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Activity Integration Coding Kids for Early Childhood Literacy Development

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Abstract

Purpose: This study aims to integrate Coding Kids activities for the development of early childhood literacy.
Methodology: The research method uses a qualitative approach with a case study design. Data collection methods in this study include observation, interviews, and documentation. Observations were conducted at BA Aisyiyah V Karangjati, Sragen, specifically for group B with 14 students. The data validity used in this study is source triangulation and technical triangulation. The data analysis technique is carried out by data reduction to group data obtained from observations, interviews, and documentation. Data presentation is used to present grouped data in the form of descriptive narratives, tables, or diagrams that facilitate understanding. Conclusions are drawn to summarize the results of all the data that has been collected, by ensuring that the conclusions answer the research questions that have been formulated.
Results: The results of the study showed that the Coding Kids activity based on Unplugged Coding in developing early literacy in early childhood showed good and positive results, so that children were able to experience improvements in recognizing, understanding words, spelling, reading and being able to write by deciphering letters to form words.
Applications/Originality/Value: The findings of this study can be used as a reference for early childhood teachers in developing early literacy in reading and writing with Coding Kids media based on Unplugged Coding.

Keywords: coding kids, development, early literacy, early childhood

Introduction Section

Early childhood education plays a crucial role in enhancing children's development and growth. As outlined in Law Number 20 of 2003 on the Education System, early childhood education is a developmental effort for children aged 0-6 years through stimulation to assist their physical and spiritual development and growth, ensuring their readiness for further education. Early childhood education can provide encouragement and long-term benefits in establishing the foundation for children's academic and social success (Zulkarnain, Mumtazah & Aisyiah, 2023). One early childhood development that can significantly impact subsequent levels of education is the development of reading and writing (Wardhani et al., 2022). The Program for International Student Assessment (PISA) is an international survey institute compiled by the Organization for Economic Cooperation and Development (OECD) that aims to measure the cognitive skills of students in various countries in the literacy aspect. PISA maps the ability to process information and implement knowledge in new contexts.

PISA measures three areas of literacy: language literacy (reading), mathematics literacy, and science literacy (Hasanah 2024). The latest survey in 2022 showed Indonesia ranked 68th out of 81 countries, released on December 5, 2023. This is a decrease from 2018, when Indonesia ranked 62nd out of 70 countries participating in the assessment. The survey rankings indicate that Indonesia remains among the 10 lowest-ranking countries in terms of literacy (Hasanah. 2024). Therefore, early literacy skills need to be developed from an early age (Jatnika. 2019). Early literacy skills can be in the form of reading and writing skills, so that later they will become provisions for children that are used in everyday life (Dwi & Zati, 2018). Children's communication skills lie in language in terms of reading and writing (Yulia et al., (2021); Devianty & Sari (2022); Mardhotillah et al., (2023)). Reading activities are fundamental to develop (Wahyuni & Jamilah, 2023).

Reading activities must be accompanied by an interest in reading, because interest in reading is the drive to understand the words and content contained in the reading text. Reading interest in early childhood can be stimulated with various activities that are fun for children. The goal of reading and writing is for children to be able to communicate ideas and feelings and be able to interpret the communication they receive. Research conducted by Purnamasari & Asri (2019) states that early literacy in the form of reading and writing in early childhood through activities that foster experience with the surrounding environment such as playing to recognize letters, sounds, numbers, pretend reading activities, making

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scribbles, looking at writing in storybooks, looking at billboards. Awareness of early literacy is shown by children in the form of enjoying listening, discussing pictures and storybooks, identifying labels and signs in their environment, participating in rhythmic games, starting to recognize letters and match them with sounds, using letters or shapes to represent written language (Husnaini, 2018).

Research by Eliza (2014); Wahyuningrum (2025); Mardiani, Fitria, and Yulianingsih (2024) states that there are six factors in a child's readiness to read, including: (1) physical readiness, a healthy physique plays an important role in reading. To stay healthy, children need adequate nutrition and rest. Physical health that supports the reading process is vision and hearing, (2) perceptual readiness, this readiness is related to the relationship between written and spoken language. Children need experience in distinguishing between letters and sounds, because there is a possibility that children will experience problems in distinguishing and matching sounds with words, (3) cognitive readiness, to read children need cognitive and intellectual processes, such as solving problems because if children are able to solve problems it means that children are able to understand instructions from the stimulator, (4) linguistic readiness, before the reading process, in this readiness, children are used to speaking or listening to more words from people in their environment, (5) affective readiness, this readiness is related to children's feelings towards themselves, (6) environmental/experiential readiness, children need experiences that connect the concepts they have and their environment

These six preparations, if the child is physically unaffected, has the same perception of what is heard, is able to receive instructions from the stimulator, has opportunities for speaking and listening activities, is mentally confident, and has direct experience in contact with the environment, it can be said that the child is ready to read. Early literacy is also related to writing activities. Writing is a skill used in indirect communication (Fitrah et al., 2024). Riskayanti & Suwardi (2018) state that writing is the ability to express oneself in written form, starting from scribbles, drawing straight lines, slanted lines, curved lines, and circles, then the child forms letters and words. Writing activities require hand-eye coordination (Amelia, Suryadi, and Daryati 2022). Writing is a symbol or symbol that has an agreed-upon meaning (Widyastuti, 2017). The stages of early literacy in terms of reading and writing, early childhood needs to be given stimulation to recognize letters, understand letters and numbers, and distinguish letters that have similarities. This stage is related to children's cognitive and language development.

BA Aisyiyah V Karangjati shows that the early literacy skills of students are not optimal, this can be seen from the data of group B where 13 students out of 14 students at the institution still have difficulty in recognizing, counting letters and numbers, distinguishing letters that have similar shapes and similarities in pronunciation. These difficulties are in writing and distinguishing the letters b and d, m and w, n and u, p and q or the pronunciation of q and k, s and x, and ca and sa, from there the activities of reading, writing and counting are still debated (Simatupang et al., 2023). Educators in developing literacy still use monotonous, uninteresting and boring methods. In fact, early childhood still has problems in early literacy reading and writing, for that it is necessary to collaborate in terms of providing stimulation through more fun and interesting activities for children. Support from all parties namely; parents, teachers and the community (Leonard et al., 2025). Cooperation in improving early literacy is also supported by Mardhotillah et al., (2023), who stated that reading and writing can be stimulated by those closest to the child, namely parents, teachers, or caregivers. Teachers have a responsibility and play a crucial role in child development, especially early literacy (Daly et al., 2025).

Early literacy can be innovated into fun and engaging activities so that children can learn as if they were playing. One such early literacy activity could be "Coding Kids." Coding Kids is a step-by-step process, carried out in detail and interpreted for follow-up to achieve a goal that can be called algorithmic (Suhendro, Sunan, and Yogyakarta (2022); McLennan, (2017)). The Coding Kids game approach is promoted through a national PAUD document that emphasizes the STEAM concept (Science, Technology, Engineering, Art and Mathematics), the four concepts are combined into Plugged Coding and Unplugged Coding learning in early childhood education units that have been published by the Director General of PAUD (Rahmawati & Agustin, (2024); Mutoharoh et al., (2021)). In various countries, Coding Kids learning has become a policy taught in early childhood education institutions. This policy is supported by previous findings that identify that early childhood can master the basic principles of Programming or Coding Kids (Elkin et al., (2016); Sullivan & Bers, (2018) and the potential of Coding Kids learning for early literacy skills in reading and writing in early childhood (Saxena & Kwan (2020); Lee, Joswick, & Pole (2023); Lee & Perdana (2023); Rabbana et al., (2025)).

Coding Kids is divided into two, namely Coding Plugged and Unplugged Coding. Coding Plugged is a learning activity with programming codes using computer technology, while Unplugged Coding is a learning activity for programming codes without using computer technology or digital equipment (Voon et al., 2023). Reading and writing skills have a correspondence with coding skills (Leonard et al., 2025). One effective and fun method in developing early literacy in reading and writing can be done by doing "Unplugged Coding" (Amelya et al., 2025). Unplugged Coding is a Coding Kids game with programming methods by doing concrete activities such as role playing, pattern making, board games, and logic stimulation (Amelya et al., 2025). This activity enables children to understand the concept of sequence, repetition, decision selection, and algorithms in a concrete, fun, and developmentally appropriate way (Syamsiah et al., 2024).

Coding Kids activities with Unplugged Coding media are due to the limitations of institutions that do not yet have adequate access such as digital devices, limited teacher competency in programming and teaching methods to early childhood which are challenges (Siswanto. (2022); Subroto, Wirawan, and Rukmana (2023); Kempirmase & Firman, (2025)). Coding Kids can strengthen early childhood through planned stimulation of simple early literacy without using

technological tools and without programming (Unplugged Coding) including Coding Kids media worksheets, mazes, puzzles, ludo, halma, sticky notes, cards, blocks, educational props etc. (Aminiati & Rohmalina, (2025); Mutoharoh et al., (2021)). Various previous studies have shown that Unplugged Coding activities can provide benefits for children, children become creative, able to integrate elements of language, science, mathematics in play activities (Kempirmase & Firman (2025); Aminiati & Rohmalia, (2025)).

The novelty of this research is that the Coding Kids activity based on Unplugged Coding can develop early literacy in early childhood. So far, there have been many published studies on Coding Kids learning based on Unplugged Coding to improve or develop early childhood computational thinking skills. Actually, Coding Kids in developing early literacy in early childhood is interrelated and becomes a next stage if the child is able or accustomed to computational thinking skills, or can be said to develop early literacy with computational thinking components. The research I conducted is considered relevant to several previous studies conducted by Oktaviani, Waluyo, & Formen, (2025) entitled Unplugged Coding to Develop Computational and Collaborative Thinking in Early Childhood Education. The study resulted in the finding that the implementation of Unplugged Coding was successfully implemented with a play-based approach with independent coding to support the development of early childhood computational thinking skills, especially in understanding simple logic and algorithms.

Further research by Fitriyah, Saputri, and Aljawad, (2023) entitled Unplugged Coding Practices based on daily lives in improving computational thinking in early childhood. This study yielded diverse achievements in computational thinking skills in children aged 5-6 years with achievements of being able to follow instructions given by teachers, being able to understand mistakes and correct them independently or carrying out discussions with friends. Based on the description above, activities that integrate Unplugged Coding focus on improving computational thinking skills, however, this research update integrates Coding kids activities based on Unplugged Coding to develop early literacy in reading and writing for early childhood children.

Based on this background, this study aims to determine and evaluate the improvement of early literacy in early childhood through the Coding Kids activity based on Unplugged Coding for 5- 6 year olds at BA Aisyiyah V Karangjati. Specifically, this study will answer two questions: 1) how is the implementation of the Coding Kids activity in improving early childhood literacy skills; 2) what are the advantages and disadvantages of the Coding Kids activity in improving early literacy. This study is expected to provide practical contributions for educational institutions in optimizing early literacy activities with Coding Kids media, as well as provide recommendations to PAUD teachers whose institutions still have problems in instilling early literacy in early childhood. Thus, the results of this study can be a reference for educators, principals, policy makers, curriculum developers in designing innovative and enjoyable learning for early childhood.

Methodology

This study uses a qualitative approach with a case study design (Moleong, (2021); Stake, (2019)). Qualitative methods were chosen to describe and illustrate existing phenomena, both natural and human-engineered, by considering characteristics, quality, and interrelationships between activities (Stolz & Stolz, 2020). Regarding the concept and practice of Coding Kids in improving early childhood literacy at BA Aisyiyah V Karangjati. Participants in this study were 1 principal, 1 grade B teacher, and one class or 14 children aged 5-6 years. Data collection techniques used included observation, interviews, and documentation (Sugiyono, 2020). Observations were conducted with teachers during the learning process. Observations were conducted to capture how Coding Kids is implemented to improve early literacy. Interviews were conducted with the principal and teachers. Interviews were conducted to obtain data related to the implementation of Coding Kids activities in improving early childhood literacy skills and factors that support and hinder the implementation of these activities. Documentation is used to strengthen research evidence in the form of teaching modules, assessments, and photo documentation results.

Data analysis techniques were conducted using the interactive model of Miles & Huberman; Saldana (2018), which includes data reduction carried out to group data obtained from observations, interviews, and documentation. Data presentation was used to present grouped data in the form of descriptive narratives, tables, or diagrams to facilitate understanding. Data interpretation was used to analyze the interpreted data by linking research findings with relevant theories and previous research. Conclusions were drawn to summarize the results of all collected data, ensuring that the conclusions answer the formulated research questions. Data validity was achieved through source triangulation and method triangulation (Patton, 2020). Source triangulation was carried out by comparing data from the principal and teachers, while method triangulation was carried out by comparing the results of interviews, observations, and documentation.

Result and Discussion

Results

Early literacy, reading and writing, is fundamental to developing (Wahyuni & Jamilah, 2023). Teachers each have their own methods for stimulating early childhood. One example is the teachers at BA Aisyiyah V Karangjati who stimulate their students through Coding Kids. Coding Kids at this institution utilizes Unplugged Coding, addressing the limitations

of digital media and teaching children to focus more on non-digital games and activities to reduce dependency, especially on cell phones, tablets, laptops, and other digital devices. The activities carried out by the teachers are divided into four stages:

1. The welcoming stage. During this stage, children arrive at school and are greeted by the teacher through verbal and non-verbal communication such as greetings, shaking hands, and asking how they are.
2. The initial activity stage, or morning time, involves children in a pre-school prayer, a review of Surah Juz Amma, daily prayers, and selected hadiths. Icebreakers are also provided. The initial step, or education and information regarding the activities to be carried out in the core activities, are provided according to the teaching module and theme.
3. Core activity stage. In this stage, children are given activities focused on improving early literacy, as outlined in the initial activity stage. Children engage in activities at this stage using a group learning model.
4. Closing stage. In this stage, children are invited to review the activities they have completed through questions and answers to enhance their understanding.

Researchers conducted research on July 21 to August 18, 2025 during core activities with a duration of 30-45 minutes, and teachers carried out activities focused on literacy development on that date because group B children were entering the new school year, from there the process of reviewing the stimulation given to group A after the end of semester break. Based on the results of observations, there was a very good increase in early literacy through Coding Kids activities. The assessment scale used was 1 to 5 with the information (1) never, (2) rarely, (3) sometimes, (4) often and (5) always. From 5 observation indicators, there were good performance results. The total number of group B was 14 children. A total of 12 children were on the assessment scale (4) often in 5 indicators. A total of 2 children were on the assessment scale (4) often in 4 indicators and the assessment scale (3) rarely in 1 indicator, the child's assessment scale can be seen in table 1 below.

Table 1. Results of the assessment scale according to the observation indicators.

NO	Observation Indicators	Observation Indicators					Number of children
		1	2	3	4	5	
1.	Focus on instructions				√		12 children
				√			2 children
2.	Following Directions				√		14 children
3.	Interest				√		14 children
4.	Actively participate				√		14 children
5.	Recognizing and Connecting				√		14 children

Rating scale: 1 (never)
2 (rarely)
3 (sometimes)
4 (often)
5 (always)

In terms of focus on instructions, 12 children showed an assessment scale of (4) often paying attention to the teacher Focus aspect with instructions, 12 children showed a rating scale (4) often paying attention to the teacher during activities, and 2 children showed a rating scale (3) rarely paying attention. This rarely can sometimes behave focused on the teacher, sometimes showing focus on other things such as taking toys, walking around, or being busy with themselves. From the first indicator, it can be stated with a ratio of 6: 1 (between often focused and rarely focused) Children who often focused were more compared to children who rarely focused. In this aspect, observations can be concluded that there was good performance. Children were seen paying attention when the teacher provided information on initial activities in the form of initial steps, instructions, procedures for activities that would be carried out in the main activity. Children's eyes were focused on the Coding Kids sheet, and rarely looked away to other things. There were times when children asked again for the instructions given. The ability to focus is the child's ability to remember what was conveyed by the teacher. Focus as the ability to concentrate attention for a long period of time to complete activities without feeling distracted by stimuli from outside or within the individual. Children who are focused can be identified by their attitude of paying attention to every instruction or information that the teacher conveys, being able to respond and understand what is conveyed, always being active by asking questions if they do not understand the information about the activity, being able to answer questions and the class conditions being calm and peaceful during the activity.

Following the rules, overall, children are able to follow the directions for carrying out activities. Children are able to work according to directions, such as writing the letter "ba" in the yellow circle, the letter "bi" in the pink circle, the letter "bu" in the purple circle, the letter "be" in the blue circle and the letter "bo" in the green circle, with the colored circles placed randomly. Early literacy activities in reading and writing begin with the introduction of vowels "a, i, u, e, o", consonants and consonants combined with vowels such as "ba, bi, bu, be, bo" and "ca, ci, cu, ce, co" up to "za, zi, zu, ze, zo". Following the rules can also be called discipline. Discipline can be formed through learning activities and games. Before the activity, the rules must be conveyed by the teacher so that children are able to understand. The rules conveyed should not contain any element of coercion and be educational so that they form an ingrained attitude in children. Following the rules at the early childhood level is useful for training children to learn as social beings who will later be accepted in society and able to follow the rules that exist in their environment.

Interest, early literacy activities that emphasize reading and writing using Coding Kids media is a special attraction for early childhood. This learning innovation is very enjoyable and can be seen from the children's eyes fixed on the Coding

Kids sheet that depicts curiosity, a desire to immediately work and smiles on the children's lips. Children in carrying out activities look enthusiastic to work on and complete activities. For children who feel capable, provide directions to other friends about the activity. Activities are carried out with various different Coding Kids models so that children do not experience boredom and in children arise curiosity about Coding Kids activities the next day, this is seen there are several children asking the teacher about tomorrow's activities. With the Coding Kids activities, children are able to recognize letters, read, guess and write letters according to instructions. Observations in this indicator show that the Coding Kids media is able to stimulate children to understand, think critically, read, and write in a fun way.

Active participation: 14 children participated very actively, as shown in Table 1. In the focus aspect, two children were still on the assessment scale, sometimes focusing when the teacher delivered directions and rules. However, all children actively participated in the early literacy activities of reading and writing using Coding Kids media. Active participation shows that children enjoy the activity. It can be seen that children are able to work independently, peacefully, do not complain about difficulties, and show a happy face until each child's task is completed. This makes it easy for teachers to improve a learning objective to be achieved. Recognizing and connecting: this process is carried out well if children are focused, paying attention, following directions, are interested, and actively participate. Table 1 can be concluded that this activity shows good development, so that children are able to recognize and connect symbols and patterns in the Coding Kids activity and complete the activity thoroughly.

Based on the assessment of early literacy skills in reading and writing, there has been a very good improvement. Before the innovation of early literacy activities through the Coding Kids media, children had difficulty distinguishing letters, recognizing letters, understanding letters, connecting initial letters with pictures, or connecting words with pictures as stated in the background. After the implementation of this fun innovation, children experienced improvements in reading and writing. Children were able to write their own names, were able to say letters shown by the teacher randomly, children were able to spell words such as the word "buku" by spelling b-u-k-u, children were also able to write letters to form words and were able to write numbers 1-50 as said by the teacher like the dictate method. With this assessment, it can be concluded that the activity was running according to its objectives.

Based on the results of interviews with respondents, 1 teacher and 1 principal at BA Aisyiyah V Karangjati, it shows a sense of pride expressed by the teachers and principals for the results of the innovation that has been carried out for students. Coding Kids is used with various games to understand symbols, solve problems, think critically, and recognize, understand, write letters and numbers and read words in a fun way. The selection of activities is done according to the order from the earliest to the last letter, because the teacher understands that in the introduction of early literacy that will be delivered to students must be coherent and structured. From both respondents said that this activity is able to improve early literacy well. It can be seen that children are able to write names on activity sheets, work results, and are able to write letters spoken by the teacher to form a word. This can be proven from the results of interviews with principal ER and teacher ZK.

"Alhamdulillah, I observed that the innovations given to the children, especially in Group B, were running smoothly and successfully. I saw that the children were now able to write their names on the activity sheets, and I often saw them writing words or names on the whiteboard using markers. I also saw good progress in the reading activities on the reading assessment cards. Now the children are more often continuing their reading activities during breaks" (Principal ER).

"I feel that the Coding Kids activity in developing early literacy is running smoothly and producing something positive for the children. I saw that the children were already able to write their names independently without teacher instructions on their respective activity sheets. The children were also able to recognize and understand their friends' activity sheets. I also tested the children with the aim of knowing whether Coding Kids was truly able to develop early literacy by deciphering letters to form words with the theme Allahurobbi, thank God the children turned out to be able and could write the letters that I said to form words and the children were enthusiastic about giving ideas for what to write, and were able to read back when I asked "what is this spelled?" and the children were also able to read "finger," "eye," cheek" (Teacher ZK).

Based on the documentation conducted during the research, it provides strong visual evidence for improving early literacy in reading and writing in early childhood. Activity documentation shows various stages of child observation and interviews with the principal and teachers. Observations of children's activities are a crucial part of illustrating concrete and real-life events surrounding the implementation of Coding Kids, as shown in the image below.

Figure 1. Photo of Coding Kids introductory activitycolor and letter patterns

Figure 2. Activity photosCoding Kids with cartoon-like number images

Figure 3. Activity photosconnecting the initial word with the picture

Figure 4. Photo of Letter Exploration Activity

Figure 1 shows a picture of a child carrying out the Coding Kids activity of recognizing patterns in shapes, colors and letters. On the activity sheet, it shows that the blue circle says "ca", the green circle says "ci", the purple circle says "cu", the pink circle says "ce" and the yellow circle says "co". The child is in the process of recognizing patterns by working on the activity sheet by writing the specified pattern. Figure 2, a child is doing an activity of guessing and observing the shape of a number in the form of a cartoon, the number has eyes like it is alive so that it is able to attract children from the shape and color and write the number the child observes in the column provided below. Coding Kids media is both a game and a formal learning activity. Children look focused and concentrated in doing activities independently, there is an interest in Coding Kids activities, because the activity sheet is colorful, has an interesting shape, and fosters curiosity in children.

Figure 3, Coding Kids connects the same initial words with pictures such as; the letter "ha" draws a line with pictures of tigers, hajj, towels, the letter "hi" draws a line to pictures of green, black, decorations, the letter "hu" draws a line to pictures of rain, forest, punishment and so on. The picture shows that the children are enthusiastic about carrying out activities by discussing together. Figure 4, Coding Kids explores letters and numbers. In this activity, the children are given an initial step by the teacher that the activity is to explore pictures that are pasted around the schoolyard environment, on classroom walls, fences, doors, and children's outdoor toys with random placement. The activity is to look for pictures that have the initial letter of the name of the picture written underneath, and the children are given a worksheet containing only pictures. Children are invited to find pictures and then write the letters on their worksheet. The pictures are such as: a picture of an apple written with the letter "a", a picture of a duck written with the letter "b", a picture of a worm written with the letter "c", and a picture of a zebra written with the letter "z".

The activities stated in all the pictures above, can be seen that the children are very enthusiastic, interested and actively participate in carrying out the activities until they are completed. With the Coding Kids activity, it shows that there is an increase in early literacy, as evidenced by the reflection of the activities where the children are able to answer questions asked by the teacher. When the teacher asks "what letter is in the picture of the apple?", the child answers "the letter a" the teacher asks again "what letter is in the picture of the xenia car?", the child answers "the letter x bu". From the results of the documentation of the activity, it has a positive impact on children, namely: children are able to understand letters, children are able to read letters, and children are able to write letters well.

Discussion

The integration of Coding Kids activities for early childhood literacy development focuses on innovative learning media in the form of Unplugged Coding with activity sheets designed to strengthen reading and writing skills. The children's activity sheets not only present passive learning activities but also present hands-on activities that directly involve children in practical activities that stimulate creativity, critical thinking, and help connect theory with practice in everyday situations (Aisyah et al., (2024); Rabbana et al., (2025)). These activities facilitate children to understand patterns, follow sequential instructions and develop basic logic in a fun way without digital devices. This creates a contextual, enjoyable learning process that is able to develop reading and writing literacy naturally (Lee & Perdana, (2023); Rabbana et al., (2025)). The activity sheets are prepared based on real needs in the field and are adapted to the developmental level of early childhood at BA Aisyiyah V Karangjati Sragen for children aged 5-6 years, which is the research location. The following is an example of an activity sheet given to children:

Figure 5. Activity sheet for recognizing shape and color patterns

Figure 6. Activity sheet connect the initial letters with the pictures

Figure 7. Activity sheet for writing numbers

Figure 8. Number exploration activity sheet

Figure 9. Road puzzle activity sheet

One of the learning objectives that can be achieved with the Unplugged Coding-based Coding Kids media is improving early literacy in reading and writing in early childhood. According to Lee, Joswick, and Pole (2023), activities can be carried out by recognizing patterns based on color and shape. With color and shape, children are able to combine, sort, and group objects (Saxena & Kwan, 2020). Pattern recognition in Coding Kids activities, such as the activity sheet in Figure 5, consists of colors and letters. The child's activity sheet shows that the letter "ca" is in the blue circle, "ci" in the green circle, "cu" in the purple circle, "ce" in the pink circle, and "co" in the yellow circle. In this activity, children are asked to write the letters "ca, ci, cu, ce, co" according to the randomly assigned circle colors. In this activity, children

appear enthusiastic and happy because the colors are attractive, the patterns are easy to understand, and they make children curious to complete the activity. So that children easily understand and are able to complete the activity well. Lee, Joswick, and Pole, (2023) stated that this activity is able to foster a high level of accuracy and focus, because in addition to recognizing patterns, children are directed to write, understand letters and become an activity to increase early literacy in early childhood.

Coding kids based on Unplugged Coding to develop children's early literacy can be in the form of activities connecting initial letters with images such as the activity sheet in figure 6 above. The activity sheet can be done by drawing a line between the letter "ha" with images of tigers, hajj, ghosts and treasures, the letter "hi" with images of green and black stars and a nose, the letter "hu" is drawn a line with images of rain, forest and punishment, the letter "he" is drawn a line with images of helmets, savings, and helicopters, and the letter "ho" is drawn a line to images of hotels, hooray and hobbies. After this activity, children are given questions to review the learning outcomes by asking them to name words that start with "ha, hi, hu, he, ho". From the results of observations in this activity, it shows that children are able to remember and name the images worked on in the core activity. This activity is able to develop early literacy by understanding and thinking critically so that children are able to recognize and name words with initial letter stimuli.

Activity sheets for developing early literacy in reading and writing can also be used to introduce numbers. This sheet can be seen in Figure 7. The activity sheet contains numbers in attractive cartoon-like shapes. This Unplugged Coding-based Coding Kids activity is presented to children to stimulate them in an attractive way, enabling them to observe, recognize, and understand numbers. In recognizing numbers, children are encouraged to write. The writing process begins with grasping a writing tool, moving it, and writing the numbers they understand (Mustari et al., 2020). Numbers are an integral part of early childhood literacy that must be taught and their understanding developed. Figure 8 above is a Coding Kids activity sheet based on Unplugged Coding, which implements play-based learning. Children are instructed to explore and search for pictures with letters written on them posted around the classroom. Once they find the picture, they must write the letter corresponding to the picture they have found. This activity can be supported by (Mutoharoh et al., 2021). Dwi & Zati (2018) stated that helping children to read or speak well is best done at an early age. The approach can start with word puzzles, guessing words, or finding words, because these activities can develop children's language and phonics development.

Early literacy development activities in reading and writing are not only focused on recognizing letters and numbers, but also provide stimulation so that children are accustomed to critical thinking. During early literacy development activities, children are also given activities such as the road puzzle shown in Figure 9. Children are instructed to cut out boxes in the shape of a road route and arrange the boxes to form the correct path from the bus picture to the terminal. This activity is carried out so that children are accustomed to critical thinking, because reading and writing activities also require critical thinking. Observed early literacy development skills include increasing understanding of reading a word and writing letters to form words. Through consistent repetition of Coding Kids activities, children are easier to remember and imitate, however, repetition is only done 2-3 times so that children do not experience boredom and are accustomed to the flow of Unplugged Coding activities. For example, as shown in Figures 5 to 9, it shows that in increasing early literacy with Coding Kids media, various worksheet activities are used, including writing letters in the agreed color circle, drawing lines from the initial letter with the picture, observing numbers in cartoon form, in the form of letter exploration activity models, puzzles, and other activities can also be carried out such as coloring letters or numbers according to the provisions, number puzzles, mazes, and arranging directions, etc.

During learning activities using Coding Kids based on Unplugged Coding, children showed high enthusiasm. They appeared very interested because the activity sheets presented exploratory activities. All activities were conducted without digital devices, making learning simpler yet interactive and enjoyable. Children asked many questions and actively sought solutions when faced with challenges in the worksheets. These activities became even more engaging when combined with exploring the school environment, learning outside the classroom, whether in the garden or the surrounding area. Interaction with the surrounding environment not only developed children's early literacy but also created a comfortable, pleasant, fresh, and beautiful atmosphere, allowing children to experience a different atmosphere than in the classroom. The learning environment influences various aspects of child development (Baiti and Banjarmasin, 2020). One aspect of development influenced by the environment is the integration of early literacy activities in children of this age group. Learning media is a useful tool to support the teaching and learning process, with the aim of making the meaning of messages conveyed by teachers clearer, more effective, and more efficient (Ningrum & Wardhani, 2022).

The results of the integration of Coding Kids based on Unplugged Coding with the provision of activity sheets are able to provide a real positive impact on the development of early literacy in reading and writing. The positive impact of the Coding Kids activity aspects, namely; 1) Able to improve children's focus and concentration. It can be seen that 12 out of 14 children on the assessment scale often and 2 children showed an assessment scale sometimes paid attention to teacher instructions and were actively involved in completing Coding Kids activities. This activity is able to help children hone their focus skills and memory of letter shapes and sounds. 2) Children are able to be more disciplined and able to follow the applicable rules. Coding Kids encourages children to follow learning rules happily. For example, when children are asked to write "ca, ci, cu, ce, co" according to the different circle colors. Children follow the rules without coercion and understanding of sequential instructions which are an important basis for reading and writing. 3) Increase interest and motivation to learn. In this activity, children show a high curiosity towards the Coding Kids activity sheets which are colorful, illustrated, and vary every day. 4) Active participation, All children participate actively either independently or with friends. Fifth, real improvement in reading and writing skills.

Coding Kids based on Unplugged Coding also has advantages including; First, Coding Kids is able to adjust activities

to learning objectives or learning themes so that students have a sense of interest in the learning material. Second, Coding Kids is able to adjust the content and material so that it can increase understanding of the concepts being taught. Third, Coding Kids makes it easy for teachers to convey learning objectives. Fourth, Coding Kids has its own appeal compared to reading and writing activities that are focused on teachers. Fifth, Coding Kids is able to improve all aspects of early childhood development, both in terms of language, cognitive, physical motor, social emotional, and art. Sixth, Coding Kids can be done by learning while having fun playing. Research by Yuningsih & Agustin (2024); Rahmawati & Agustin (2024) states that playing is not only a fun activity, but aims for learning. Coding Kids activities with Unplugged Coding are included in the contractivism approach, this strategy allows children to solve challenges they have according to the rules, find ideas, assimilate concepts, programming and are able to solve problems according to the objectives of the activity (Wang et al., 2023).

No matter how good the Coding Kids media is, the role of the teacher cannot be completely replaced by learning media. This means that media without teachers is difficult to improve the quality of learning. The role of teachers is still necessary even though the media has summarized all the learning materials needed by their students. Media only helps teachers in concretizing the material to be given to students. Meanwhile, students will easily grasp the material given by the teacher. Teachers feel that using appropriate learning media will facilitate the achievement of learning objectives. Every learning activity is not free from challenges, especially related to the potential of teachers in preparing a variety of Coding Kids media. The obstacle currently experienced is that teachers feel running out of ideas to create other varied innovations to develop and improve other aspects of development. Another obstacle is limited digital technology facilities in schools, so activities are more focused on activities that are Unplugged Coding or without digital technology.

Conclusion

The integration of Coding Kids activities based on Unplugged Coding for early childhood literacy development at BA Aisyiyah V Karangjati has proven effective and has a positive impact. This activity is able to encourage focus, discipline, active participation and curiosity in children. It is able to foster a fun and interactive learning atmosphere. Children become able to recognize, understand, spell, read words, write letters to form words, write their own names, and children are able to do dictate activities. However, this integration still has obstacles, such as the need for support in improving teacher competency to get the latest varied ideas in learning and inadequate digital technology facilities..

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