.ac.id/index.php/mdr/article/download/3187/1682

Muawanah, S. R., & Harjani, H. J. (2024). *Analisis Pembelajaran STEAM Menggunakan Loose Parts Terhadap Kemampuan Berpikir Kritis Anak Usia 4-5 Tahun*. *7*(2). https://doi.org/10.31004/aulad.v7i2.668

Najamuddin, N., Fitriani, R., & Puspandini, M. (2022). Pengembangan Bahan Ajar Science, Technology, Engineering, Art and Mathematics (STEAM) Berbasis Loose Part untuk Meningkatkan Kemampuan Pemecahan Masalah Anak Usia Dini. *Jurnal Basicedu*, *6*(1), 954–964. https://doi.org/10.31004/basicedu.v6i1.2097

Nurmawati, Hendra, & Muslim. (2025). PENGGUNAAN MEDIA LOOSE PART UNTUK MENGEMBANGKAN KETERAMPILAN TEKNIK (ENGINEERING) PADA ANAK USIA DINI DI TK ABA 2 CAMPA. *Walada: Journal of Primary*

Education, *4*(1). https://doi.org/10.61798/wjpe.v4i1.279

Purwaningsih, C. W. W., Triharnanto, J., & Pusporini, W. (2022, August). Penggunaan Media Loose Part Berbasis STEAM Dalam Peningkatan Kreativitas Anak Usia Dini. In *Seminar Nasional 100 Tahun Tamansiswa* (Vol. 1, No. 1, pp. 31-35). https://seminar.ustjogja.ac.id/index.php/SemNasTamansiswa/article/view/63

Rahayu, D., Hafidah, R., & Dewi, N. K. (n.d.). *IMPLEMENTASI MEDIA LOOSE PARTS DALAM PEMBELAJARAN AUD*. *12*(2), 103–114.

Ratna, A., Arbarini, M., & Loretha, A. F. (2023). Pembelajaran STEAM dengan Media Loose Parts di Kelompok Bermain Anak Usia Dini. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *7*(3), 3227–3240. https://doi.org/10.31004/obsesi.v7i3.4468

Sativa, F., & Buahana, B. N. (2024). PENERAPAN PEMBELAJARAN STEAM DENGAN MEDIA LOOSE PARTS UNTUK MENINGKATKAN KETERAMPILAN BERPIKIR KRITIS ANAK USIA DINI. *BIOCHEPHY: Journal of Science Education*, *4*(2), 1093-1098. https://doi.org/10.52562/biochephy.v4i2.1367

Syafi'i, I., & Dianah, N. D. (2021). Pemanfaatan Loose Parts Dalam Pembelajaran Steam Pada Anak Usia Dini. *Aulada : Jurnal Pendidikan Dan Perkembangan Anak*, *3*(1), 105–114. https://doi.org/10.31538/aulada.v3i1.1203

Triani, N., Edi, W., Mulyana, H., Abdul, D., & Lidinillah, M. (2020). *ANALISIS UNSUR ART PADA PEMBELAJARAN STEAM UNTUK ANAK USIA DINI*. *1*(3), 135–141.

Triyawati, T., Cahyono, H., & Wulansari, B. Y. (2025). Implementasi Analisis Penggunaan Loose Part dalam Mengembangkan Kreativitas Anak Usia Dini di KB Khadijah Ngariboyo. *Jurnal Studi Guru dan Pembelajaran*, *8*(2), 781-794.

Wahyuningsih, S., Pudyaningtyas, A. R., Nurjanah, N. E., Dewi, N. K., Hafidah, R., Syamsuddin, M. M., & Sholeha, V. (2020). The utilization of loose parts media in steam learning for early childhood. *Early Childhood Education and Development Journal*, *2*(2), 1-5. https://doi.org/10.20961/ecedj.v2i2.46326