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# Assessment of Educational Protection Tools (APE) of Block in Early Childhood Education

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## ABSTRACT

*This study aimed to evaluate the use of Educational Props (APE) blocks in improving cognitive, motor, and social-emotional development in early childhood. The assessment was conducted through observation, documentation, and interviews with teachers and children aged 4–5 years at an early childhood education institution. The results of the study indicate that the structured use of blocks can improve children's classification, construction, fine motor coordination, and social skills, such as cooperation and communication. The obstacles found were suboptimal variation in block use and the lack of educators' understanding of constructive play-based stimulation strategies. The implications of this study encourage teachers to use a guided play approach to make APE more effective.*

*Keywords: APE, Blocks, Early Childhood Education, Learning Assessment, Child Development*

## I. INTRODUCTION

Early Childhood Education (PAUD) is the most fundamental phase in human development, as the foundations for character, intelligence, and learning readiness begin to form during this period. Experts state that early childhood is a critical period or golden age when brain development occurs very rapidly and reaches up to 80% of adult maturity; therefore, the stimulation provided greatly determines the child's subsequent development (Santrock, 2018). Therefore, the implementation of appropriate, meaningful learning in accordance with the characteristics of child development is a crucial responsibility of PAUD institutions. One instrument that plays a significant role in PAUD learning is media or Educational Teaching Aids (APE) because it helps children learn through concrete experiences that are natural and in accordance with children's learning patterns, namely learning through play (Montessori, 2019).

Educational Teaching Aids function as learning facilitators to help children develop cognitive, language, motor, social-emotional, moral, and creative skills. Appropriate learning media will provide opportunities for children to explore, experiment, reason, and build their knowledge through direct experience (Clements & Sarama, 2011). Through Educational Teaching Aids, the learning process is no longer teacher-centered, but shifts to active child-centered learning in accordance with the principles of child-centered learning as recommended in Early Childhood Education (ECE) standards (Ministry of Education and Culture, 2020). Educational Teaching Aids also encourage contextual learning that is relevant to children's lives so that learning experiences are not abstract but can be seen, touched, manipulated, and experienced directly (Arsyad, 2016).

One type of ECO that is commonly used with great potential to support early childhood development is building blocks. As a manipulative medium, blocks provide opportunities for children to build various shapes, construct structures, organize spaces, simulate life experiences, and solve problems creatively. Playing with blocks has been shown to improve the ability to recognize shapes, sizes, quantities, patterns, and spatial relationships, which forms the basis of children's cognitive mathematical development (Jones et al., 2013). Furthermore, blocks also stimulate motor skills through manipulative movements such as holding, stacking, and balancing blocks, thus developing eye-hand coordination and motor control well (Smith, 2020). From a socio-emotional perspective, playing with blocks teaches students the ability to work together, respect the opinions of peers, manage emotions, and express ideas in group interactions (Morrison, 2018). Therefore, blocks are not only used as a simple game but also as a strategic medium capable of developing various aspects of child development in one integrated activity.

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However, the effectiveness of using blocks as a child-centered educational tool (APE) is determined not only by the availability of the media but also by how teachers design activities, facilitate interactions during play, and assess children's learning processes and outcomes. Many early childhood education institutions operate as a routine without clear learning objectives or measurable developmental indicators (Widiasari, 2022). Teachers often fail to systematically monitor whether block play activities truly impact children's development according to developmental achievement standards (Nurhayati & Rahmawati, 2019). Furthermore, assessments tend to be general in nature, poorly documented, and underutilized as a basis for decision-making in future learning planning (Sudjana, 2017).

This situation results in the blocks' full potential as a learning medium being under-achieved. Children play with blocks merely as a way to complete their daily activities without any measurable developmental direction. However, a good assessment should provide information about a child's initial abilities, progress, obstacles encountered, and the learning strategies needed for the next stage (Creswell & Creswell, 2018). Therefore, research on the implementation of blocks as learning aids in early childhood education is crucial to gain a deeper understanding of how this medium can be utilized effectively and serve as an authentic assessment instrument for child development.

This study was conducted to answer the question of how the block-based learning model (APE) is designed and implemented in early childhood education (PAUD) classrooms, and its impact on child development. It also explored how assessments are conducted during play activities, the developmental indicators used, and the extent to which these assessments inform subsequent learning decisions. Furthermore, it provides an overview of teachers' constraints and challenges in utilizing blocks as a learning medium as well as strategies for improving their implementation.

Specifically, this study aims to (1) describe teacher strategies in designing learning using APE blocks, (2) identify the process of implementing manipulative activity-based learning through block play, (3) analyze its impact on children's cognitive, motor, and social-emotional development, and (4) examine how teachers conduct authentic assessments during play activities and utilize the assessment results in subsequent learning processes. Through these objectives, this study is expected to provide a comprehensive picture of the use of blocks not only as a play tool, but also as an effective and measurable learning medium.

This research is urgent because it aligns with the national education policy, which emphasizes that assessments in Early Childhood Education (PAUD) must be authentic, conducted throughout the process, and serve as the basis for further learning development (Ministry of Education and Culture, 2020). This research also contributes to improving teachers' professional capacity in designing learning using manipulative media oriented toward child development. Furthermore, the research findings can serve as a foundation for schools to improve the quality of learning resources and learning-by-doing-based learning patterns, which have proven to be more effective in enhancing early childhood development (Akhtar & Sengupta, 2020). Therefore, this research is expected to bridge the gap between PAUD learning theory and classroom implementation practices.

These research findings are expected to provide both theoretical and practical benefits. Theoretically, this study enriches the literature on APE-based manipulative learning and authentic assessment in early childhood education (PAUD). Practically, this research can be used by teachers to improve learning planning and implementation, by schools as inputs in providing higher-quality learning resources, and by curriculum developers to develop learning models that are more relevant to early childhood development. Thus, this research can make a real contribute to improving the quality of learning in PAUD.

## II. THEORITICAL REVIEW

### 1. Educational Teaching Aids (APE)

Educational Teaching Aids (EDA) are learning media used to stimulate children's development through meaningful play activities. EADs are designed to allow children to explore learning concepts directly through the manipulation of real objects, in keeping with the learning characteristics of early childhood, when it is easier to grasp concrete ideas than abstract ones. From Piaget's constructivist perspective, children learn by actively constructing knowledge through direct interaction with objects and their surroundings, making manipulative experiences crucial for learning (Piaget, 1969). EADs help foster thinking processes, imagination, and creativity by providing space for children to experiment with, try, discover, and solve problems without relying solely on verbal explanations. In the context of early childhood education, EADs also serve as a means of integrating all aspects of development, including cognitive, social, emotional, language, physical-motor, and moral values (Arsyad, 2016; Morrison, 2018). Therefore, the use of EADs is not merely a complement but an integral part of child-centered learning.

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**2. Blocks in PAUD**

Blocks are a type of ECD that are widely used in early childhood education because of their flexibility and potential for various forms of play. Blocks can help children develop construction skills, such as arranging, building, grouping, and creating spatial shapes, according to their creativity. Through block play, children learn to observe the relationships between shapes, sizes, quantities, patterns, and spatial characteristics, thus providing a foundation for understanding early mathematical concepts (Clements & Sarama, 2011). Block play also provides opportunities for children to express ideas freely and develop creativity and imagination through the construction of the shapes or structures they create themselves (Montessori, 2019). Furthermore, blocks play a role in improving problem-solving skills, as children often have to try various strategies when the structures they build collapse or do not meet their expectations. Block play not only stimulates cognitive aspects but also supports other developmental aspects, such as fine motor coordination, social skills, cooperation, communication, and the ability to regulate emotions while playing with others (Hollebrands & Lee, 2022). Therefore, blocks are not only seen as toys but also as a comprehensive learning medium that supports the multidimensional development of early childhood.

**3. Child Development Assessment**

Assessment in Early Childhood Education is characterized by authenticity, which is conducted in a real-life context through the direct observation of children's behavior, interactions, and achievements during daily activities. Authentic assessment does not require children to demonstrate their abilities through formal tests, but rather through systematic recording of development reflected during play, communication, activities, and task (Nurhayati, 2021). Forms of authentic assessment include anecdotal notes that record children's specific behaviors in specific situations, observation sheets that structurally assess the achievement of developmental indicators, and portfolios of work that demonstrate the development of children's competencies over time (Sudjana, 2017). In practice, authentic assessment provides teachers with important information about children's initial abilities, progress, and any obstacles encountered during the learning process. These assessment results serve as a basis for teachers to design subsequent learning strategies to better suit the needs and characteristics of each child (Miles et al., 2014). Thus, assessment not only functions as a development measurement tool but also as a reflection tool for teachers to improve the quality of learning in PAUD.

## III. RESEARCH METHODS

This study uses a descriptive qualitative approach to describe in depth the phenomenon of learning using blocks in the Early Childhood Education (PAUD) environment. A qualitative approach was chosen because it can produce a comprehensive understanding of the behavior, experiences, and processes that occur in the field through naturally obtained data (Creswell & Creswell, 2018). Descriptive research in this context focuses on presenting findings according to real conditions in the classroom without experimental treatment. Thus, the results of the study can provide an overview of how block media is used as an educational prop in supporting early childhood development as part of an authentic assessment of learning.

The research design was conducted within the scope of a simple case study, examining the implementation of block learning in one group of early childhood education classes. Qualitative case studies allow researchers to examine phenomena in depth in a specific context, thereby identifying natural patterns of learning interactions that emerge naturally (Miles, Huberman, & Saldaña, 2014). The focus of the research lies in the effectiveness of the use of blocks in learning, particularly how teachers design activities, facilitate the play process, and assess children's development during activities.

The research subjects consisted of 12 children aged four to five years and two teachers at an early childhood education (PAUD) institution in Indonesia. Subject selection was purposively conducted because this group was actively involved in learning using blocks and possessed characteristics relevant to the research objectives. Purposive sampling techniques are commonly used in qualitative research to select participants deemed most capable of providing adequate information regarding the phenomenon being studied (Cohen, Manion, & Morrison, 2018). The research location was chosen in an early childhood education (PAUD) environment that implemented game-based learning so that observations can be conducted within the context of normal student activities.

Data were collected using three main techniques: observation, interviews, and documentation. Observations were used to directly assess the learning process, including children's interactions with the blocks, interest, motor involvement, and ability to construct shapes. The observation method in Qualitative research allows researchers to capture real-world data without manipulation or intervention (Sugiyono, 2019). Interviews were conducted with teachers to explore their learning plans, activity objectives, assessment

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strategies, and obstacles encountered in implementing the blocks. Photographic documentation and children's work were used as additional data sources to strengthen the research findings and to provide authentic evidence of the learning process.

Data analysis was conducted using Miles and Huberman's interactive model, which included three stages: data reduction, data presentation, and verification or drawing conclusions. In the data reduction stage, researchers select, organize, and focus on important data that aligns with the research objectives. Next, the reduced data were presented in narrative form, tables, or visual displays for easier understanding. The final stage is verification, in which conclusions are drawn by linking field findings to the theoretical framework used (Miles et al., 2014). This analytical approach is suitable for qualitative research because it allows researchers to systematically interpret data from the beginning to the end of the research process.

## IV. RESEARCH RESULT

### 1. Use of Blocks in Learning

Observations showed that teachers consistently use blocks as the primary medium in two types of activities: free play and guided play. In free play, children are given the complete freedom to explore blocks according to their individual creativity. Children construct towers, bridges, houses, and simple building shapes based on their ideas. Meanwhile, in guided play, teachers design structured activities, such as grouping blocks by shape, color, or size, and challenging children to build specific structures according to simple instructions. This approach aligns with the concept of guided play learning, which combines children's spontaneity with clear learning objectives (Bodrova & Leong, 2015).

Block play activities also involve role-play, for example, using blocks, such as vehicles, shops, or story props. These activities provide space for children to develop self-expression, strengthen heir language skills, and understand the social world within a meaningful play context. This aligns with Morrison's (2018) argument that ECOs such as blocks can support cross-disciplinary development when used flexibly and contextually in learning.

### 2. Impact on Child Development

Based on authentic assessments conducted during the learning process, it was found that the use of blocks had a positive impact on three main aspects of development: cognitive, fine motor, and social-emotional. From the cognitive aspect, children demonstrate the ability to create increasingly complex patterns and structures. Children can compare sizes, construct symmetrical shapes, and demonstrate a basic understanding of spatial relationships, such as height and width, length and length, and balance and imbalance. This development is in line with Piaget's theory, which states that manipulating concrete objects greatly helps children build spatial thinking schemes in the pre-operational stage (Piaget, 1969).

In fine motor skills, children's eye-hand coordination improves as they develop more precise block-stacking skills. The movements of holding, stacking, maintaining balance, and controlling the touch of the hands when placing blocks provide significant stimulation for the development of small muscles. This reinforces Montessori's (2019) view that concrete manipulative activities help children simultaneously integrate physical movements with mental abilities.

From a socio-emotional perspective, children became more open in collaborating, sharing roles, discussing, asking for help, and offering opinions to their peers. The natural interactions that emerge during play serve as a means of internalizing meaningful social values. This aligns with Vygotsky's concept that children's learning improves through social interactions within the Zone of Proximal Development (ZPD), where children learn best when working with peers or under the guidance of teachers (Vygotsky, 1978).

### 3. Constraints on Using Beams

Despite its many positive impacts, several obstacles have been encountered during this research. First, play activities sometimes lack variety, so children's learning experiences do not always develop gradually. When play was repeated without new challenges, the children quickly became bored. Second, some teachers struggled to implement scaffolding strategies or tiered guidance in constructive play. However, teachers play a crucial role as facilitators, helping children expand their thinking skills through open-ended questions, new challenges, and demonstrations of problem-solving strategies (Creswell & Creswell, 2018). Third, not all teachers were able to utilize assessment results as a basis for planning subsequent learning; therefore, the learning process did not always move from the child's initial competencies.

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## V. DISCUSSION

The findings of this study indicate that block play is not only beneficial as a form of entertainment but also significantly contributes to children's cognitive, motor, and social development when used in planned learning. These results support the view of Clements and Sarama (2011) that manipulative media such as blocks can improve spatial and constructive thinking skills and halp children understand basic mathematical concepts in early childhood. Block play activities stimulate children to think divergently, engage in creativity in designing constructions, and develop natural problem-solving skills. Each process of assembling, comparing, balancing, and repairing buildings is a meaningful and direct learning process.

The teacher's role in learning has also been shown to be a determining factor in the effectiveness of block use. Blocks will have the maximum impact if the teacher is able to design play experiences that range from simple to challenging according to the child's abilities. This is where the concept of guided play becomes relevant as it combines children's independent exploration with teachers' instructional support from the teacher (Bodrova & Leong, 2015). When the teacher asks provocative questions, such as "how can I keep this building from collapsing?", children are encouraged to analyze new strategies rather than simply stack blocks randomly. This demonstrates that active learning occurs when the teacher acts as a facilitator, rather than a central source of information.

From a socio-emotional perspective, this study found improvements in communication skills, cooperation, emotional management, and tolerance during the collaborative play activities. These findings reinforce Vygotsky's theory of the Zone of Proximal Development (ZPD), where children's development occurs through guided social interactions (Vygotsky, 1978). When children discuss, share ideas, or make decisions, they develop social skills that cannot be taught through lectures or worksheets.

However, several identified challenges indicate that teacher training in scaffolding strategies, authentic assessment, and game-based learning management still needs improvement. As Miles, Huberman, and Saldaña (2014) noted, the quality of implementation is largely determined by how teachers capture learning process data and use the results to make decisions regarding future instruction. Therefore, improving teacher competency is urgently needed to ensure that game-based learning materials such as blocks can be fully utilized in learning.

## VI. CONCLUSION

The results show that blocks as Educational Teaching Aids (EAA) play a strategic role in supporting learning in Early Childhood Education. Through constructive play activities, children have the opportunity to learn directly through exploration, try various forms of construction, and naturally solve problems. Authentic assessments conducted during the learning process showed that the planned use of blocks had a positive impact on children's cognitive, fine motor, and socio-emotional development. Children are able to build increasingly complex constructions, recognize the concepts of space and size, and improve eye-hand coordination through manipulative activities. In addition, interactions during play are important vehicles for building communication skills, cooperation, collaboration, and the ability to manage group emotions.

However, the effectiveness of using blocks in learning depends heavily on teachers' roles as facilitators. Teachers need to design games that are gradual, challenging, and developmentally appropriate and implement appropriate scaffolding strategies throughout the play process. A variety of creative and experiential activities will help children think more divergently, develop their imaginations, and increase their motivation to learn. These findings confirm that blocks are not just a simple play medium but can also be a meaningful learning instrument if carefully planned, continuously assessed, and used to map children's developmental milestones. Therefore, the integration of blocks into early childhood education must be continuously strengthened to make the learning process more active, enjoyable, focused, and aligned with the developmental characteristics of early childhood.

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