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An Assistance in Making Educational Game Tools for Teacher Raudlatul Athfal in Developing Children's Scientific Literacy in Metro Lampung City

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Abstract

The lack of skills in utilizing environmentally friendly waste materials effectively and efficiently remains a challenge among early childhood educators. Many teachers in Raudlatul Athfal (RA) and Kindergarten have not yet received consistent and in-depth training on the optimization of interactive learning media. This study aims to identify concrete steps in the development of educational game tools (Alat Permainan Edukatif/APE) and to evaluate the impact of mentoring programs on the creation and implementation of APE in enhancing scientific literacy among early childhood learners in Metro, Lampung City. The mentoring program adopts the Asset-Based Community Development (ABCD) approach, which focuses on leveraging available assets—individual skills, natural resources, and existing infrastructure—to empower the community. The results show that the creation and use of APE by RA teachers play a strategic role in fostering children's scientific literacy. These tools allow children to explore scientific concepts in an engaging, hands-on, and age-appropriate manner. Furthermore, the mentoring process significantly enhances teacher creativity and supports the implementation of interactive, child-centered learning strategies. This study contributes to early childhood education practices by demonstrating how locally available resources and structured mentoring can empower teachers to develop sustainable learning tools. It highlights the importance of contextualized, asset-based interventions in improving both teaching quality and children's scientific literacy in under-resourced settings.

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INTRODUCTION

Scientific literacy is increasingly recognized as a critical competency for individuals in the 21st century. However, in Indonesia, levels of scientific literacy remain relatively low compared to many other countries. Several studies have attributed this deficiency to the suboptimal use of technology in educational settings and a lack of meaningful engagement with technological tools for learning purposes (Aprillia et al., 2024; Latifah et al., 2024; Putri & Zulfadewina, 2023; Thoriq et al., 2024; Yusmar & Fadilah, 2020). When used effectively, technology can serve as a powerful medium to stimulate children's curiosity and interest in reading—key foundations for developing scientific literacy.

Data from the Programme for International Student Assessment (PISA) between 2019 and 2023 indicate that Indonesia consistently ranks low in science literacy. The 2023 report reveals a decline in average performance compared to 2020: while the science literacy score reached 512 in 2020, it fell to 445 in 2023 (Febrianti et al., 2023; Sari & Setiawan, 2023). This trend highlights a growing gap in science education and underscores the urgency of early interventions. Providing quality scientific literacy education from an early age is vital to prepare children for more formal, structured educational environments. One crucial component of this early preparation is the ability to read and comprehend scientific concepts.

Field observations conducted at RA Ma'arif 1 Metro identified several limitations in the current teaching and learning process. Educational play equipment, which should support children's developmental goals, is underutilized and, in some cases, damaged or overly simplistic limited to basic items such as hand puppets or geometric figures. These tools are insufficient for stimulating higher-level thinking or developing reading comprehension in line with early childhood developmental stages.

In addition, the ability of teachers to creatively use recyclable or environmentally friendly materials in developing APE is still lacking. Teachers at several institutions, including RA Ma'arif 2 Yosodadi and TK Ma'arif NU 3 Harun Ar Rasyid, reported a lack of sustained training and support in this area. Current classroom practices often rely on passive activities such as singing and letter recognition, with limited integration of interactive or eco-conscious learning strategies. As a result, many children still struggle to differentiate between upper- and lowercase letters, a basic literacy milestone.

Given these challenges, there is a clear need for a targeted mentoring program to support teachers in designing and utilizing eco-friendly educational tools. Such a program could serve dual purposes: enhancing scientific literacy in early childhood and promoting environmental awareness through the reuse of materials. This initiative is particularly important for improving early science skills in Raudlatul Athfal (RA) schools and kindergartens.

Previous research has demonstrated the effectiveness of educational game tools in promoting multiple domains of child development, including moral values, motor skills, cognitive growth, social behavior, language, and creativity (AH, 2018; Indriasih, 2015; Imaduddin et al., 2021; Marlisa et al., 2023). Furthermore, integrating principles of sustainability such as reduce, reuse, and recycle into educational play has shown promising results in fostering eco-literacy and innovation in early education.

This study distinguishes itself by involving three different educational institutions in Metro, Lampung RA Ma'arif 1 Metro, TK Ma'arif 2 Yosodadi, and TK Ma'arif NU 3 Harun Ar Rasyid. Employing the Asset-Based Community Development (ABCD) approach, the study aims to empower teachers by leveraging existing resources and community strengths. The central objective is to investigate the design and implementation of APE using recycled materials and to evaluate its impact on children's scientific literacy.

By addressing this issue through collaborative and context-sensitive interventions, the study contributes to broader efforts to enhance early childhood education in Indonesia. It also provides practical strategies for integrating sustainability and scientific thinking in a way that is accessible, engaging, and developmentally appropriate for young learners.

METHOD

This mentoring program uses the ABCD or Asset Bassed Community Development method, which optimizes assets, both individual assets, nature, infrastructure, etc. (Charizah et al., 2024). Mentoring involves RA teachers, namely at RA Ma'arif 1 Metro. This activity involves several multi-site holders in order to support the activity, including involving teachers, students, experts, etc. So, by working together, it is hoped that we can accelerate the mentoring activities for the educational game equipment program for Raudlatul Athfal teachers and the targets that will be achieved in the next few years will be achieved optimally.

The activities carried out optimize the utilization of potential and assets in the school environment, teachers, community, or facilities that support the implementation of learning activities. Several asset development strategies used, the first is optimizing assets, especially for Raudlatul Athfal teachers by reviewing assets through Focus Group Discussion activities. This is done in order to equalize perceptions regarding the learning system carried out and the methods used in learning activities. The second is Dream, or aspirations. Where the facilitator and the supporting parties discuss the final goal of the program being implemented, namely the skills of the teachers in making interesting educational game tools, as well as involving several students who are then trained, so that sustainable knowledge and creativity can be utilized and channeled to all parties, who provide benefits.

Third, in implementing this activity, the facilitator (researcher) involves multi-stake holders in order to support the activity, including involving teachers, students, experts, etc. So, by working together, it is hoped that we can accelerate the mentoring activities for the Educational Game Equipment Making Program for Raudlatul Athfal Teachers and the targets that will be achieved in the next few years will be achieved optimally. Then the fourth applies the implementation of assistance in making educational game tools to Raudlatul Athfal teachers in developing children's scientific literacy and analyzing the impact of the program's usefulness. This mentoring program involves experts including Yeasy Agustin Sari, M.Pd. Then the facilitator evaluates and follows up on mentoring activities carried out jointly by teachers or school principals by utilizing activities that already exist in the school environment.

Devotion Strategy Analysis (Asset Advantage Analysis):

Personnel (Human), Infrastructure and Economic Assets

- The participation of Raudlatul Athfal Teachers in the Early Childhood Education Association organization as an effort to increase competency
- There is an enthusiastic spirit from Raudlatul Athfal's teachers in the competency improvement mentoring program
- There is sufficient infrastructure in learning facilities at RA Ma'arif 1 Metro and RA Ma'arif 2 Yosodadi Metro Timur. There is cooperation or partnership with BMT Artha Buana and, LP Maarif, and the Nahtdlatuljar Cooperative.

  Service Strategy Analysis (Asset Development Analysis)

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RESULTS AND DISCUSSION

Concrete steps in making educational game tools for Teacher Raudlatul Athfal in developing children's scientific literacy

Early childhood education (PAUD) has an important role in building a strong scientific literacy foundation for children. One effective method for developing scientific literacy is through the use of Educational Game Tools . In this context, researcher and teacher Raudlatul Athfal (RA) acts as a facilitator who not only teaches basic science concepts, but also creates a fun and interactive learning environment. This service activity report describes the steps in creating APE that can be used by RA teachers to support the development of children's scientific literacy.

Figure 1

Activities for Making Educational Game Tools

The service activity was held on 18 and 19 November 2024 and was then attended by several RA teachers, namely at RA Ma'arif 1 Metro. This activity involves several multi-site holders in order to support the activity, including teachers, students and experts. So, by working together, it is hoped that we can accelerate the mentoring activities for the Educational Game Equipment Making Program for Raudlatul Athfal Teachers and the targets that will be achieved in the next few years will be achieved optimally. Some of the activities that have been carried out in this mentoring program are making APE Windmills, Smart Boxes, Smart Wheels, and Addition Circuits.

The creation of APE by teacher Raudlatul Athfal has a very strategic role in developing children's scientific literacy. By using APE, children can learn science in a fun, concrete and interactive way. Apart from that, APE also helps increase teacher creativity and supports learning approaches that are appropriate to the child's age.

The first step in creating an APE is identifying the child's needs and learning goals. Teachers need to understand the science concepts they want to teach, such as: Observing nature, scientific processes, basic concepts of learning to count. Once the needs are identified, the next step is to determine the type of APE that will be created. Some examples of APE that can be used to develop scientific literacy include: Simple teaching aids (for example, a model of the solar system), board games related to science and simple experimental activities (for example, making a lava lamp from household materials).

This mentoring activity also requires materials that are easy to find and use. The materials needed to make APE must be easily accessible and safe for children. Teachers can collect the following materials: Natural materials (leaves, stones, water), Recycled materials (plastic bottles, cardboard), Stationery and drawing tools. After the materials are collected, the teacher must design the APE by considering aesthetic and functional aspects. The design should attract children's attention and make it easier for them to understand science concepts. In this stage, the teacher can draw a sketch or make a prototype of the APE that will be made. Then the next step is to create a design, which has been agreed and approved, the facilitator can start the APE creation process. This process includes cutting and arranging materials according to the design, combining materials using safe techniques (for example, using non-toxic glue). Decorate APE to make it more attractive.

After the learning activities are completed, it is important for the teacher to carry out an evaluation. Teachers can gather feedback from children about APE and how the tool helps them understand science concepts. This reflection will help teachers improve APE in the future and increase learning effectiveness. Some of the activities that have been carried out in this mentoring program are making Windmill educational game tools :

Figure III
Making Number Wheel Educational Game Tools

This mentoring activity created an educational game tool called "Kincir Numbers". This tool is shaped like a pinwheel with the numbers 1 to 10 attached to the colorful blades. The base of the tool is decorated with gold colored paper which attracts children's attention.

This mentoring activity involved several RA teachers, namely at RA Ma'arif 1 Metro, RA Ma'arif 2 Yosodadi East Metro, and TK Ma'arif NU 3 Harun Ar Rasyid West Metro. This activity involves several multi-site holders in order to support the activity, including teachers, students and experts. Several steps for making the "Number Pinwheel" educational game tool , including a focus on design planning, preparation of materials or tools, making the number pinwheel, decorating and refining the tool, and use in learning activities:

- Design Planning:

Determine the purpose of the game tool, namely to help children recognize numbers and develop scientific literacy through interaction.

Sketch a number pinwheel design that is interesting and easy for children to play with.

- Preparation of Materials and Tools:

Cardboard or thick cardboard for the basic structure.
Colorful paper for decoration.
Scissors, glue gun, and other adhesives.
Marker or paint to write numbers.
Wire or support to make the wheel spin.
Gold paper to enhance the appearance.

- Basic Tool Making and Mill Blade Making:

The cardboard shape becomes a sturdy base with a curved design like the picture.

Add a base to make the tool more stable.
Cut the cardboard into several strips of the same size.
Cover the blades with colorful paper.
Write the numbers from 1 to 10 on each bar.

Pinwheel Assembly:

Attach the blades to the center of the wheel using a wire or wick so that it can rotate.
Make sure the wheel spins smoothly.

Decoration and Finishing:

Decorate the outside with gold foil or other interesting materials.
Add visual elements like smiley faces to make the tools more kid-friendly.
Attach a label with the name of the tool such as "Number Pinwheel" to make the tool look professional.
Test the play equipment with children to ensure the pinwheel functions properly.
Make improvements if deficiencies are found during testing.

- Use in Learning Activities:

Use this tool for games like number matching, counting, or introduction to simple science concepts (for example, spin and rotation).

Engage children in interactive games to increase their engagement and understanding. From the activity of making a number wheel educational game tool, it can be concluded that this tool is very useful for developing children's scientific literacy at an early age because it combines learning with play activities. The Educational Game Tool is called Kincir Numbers. The Number Wheel is a pinwheel-shaped tool decorated with the numbers 1 to 10 on colorful blades. This tool is designed to attract children's attention and is used for learning through interactive play.

Educational Game Tool Pinwheel Numbers is an interactive learning media designed to help children understand the concept of numbers in a fun way. The Number Pinwheel is shaped like a windmill with several blades or spokes, each of which has a certain number. Usually, these tools are made from simple materials such as cardboard, wooden sticks and colored paper, and covered with attractive decorations to make them more attractive to children.

The Number Pinwheel works by turning, and children can name the number shown by the pinwheel when it stops. This game not only involves visual aspects but also motor skills because children actively interact with this tool. This tool has many benefits, both in the cognitive, motoric and social aspects of children. Here are some of the main benefits:

a. Cognitive Development

1. Understanding Number Concepts: With different numbers on each blade of the pinwheel, children can recognize the numbers and their order more easily.
2. Improves Counting Skills: Children can learn to count by saying the number they get every time the pinwheel rotates.
3. Sharpens Memory: By playing repeatedly, children will more easily remember numbers and their sequence.

b. Motor Development

1. Practices Hand-Eye Coordination: The pinwheel spinning activity helps children develop coordination skills.
2. Develops Fine Motor Skills: While holding and spinning the pinwheel, children exercise the small muscles in their hands.

c. Social and Emotional Development

1. Increase Social Interaction: This APE can be played in groups, so children can interact with their friends.
2. Develops Self-Confidence: When children are successful in saying numbers correctly, they will feel more confident.
3. Instilling the Concept of Cooperation and Sharing: In this game, children have to take turns playing, so they learn about patience and cooperation.

APE Kincir Angka makes a big contribution to education, especially for early childhood and primary education. Here are some of the main contributions: As an Interactive Learning Media. In this case, the use of the APE Pinwheel Numbers in the teaching and learning process makes learning more interesting and not boring. Teachers can use this tool in various classroom activities to increase student participation. Then it can support the Early Childhood Education Curriculum (PAUD). The PAUD curriculum emphasizes play-based learning. Number Pinwheel supports this principle by integrating the concept of numbers into a fun game. Increasing Children's Creativity: Apart from being used as a game tool, children can also make their own number wheel with the guidance of a teacher or parent. This manufacturing process can increase their creativity and artistic skills. And encourage the use of environmentally friendly materials: APE Pinwheel Numbers are usually made from recycled materials such as cardboard and ice cream sticks. It teaches children the importance of protecting the environment and reusing used materials for something useful.

Figure IV
Making Smart Contact Educational Game Tools for Early Age Children

The next activity is making an Educational Game Tool in the form of a Smart Box, which consists of several educational features for early childhood. Some of the steps for making a "smart box" include the first, carrying out concept planning, namely identifying

learning objectives (for example, introducing shapes, letters, numbers and basic science concepts). And determine what activities are appropriate for young children and can be delivered via smart boxes. The next preparation is to prepare materials and tools, including used cardboard as the basic material for the box. Used plastic bottles for ball baskets and stick cases. Colorful paper for decoration and learning cards. Markers, scissors, glue gun, and other adhesives. Small balls, ice cream sticks and bottle caps as game elements. When it comes to decoration, cover the box with colorful paper to make it attractive to children. Add labels to each section, such as "Connecting Geometric Shapes," "Basketball Basket," "Spelling Letters," and "Let's Count."

Shape the cardboard into a sturdy box with several spaces or sections for various games. Make sure the structure is strong and stable so that it is safe for children to use.

- Connecting Geometric Shapes: Stick colored bottle caps on specific areas. Make geometric shapes from paper or cardboard that can be attached to the bottle cap.
- Basketball Basket: Cut a plastic bottle to make a basket. Stick it in the box and provide a small ball to put it in.
- Spelling Letters: Make cards out of picture paper with letters or simple words written on them.
- Let's Count: Attach a plastic bottle to the side of the box and provide sticks to enter according to the numbers listed.
- Make sure all parts are installed properly and safe to use.
- Test the tool with children to ensure its effectiveness.

Some benefits of "Smart Boxes" in the Development of Children's Scientific Literacy One of them is interactive learning. In this case, children can learn through playing, which is more effective at an early age. Scientific literacy develops through direct experience and exploration. Then you can develop motor skills, namely activities such as matching shapes and putting the ball in the basket to train children's fine and gross motor skills. Apart from that, the smart box introduces basic concepts of science and mathematics, including the introduction of the concepts of gravity, geometry, numbers and patterns, which are introduced in a simple and fun way. Can strengthen Literacy strengthening, children learn to recognize letters, spell and read simple words. This tool can increase creativity and logic. Children are invited to think creatively and logically when completing challenges from this smart box.

So this tool is designed to help children learn literacy, science and mathematics in a fun and interactive way. In this activity, the assisted parties match geometric shapes (triangles, circles, squares) with the appropriate places. Bottle caps and other elements are used to reinforce learning of geometric concepts. In practice, several students were asked to put small balls into baskets made from plastic bottles. Train children's motor coordination while introducing the concepts of motion and gravity. Train children's literacy, especially recognizing letters and words and helping children recognize numbers, count and group objects.

Making "Smart Boxes" is a creative step to support teacher Raudlatul Athfal in developing children's scientific literacy. With this tool, children can learn various basic concepts through a fun play approach. This tool also helps teachers create learning experiences that are innovative, interactive, and appropriate to the developmental stages of early childhood.

Educational Game Tool "Smart Contact" is an interactive learning media designed for early childhood. This APE is made from simple materials such as cardboard, plastic bottles and colorful paper, with various educational activities that involve children's fine

motor skills and cognitive abilities. From the image shown, this tool has several main features:

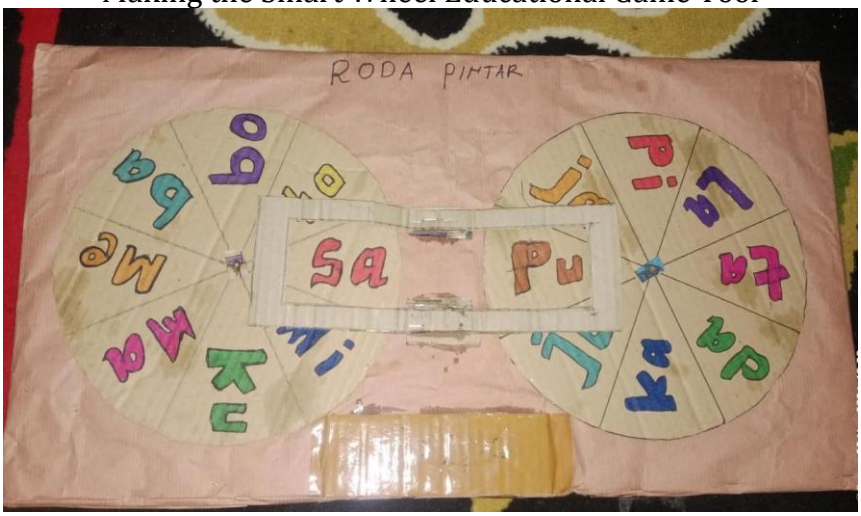
1. Connecting Geometric Shapes – Children are invited to match geometric shapes such as triangles, circles and squares using colored bottle caps.
2. Basketball Basket – Practice hand and eye coordination by putting small balls into the basket.
3. Spelling Letters – Children are invited to recognize letters and read simple words by opening an interactive panel.
4. Let's Count – Counting activities use numbers and visual elements to introduce basic math concepts.

Some of the benefits of the Smart Contact Educational Game Tool include being able to improve cognitive skills, namely that children learn to recognize shapes, colors, numbers and letters in a fun way. Both can train fine motor coordination: Activities such as matching shapes and putting balls into baskets help develop children's hand skills. And the third is that it can develop creativity and exploration: Attractive tool designs encourage children to explore and learn independently. Improve social skills: Can be played in groups, so children learn to cooperate and communicate.

Making Educational Game Tools by teacher Raudlatul Athfal is a strategic step in developing children's scientific literacy. Through a systematic process, from identification of needs to evaluation, teachers can create APE that is not only interesting but also effective in supporting learning. By utilizing APE, it is hoped that children can better understand science concepts and develop the skills needed to face future challenges. Proper and sustainable implementation of APE will have a positive impact on the development of children's scientific literacy at Raudlatul Athfal.

This APE provides a more interesting and effective learning experience for young children, especially in stimulating cognitive and sensorimotor development. With easily available and environmentally friendly materials, this tool is also a cost-effective educational solution for educational institutions such as PAUD and Kindergarten. Overall, APE "Smart Contact" helps build a strong learning foundation for children, preparing them for more advanced stages of education in a fun and interactive way.

Figure V
Making the Smart Wheel Educational Game Tool



The next activity is making an educational game tool called Roda Pintar. This tool consists of two circular wheels containing letter combinations such as "ba", "la", "pi", and

so on. There is a window in the middle of the tool which is used to display the letter combinations of the two wheels when rotated. APE is designed to help children learn to recognize letters, spell, and form simple words in a fun way.

This tool functions to help children recognize basic letters and syllables. Train children to spell and read simple words. Develop literacy through interactive games. Apart from that, the function of the wheel which consists of various kinds of words can be rotated, each containing letters or syllables. The window in the center of the tool serves as a focus for viewing the results of syllable combinations from the wheel. The assistance we provide is paying attention to the steps for making a smart wheel, which includes planning and designing, preparing materials and tools, making the wheel and installing the axle, making decorations for the smart wheel display. The following are the steps taken in the assistance activities for making Smart Wheels:

Planning and Design:

This planning involves determining tools, namely helping children learn to recognize letters and spell syllables. Design two circular wheels with sections containing letter/syllable combinations.

Preparation of Materials and Tools:

Cardboard or thick cardboard to make wheels.

Scissors, glue, and other adhesives.

Colored markers for writing letters/syllables.

Thumbtacks or axles to turn the wheel.

Additional paper or cardboard to create a window in the center of the tool.

Making Wheels and Axis Installation

Cut the cardboard into two circles of the same size.

Divide each circle into pieces (like pizza slices).

Write a combination of letters or syllables in each section in an attractive color.

Mount the two wheels on a cardboard board using thumbtacks or axles, so that the wheels can spin smoothly.

Make sure the wheels are aligned and close together so that the combination of syllables is visible in the window.

Creating a Focus Window:

Create a small window out of cardboard in the center of the tool to display the letter combinations of both wheels.

Make sure the window is not too large, so that it only displays one letter/syllable combination at a time.

Decoration and Finishing:

Decorate the tools with colorful paper or pictures to make them more attractive to children.

Provide a label such as "Smart Wheel" to make the tool name clear

Trials:

Turn the wheel to ensure smooth movement and that the letter combination can be seen clearly in the window.

Test it with children to make sure it works as intended.

Educational Game Tool "Smart Wheel" is an interactive learning media designed to help young children recognize letters and syllables. This APE is in the form of two rotating wheels containing colorful letters or syllables. These two wheels can be rotated to produce different combinations of syllables, which are visible through a small window in the center of the device.

The main materials of this tool are cardboard and paper, which makes it light and easy to use. Bright colors and large, clear writing help attract children's attention, so they are more motivated to learn.

Some of the benefits of the Smart Wheel Educational Game Tool include introducing letters and syllables, that is, children can learn to recognize letters, spell syllables, and form words interactively. Second, it can improve cognitive abilities, namely this game trains children's thinking abilities in combining syllables into meaningful words. The third is training fine motor skills, namely the activity of spinning a wheel helps children develop fine motor skills which are important for writing and other hand skills. And it can increase creativity where children can explore various combinations of syllables to form different words.

This accompanying activity in making "Smart Boxes" is a creative step to support teacher Raudlatul Athfal in developing children's scientific literacy. With this tool, children can learn various basic concepts through a fun play approach. This tool also helps teachers create learning experiences that are innovative, interactive, and appropriate to the developmental stages of early childhood.

This APE provides a learning method that is more interesting and fun than conventional methods. With this tool, children not only listen and see, but are also actively involved in the learning process. Apart from that, this tool can be used by teachers in PAUD or Kindergarten as an interactive learning medium, or by parents for learning activities at home. The use of environmentally friendly materials also makes it an educational solution that is cheap and easy to make. With Smart Wheels, children can learn to read in a more enjoyable way, so they are more motivated to know and understand language from an early age.

Picture VI

Making Educational Game Tools for Early Childhood Addition Circuits

The next mentoring activity is to create an Educational Game Tool called "Addition Circuit". This tool is designed to help children understand the concept of addition through play activities that involve physical manipulation. In this tool, there are two plastic bottles at the top as number containers, a board with an addition symbol (+), as well as a container for the final result decorated with interactive elements such as small balls (marbles) for visualization of mathematical operations.

The main feature of this tool is two plastic bottles at the top to enter the first and second numbers. The "+" symbol in the middle explains the mathematical operation of addition. The result container at the bottom shows the result of the addition. Meanwhile, small balls are used as visual aids for counting. The aim of introducing this educational game tool is to introduce the basic concept of addition to young children. Helping children understand the counting process in a visual and manipulative way, and increasing children's involvement in mathematics learning. Meanwhile, the basic material used in assisting this activity is cardboard for the main structure of the tool. Used plastic bottles as number containers. Small balls or marbles as interactive elements. And colorful paper for decoration.

The assistance we provide is paying attention to the steps for making a Addition Circuit which includes making plans and concepts, preparing materials and tools, . The following are the steps taken in the assistance activities for making the Addition Circuit:

Planning and Concept:

Determine the purpose of the tool, namely to introduce simple addition through play.

Design the structure of the tool, including number containers, operation symbols, and result containers.

Preparation of Materials and Tools:

Thick cardboard to make the main structure.

Used plastic bottles for number containers.

Small balls or marbles to help with counting.

Scissors, cutter, glue gun, and markers to make and decorate tools.

Colorful paper to beautify the appearance.

Make a box from cardboard as the base of the tool.

Cut off the top to attach two plastic bottles as number holders.

Add a "+" symbol in the middle to emphasize the concept of mathematical operations.

Attach the resulting container to the bottom of the tool, made from cardboard or a small box.

Make sure the small balls inserted from the top bottle can flow into the resulting container.

Installation of Interactive Elements:

Install the plastic bottle in the place that has been prepared.

Add small balls or marbles that are used to indicate the number being counted.

Decor:

Cover the structure with colorful paper to attract the child's attention.

Add labels such as numbers, "+" and "=" symbols to make the tool more communicative.

Trials:

Put small balls in the bottles for the first and second numbers, then count the total balls collected in the resulting container.

Make sure the tool works well and can be used easily by children

Educational Game Tool "Addition Circuit" is an interactive learning media designed to help young children understand the basic concept of addition in a concrete and fun way. This tool is in the form of a cardboard box equipped with two plastic bottles at the top, as well as a path or circuit to drain small objects such as marbles.

Some of the benefits of the Addition Circuit Educational Game Tool include making it easier to understand mathematical concepts, namely with a concrete and visual approach, children can understand the concept of addition by seeing directly how the number of marbles increases. Improves Fine Motor Skills: The activity of inserting and retrieving marbles trains children's hand coordination and fine motor skills. Training Numeracy and Cognitive Skills, that is, children learn to count while observing the results of the addition, helping to improve their logical thinking power. Making the Learning Process More Enjoyable: With the playing while learning method, children are more enthusiastic in understanding basic mathematics. And Encourages Exploration and Independence: Children can experiment with various number combinations and see for themselves how they turn out.

This APE provides a more interactive learning experience compared to conventional methods such as counting on your fingers or writing numbers on paper. With this tool, children not only memorize numbers but also understand the concept of addition in real life.

Apart from that, this tool can be used by teachers in PAUD or Kindergarten as an interesting learning medium, as well as by parents to accompany their children to study at home. With environmentally friendly materials and easy to make, this tool is an innovative and affordable educational solution.

With Addition Circuit, children can learn basic mathematics in a more fun and effective way.

Benefits of Educational Game Tools

1. Develop Cognitive Abilities

APE helps children understand basic concepts of math, science, language, and art. By playing with puzzles or building blocks, for example, children learn to understand patterns, shapes and cause-and-effect relationships.

2. Improve motor skills

PEs such as wooden blocks, plasticine, or sewing games help develop hand-eye coordination and fine motor skills that are important for writing and drawing.

3. Foster Creativity and Imagination

Games such as drawing, building with blocks, or role playing allow children to express themselves freely and exercise their imagination.

4. Train Social and Emotional Skills

Educational games played in groups help children learn to share, cooperate and understand other people's feelings. This is important in forming children's emotional intelligence.

5. Increase focus and patience

Some games, such as putting together puzzles or simple strategy games, teach children to focus and complete tasks to completion. This also helps train their patience.

Educational Game Equipment is an important element in children's development that not only provides entertainment but also trains various essential skills. With the right selection, APE can be an effective and enjoyable learning medium for children of various ages. Therefore, it is important for parents and educators to understand and make maximum use of APE to support children's holistic growth and development.

The Impact of Implementing Assistance in Making Educational Game Tools for Teacher Raudlatul Athfal in Developing Children's Scientific Literacy in Metro Lampung City

From several activities that have been carried out, this assistance provides benefits and impacts in increasing children's interest in learning. The use of APE in science learning has various benefits, including increasing interest in learning. Interesting and interactive APE can increase children's interest in learning science. By being directly involved in games and experiments, children become more enthusiastic and active in the learning process. APE helps children understand abstract scientific concepts in a more concrete way. Through direct experience, children can see and feel scientific phenomena, which makes learning more meaningful.

Activities involving APE are often carried out in groups, encouraging children to work together, communicate and share ideas. This is important in the development of a child's social skills. Through experiments and games, children are invited to think critically and solve problems. They learn to ask questions, make observations, and draw conclusions based on their experiences. The process of making APE itself can also increase children's creativity. By designing and creating play equipment, children learn to innovate and think outside existing boundaries.

For example, making a Number Wheel APE for teacher Raudlatul Athfal in developing children's scientific literacy. The impact of making APE encourages teachers to think creatively in creating tools that are relevant and interesting according to children's needs. In this case, teachers can adapt game tools to the material they want to teach, for example numbers, colors, or basic science concepts such as rotation and motion. Assisting teachers in developing interactive learning media. The Number Pinwheel is an example of concrete learning media that makes it easier for children to understand abstract concepts, such as number sequences or simple calculations. Teachers can use this tool for various activities, such as counting, matching numbers, or playing guessing games. In the manufacturing process, teachers learn how to design tools that are child-friendly, safe to use, and effective in achieving learning goals. It also supports teachers' pedagogical and professional competencies. So this will have an impact on increasing teacher and child interaction. Through APE, teachers can create a learning atmosphere that is fun and full of involvement. Children tend to be more open to learning when they feel entertained and curious about the tools used. APE such as the Number Wheel makes it easier to convey material that previously took a long time for children to understand. The learning process becomes more effective because children learn through direct experience.

The impact of making APE on the development of children's scientific literacy can develop basic science skills. Children learn basic science concepts such as motion, cause and effect and rotation through pinwheel games. Children also learn observation and exploration skills through tool manipulation. The Number Pinwheel encourages children to think logically, for example understanding the sequence of numbers or predicting what will happen if the pinwheel is turned. Children learn to make connections between their actions (spinning the pinwheel) and the results (the number bars moving). When children spin the pinwheel or touch the blades, they practice hand-eye coordination and fine motor skills. Physical movement in play also helps develop gross motor skills. In the activities they do, children will be curious and motivated to explore how the pinwheel works, why the blades move, and how the numbers are arranged. Create a fun learning

experience. By playing while learning, children feel happy and are more open to accepting new concepts. Scientific literacy develops naturally through activities that are not boring.

When playing with friends or teachers, children learn to work together, take turns and communicate so they can improve social skills. It also helps children build social skills that are important for their future. Through tools such as the Number Wheel, children gain a basic understanding that will make it easier for them to study science at the next level of education. Children who are used to playing with APE are more ready to receive lessons based on logic and observation.

Making Educational Game Equipment such as Number Wheels provides great benefits for both teachers and children. Raudlatul Athfal teachers can use this APE to increase creativity, pedagogical abilities and interaction with children. Meanwhile, children gain a fun, in-depth and holistic learning experience, which supports the development of their scientific literacy. APE not only functions as a learning tool, but also as a medium to build children's curiosity and love of science from an early age.

In conclusion, the implementation of assistance in making Educational Game Tools for Raudlatul Athfal teachers has a broad and deep impact in developing children's scientific literacy. By improving teachers' skills in designing effective APE, creating collaboration between teachers, and encouraging children to be active in learning, this assistance contributes to a better learning environment. Apart from that, this process also increases the professionalism of teachers, making them more adaptive and innovative in teaching. Therefore, investment in this kind of mentoring is very important to create a generation that not only understands science, but also has high curiosity and the ability to think critically.

Evaluation of changes in the impact of the Educational Game Tools creation program for Raudlatul Athfal (RA) teachers In Developing Children's Scientific Literacy in Metro Lampung City, the aim is to determine the effectiveness of the mentoring activity program and can improve teacher skills and develop scientific literacy in early childhood. This evaluation was carried out through several aspects, namely the competence of RA teachers, children's participation in science activities, as well as changes to learning methods in the classroom.

The first is the evaluation aspect of increasing RA teacher competency, which is one of the main aspects evaluated in this program. The evaluation was carried out to determine the extent to which Raudlatul Athfal (RA) teachers experienced changes in their understanding of the use of APE in early childhood scientific literacy learning. The aspects evaluated include Understanding the Concept of Scientific Literacy for Early Childhood, where Teachers understand the importance of scientific literacy in the cognitive development of early childhood. Then the teacher is able to explain basic science concepts simply and according to the child's level of development. And teachers' understanding of experimental-based learning methods increases, so they can connect theory with practice in learning. Teachers can increase their skills in designing and using science-based APE.

The second is the aspect of children's participation and interest in scientific literacy through educational game tools Evaluation of increasing children's participation and interest in scientific literacy aims to measure how the use of Educational Game Tools can influence children's involvement, interest and understanding of science concepts. This evaluation covers several important aspects, namely the child's level of involvement, curiosity, understanding of science concepts, and changes in behavior in science exploration activities.

Through this activity, children are more active in participating in science-based activities using APE. They really show higher enthusiasm and focus when playing with APE compared to conventional methods. So they don't get bored easily and ask questions more often when carrying out science exploration activities. This activity also has an impact on changing behavior in Playing and Learning. They start to choose games that are exploratory rather than just passive games. They are better able to work together with their friends in completing science-based challenges.

DISCUSSION

Early childhood education, especially at Raudlatul Athfal institutions, has an important role in forming a strong scientific literacy foundation. One way to achieve this goal is through the use of Educational Game Tools which are specifically designed to support the learning process. In this context, the steps in making APE become very crucial. This process not only involves creativity, but also a deep understanding of the child's needs and the learning goals to be achieved. In this discussion, we will explore these steps, provide concrete examples, and analyze the importance of each step in developing children's scientific literacy.

The first step in creating an APE is identifying the child's needs. At this stage, the teacher must observe and analyze the characteristics and interests of the children in the class. For example, if children show a high interest in animals, teachers can develop APE that focuses on the animal world, such as games that introduce various types of animals and their habitats. Through this game, children not only learn to recognize animals, but also understand basic science concepts such as ecosystems and food chains. Research shows that games that are relevant to children's interests can increase their motivation and involvement in learning (Nahampun, et al., 2024; Puspitoningrum, E. et al., 2024; Sela & Wathon, 2020). Thus, this step is an important foundation in ensuring that the APE created can attract attention and meet children's learning needs.

Once the child's needs are identified, the second step is to design the APE. In this process, teachers need to consider various aspects, such as learning objectives, the age of the child, and the game method that will be used. For example, APE designed for children aged 5 years must have visual elements that are attractive and easy to understand. An example that can be used is making Smart Wheel and Smart Box Educational Game Tools In this game, children can learn to understand the concept of addition through play activities that involve physical manipulation. Research by Putri, H., & Harfiani, R. (2024) shows that well-designed APE can increase children's understanding of science concepts. Therefore, proper design is essential to ensure that APE is not only fun, but also educational. The third step is APE testing and evaluation. After the APE has been created, it is important to test it in class. In this stage, teachers can observe how children interact with the game and evaluate whether the APE achieves the desired learning objectives. Feedback from children is also invaluable in this process, as they can provide a first-hand perspective on what they like or don't like about the game. Research shows that good evaluation can help teachers to optimize existing APE and adapt it according to children's needs (Dini, 2022; Juliandini, et al., 2022; Yanti, 2020). Thus, this step is very important to ensure the effectiveness of APE in increasing children's scientific literacy.

Overall, making Educational Game Tools at Raudlatul Athfal is a complex process but very useful in developing children's scientific literacy. Through proper identification of needs, design and evaluation, teachers can create APE that is not only fun but also educational. With an approach based on children's interests and needs, APE can be an

effective tool in increasing understanding of science from an early age. Therefore, it is important for teachers to continue to innovate in making APE and always pay attention to the latest developments in early childhood education. In this way, children will not only have better knowledge of science, but also critical thinking skills that will benefit them in the future.

Then the impact of implementing assistance in making Educational Game Tools for Raudlatul Athfal teachers has a significant impact on the development of children's scientific literacy. APE not only functions as an aid in learning, but also as a means to stimulate children's curiosity and exploration of basic science concepts (Rahmawati & Rachman, 2022; Wulandari, & Mumtaz, 2023; Zega, 2023). In this context, it is important to understand how such assistance can improve teachers' abilities in creating a learning environment that supports the development of scientific literacy.

Assistance in making APE provides teachers with new knowledge and skills in designing tools that suit children's needs. For example, teachers who previously had no experience in making educational games can now learn creative techniques in using simple materials. With this assistance, teachers can create APE that is not only interesting but also functional, such as props for understanding the concept of gravity using balls and various different surfaces. This not only increases children's engagement in learning, but also helps them understand science concepts in a fun way. Second, this mentoring also contributes to increasing collaboration between teachers. In the process of creating APE, teachers are invited to share ideas and strategies in teaching. For example, in a mentoring session, teacher A and teacher B can exchange ideas about how to teach science concepts such as the water cycle using different game tools. This collaboration not only enriches their teaching methods, but also creates a mutually supportive learning community. In this way, teachers are not only teachers, but also learners who continuously adapt to the latest developments in education.

Furthermore, the impact of this mentoring is also visible in the way children respond to science learning. When APE is used in the learning process, children tend to be more active and enthusiastic. For example, when using an APE designed for simple experiments, such as observing the change in the form of water from liquid to gas, children can see the results of the experiment directly. This not only strengthens their understanding of science concepts, but also develops observation and analysis skills. In this way, children not only learn theory, but also gain practical experience that enriches their understanding.

Finally, it is important to note that the impact of this mentoring is not only limited to increasing children's scientific literacy, but also on developing teacher professionalism. Through the mentoring process, teachers are taught to evaluate and reflect on their teaching practices. This creates awareness of the importance of innovation in teaching and encourages them to continually look for new ways to engage children in learning. Thus, assistance in creating APE is not only technical training, but also a transformation process in the way teachers see their role in education.

CONCLUSION

The creation of APE by teacher Raudlatul Athfal has a very strategic role in developing children's scientific literacy. By using APE, children can learn science in a fun, concrete and interactive way. Apart from that, APE also helps increase teacher creativity and supports learning approaches that are appropriate to the child's age. This mentoring activity helps children learn actively. Early childhood children tend to learn better

through direct experience rather than just hearing explanations. APE, like the “Number Pinwheel,” allows children to learn actively through exploration, manipulation, and play. Scientific literacy is developed through interactive activities that enable children to understand basic concepts such as numbers, movement, balance and cause and effect. Science concepts are often abstract and difficult for children to understand if only explained verbally. In this case APE visualizes these concepts, for example windmills to understand rotation or movement, or number games to understand sequences and quantities. This tool bridges understanding between simple scientific theories and children's everyday experiences. The impact of this mentoring activity is that it can increase the creativity of teachers and children. In the process of making APE, teachers develop creativity in designing tools that suit learning needs. Children are also stimulated to think creatively and solve problems when using these tools. The use of APE creates a fun and innovative learning atmosphere because children learn through a combination of sight, hearing and touch. APE provides a multisensory learning experience, thereby increasing children's absorption of information. For example, "Number Pinwheel" involves physical (spinning the pinwheel), visual (seeing the numbers), and cognitive (counting or recognizing numbers) movements. Interesting game tools make children more actively involved in learning activities. Scientific literacy develops naturally without coercion, through games that invite their curiosity.

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