What's in My House? Development of Meaningful and Joyful Digital Learning Media for Early Childhood

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Abstract: This study aims to develop digital learning media in the form of an animated video titled "What's in My House?" and to examine the implementation of digital learning media and integrate a fun and meaningful approach for early childhood. This study uses Research and Development (R&D) with the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) model. The subjects were 5-6 year old children at the PKK Kindergarten in Palur, Karanganyar. The results indicate that the digital learning media developed in the form of the "What's in My House?" learning video can be used by teachers to support conscious, meaningful, and fun learning, interactive, and contextual, and has a positive impact on children's development.

1 INTRODUCTION

The era of the Industrial Revolution 4.0 and the current Society 5.0 era is characterized by rapid and increasingly sophisticated developments in information and communication technology. This era has transformed the way people think, leading to greater use of technology in their lives. Along with increasingly sophisticated technological developments, there is a demand for improved knowledge quality through the use of technology across all age groups, including early childhood. Children are now growing up as a digital generation, exposed to digital technology from birth. Early childhood is in a golden age, a period of rapid growth in various aspects of development, such as cognitive, motor, social, emotional, and language (Nurhayati, 2020). To optimize this golden age, children need appropriate stimulation through playful learning from their surroundings. Good stimulation can be provided by addressing every aspect of physical, motor, cognitive, social, emotional, religious and moral values, and language development appropriate to their age.

In digital era, efforts to improve the quality of learning in early childhood education (PAUD) require the use of technology throughout the learning process, including the role of teachers. The role of teachers is crucial in designing and producing innovative, relevant and popular digital learning media that provide appropriate stimulation and positively impact children. Innovative learning media aims to increase the effectiveness and appeal of the learning process for children of preschool age (Arifudin, 2021). Digital learning media in early childhood education is all forms of technology used to support the teaching and learning process of children (Suryani, 2023). There are various forms of technology such as laptops, tablets, smartphones and computers that can be used to create digital learning media designed by teachers, including software applications, digital games, animated videos, interactive videos, interactive quizzes, augmented reality (AR) and other multimedia content.

Media Several studies have been conducted on digital learning media for early childhood. ABaCa game-based learning media can improve early literacy skills in children aged 5-6 years, particularly in terms of phonological awareness, reading comprehension, and letter and word recognition (Nirwana, 2021). Digital game-based learning has a positive impact on children's learning (Behnamnia, 2023). Meanwhile, a common phenomenon is the

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limited implementation of early childhood learning, particularly the use of digital learning media in rural educational institutions. Based on initial observations, the PKK Kindergarten in Palur, Karanganyar, lacks the ability of teachers to create enjoyable and meaningful digital learning media that are implemented in the learning process. In terms of learning strategies, learning activities remain monotonous, with only student worksheets, magazines, and reading, writing, and counting activities without media, making children reluctant to participate.

Learning can take place in a fun and meaningful way through the role of digitalization of education through the use of digital technology, making it easier for children to understand the material presented by teachers. Digital media technology can encourage children to be more verbally expressive through storytelling (Tang, 2024). Furthermore, it has encouraged the birth of various innovative approaches in the teaching and learning process that can increase children's interest during learning activities. Efforts to integrate the role of technology in learning in the digital era require innovation in digital learning media for early childhood through a fun and meaningful approach that can be applied specifically in early childhood education institutions in rural areas to make the learning process more enjoyable, meaningful, and appropriate to the child's developmental stage. Therefore, the current research aims to develop digital learning media in the form of an interactive learning video "What's inside my house?" that can be used by early childhood to stimulate various aspects of child development such as cognitive, language, motor, and social-emotional.

2 RESEARCH METHODS

This study uses the Research and Development (R&D) type of development research with the ADDIE model (Analyze, Design, Develop, Implement and Evaluate) (Sugiyono, 2016). The ADDIE model includes (1) Analyze: Analysis of teacher and child needs, curriculum, and available technology. (2) Design: learning video content "What's in My House?" using visual, audio, and interactivity elements. (3) Develop: creating a prototype of an existing learning video with the help of a laptop and the Canva application but using the theme "What's in My House?" in stimulating the developmental aspects of children aged 5-6 years. (4) Implement: implementing the learning video "What's in My House?" for ages 5-6 years at the Palur PKK Kindergarten. (5) Evaluate: evaluating the implementation of the product. The implementation of the learning video "what's in my house" was carried out by integrating a fun and meaningful approach for early childhood. The research subjects were 15 students aged 5-6 years at the Palur PKK Kindergarten. Data was collected using observation, interviews, checklists, then analyzed quantitatively and qualitatively based on the results of expert media material tests.

3 DISCUSSION

Result

Based on the research results, researchers developed digital learning media in the form of interactive game-based learning videos with an environmental theme and a sub-theme of home. This learning video is specifically for students aged 5-6 years, totaling 15 children at Palur Karanganyar Kindergarten, with the topic "my home." The video contains educational materials about the rooms in the house, namely the family room, bedroom, kitchen, and bathroom, as well as the objects in those rooms in Indonesian language. In each game menu there will be a pause for children to think, and at the end of the game, an explanation will be given to always keep the house clean.

Analyze

At this stage, an initial observation analysis is conducted to assess the learning process, child development, and media used. The purpose of the analysis is to determine the digital learning media needs of children aged 5-6 years

Table 1: Initial needs analysis.

Aspects analyzed	Indicator
The need for video-based digital learning media has not been met.	Teachers' limitations in preparing/designing enjoyable and meaningful digital learning media.
The suitability of the material to the ongoing theme.	The material needs to be adapted to the child's needs by integrating all aspects of development.
Lack of interest in learning among children	Learning methods are still conventional
Availability of technological devices in schools	Laptops are available but use is limited to school administration needs.

Based on this analysis, digital learning media based on learning videos is needed at the Palur PKK Kindergarten.

Design

In this video design, Indonesian language is used because the students at the Palur PKK kindergarten still do not understand English language. The concept for developing digital learning media in the form of an interactive video lesson, "What's Inside My House?", is a game-based learning video aimed at introducing the spaces and objects found inside a house in Indonesian language. The video not only introduces the spaces and objects, but also explains the function of each room in the house. The digital learning media developed includes several elements such as images, sounds, and words or sentences. The following is a preview of the menu design for the "What's Inside My House?" learning video:

(a)

(b)

(c)

(d)

(e)

(f)

Figure 1: Display of the interactive learning video menu "what's in my house?" with Indonesian language.

Table 2: Design.

Design Aspect	Indicator	Average Score	Percentage
Suitability of design to learning objectives	Material according to development indicators	4,87	97,4%
Audio-visual appeal	Sound, color, illustrations, and layout.	4,80	96%
Clarity of narrative	Simple language, easy for children to understand	4,73	94,6%
Integrasi audio-visual	Videos contain sound and images to support the visualization of the material.	4,80	96%
Rata-rata			**96%**

Develop

At this stage, digital learning media was developed in the form of a video lesson titled "What's inside my house?" assessed by media experts using a questionnaire. The video was then revised based on the media experts' suggestions, resulting in its feasibility. This learning video stimulates multiple senses, builds emotional engagement, and encourages active interaction between children, teachers, and the reading material. Furthermore, the learning video concept also addresses various developmental aspects, including:

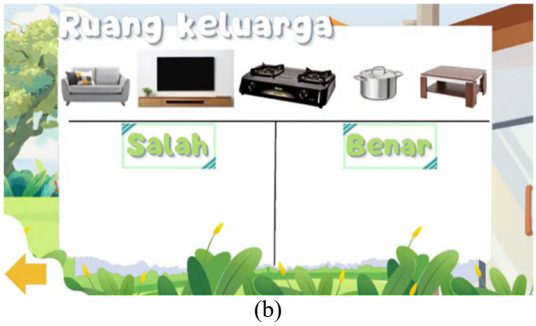
3.1 Family Room

In the family room, there's a game menu for distinguishing objects. In this menu, students can operate interactive games such as:

a) If the item is not a living room item, it is placed in the wrong section. This menu displays items like pots and stoves.
b) If the item is a living room item, it is placed in the correct section. This menu displays items like sofas, TVs, and tables.

The developmental stimulation provided focuses on cognitive development. In this section, students are asked to name objects found in the living room. Then, on the next slide, the types of objects are matched to the "true" and "false" columns provided.

(a)



(b)

(c)

Figure 2: Family room or ruang keluarga (Indonesian language).

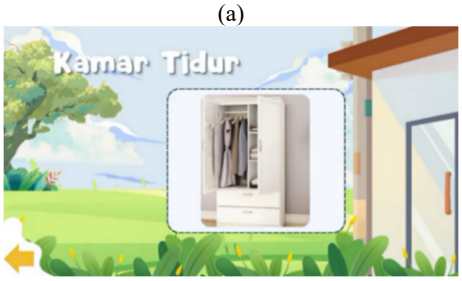
3.2 Bedroom

In the bedroom section, a game menu is provided explaining the function of the bedroom and the objects found in the bedroom. In addition, there is a game menu for guessing the names of objects in the bedroom. In this menu, students can operate interactive games such as:

a) A picture of a cupboard is displayed, followed by the word "cupboard." In this menu, students can spell the letters L-E-M-A-R-I (Indonesian Languange) in the word "Lemari" (Indonesian languange) or "Cupboard" (English language)
b) A picture of a pillow is displayed, followed by the word "pillow." In this menu, students can spell the letters B-A-N-T-A-L in the word "BANTAL" (Indonesian language) or "pillow" (English language)
c) A picture of a mattress is displayed, followed by the word "kasur." In this menu, students can spell the letters K-A-S-U-R in the word "kasur" (Indonesian language) or "bed" (English language)

The developmental aspect provided is language development. In this section, students are asked to guess the name of the object in the picture. Then, on the next slide, a picture and corresponding word appear, such as cupboard, pillow, mattress. In the video there is also a voice inviting you to spell letters into words, then students can follow along by spelling the letters into words.

(a)



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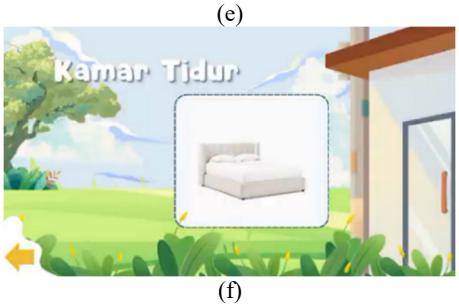


(f)

(g)

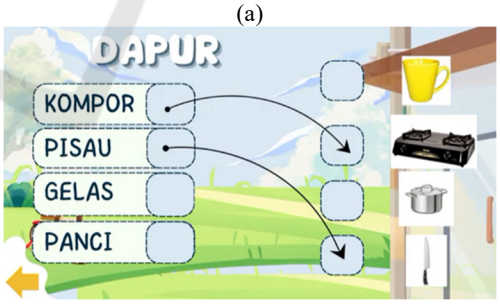
Figure 3: Bedroom or kamar tidur (Indonesian language).

3.3 Kitchen

In the kitchen or dapur (Indonesian language) area, there's a game menu that explains the kitchen's functions and the objects found there. There's also a game menu for naming the objects in the kitchen. In this menu, students can operate interactive games such as:

a) The word “Gelas” (Indonesian language) or "Glass" is displayed, then connected with a line to the image of the "Glass," and then explained the function of the glass as a drinking utensil.

(a)



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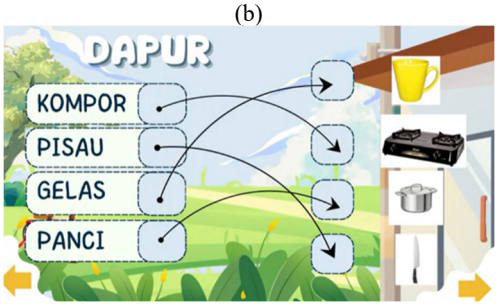

(c)

Figure 4: Kitchen.

b) The word "pisau" (Indonesian language) or "Knife" is displayed, then connected with a line to the image of the "Knife," and then explained the function of the knife in cutting food.
c) The word "kompor" (Indonesian language) or "Stove" is displayed, then connected with a line to the image of the "Stove," and then explained the function of the stove in cooking.
d) The word "panci" (Indonesian language) or "Pan" is displayed, then connected with a line to the image of the "Pan," and then explained the function of the stove in cooking soup.

The developmental aspects provided are cognitive and language development. In this section, students are asked to name the objects in the picture. Then, on the next slide, a word and corresponding image appear, such as stove, knife, glass, and pan. The video also includes voice prompts to connect the words with the images of fig.4.

3.4 Bathroom

In the bathroom area or kamar mandi (Indonesian language), a game menu is provided explaining the function of the bathroom and the objects found there. In addition, there is a game menu for guessing and counting the number of toothbrushes, soap, and ladles, as objects found in the bathroom. In this menu, students can understand interactive games such as:

a) A picture of three "Toothbrushes" or "sikat gigi" (Indonesian language) plus two "Toothbrushes" is displayed. In this menu, students can count the total number of "Toothbrushes" displayed, which is five toothbrushes.
b) A picture of two "ladle" or "gayung" (Indonesian language) plus one "Ladle" is displayed. In this menu, students can count the total number of "Ladles" displayed, which is three ladles.
c) A picture of one "Soap" or "sabun" (Indonesian language) plus two "Soap" is displayed. In this menu, students can count the total number of "Soaps" displayed, which is three bars of soap.

(a)

(b)

(c)

(d)

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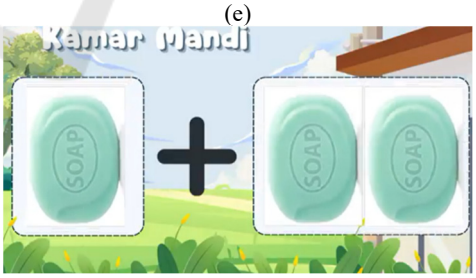

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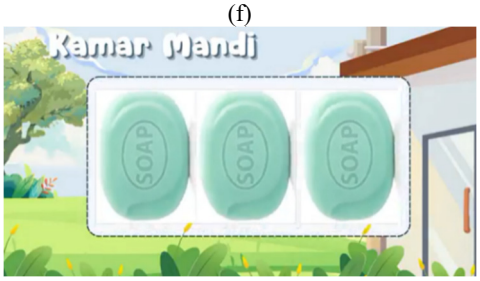


(g)

Figure 5: Bathroom.

The developmental aspect provided is cognitive development. In this section, students are asked to name the number of objects in the picture. Then, on the next slide, a picture of a toothbrush, ladle, and soap appears. In the video there is also a voice inviting students to count the matching pictures, then students are invited to count the number of matching pictures.

4 IMPLEMENT

At this stage, after product trials were conducted according to expert advice, the learning video "What's inside my house?" was implemented for 15 children aged 5-6 years at the Palur PKK Kindergarten. This study aims to develop digital learning media in the form of a learning video "What's inside my house?" so that it stimulates various aspects of child development such as cognitive, language, motoric, and social-emotional. Based on the findings of observations and teacher interviews, the following results are presented.

4.1 Family Room

Observations of implementation in the field revealed that when the teacher showed a learning video on the family room menu, students were very enthusiastic about the learning process. They were able to name and differentiate objects in the family room. They actively answered the teacher's questions due to the teacher's engaging teaching methods.

(a)

(b)

Figure 6: Implementation of video viewing.

Meanwhile, interviews with teachers revealed:

> "The children enjoyed playing the game. They didn't think it was learning, even though the video contained several questions, which the children could answer using animated images." (interview with teacher SR).
>
> "It was very enjoyable and helped the children understand the parts of the house. Some of the children were just learning about the living room because they didn't have one at home." (interview with teacher NI).

This demonstrates the visualization of the digital learning media, which makes it easier for students to understand the objects in the living room.

4.2 Bedroom

Observations of implementation in the field revealed that when the teacher showed a learning video on the bedroom menu, students were very enthusiastic about participating in the learning process. Students were able to name objects that matched the pictures.

(a)

(b)

Figure 7: Implementation of video viewing.

In addition, students also spelled letters to form words that corresponded to the images. Teacher interviews revealed that

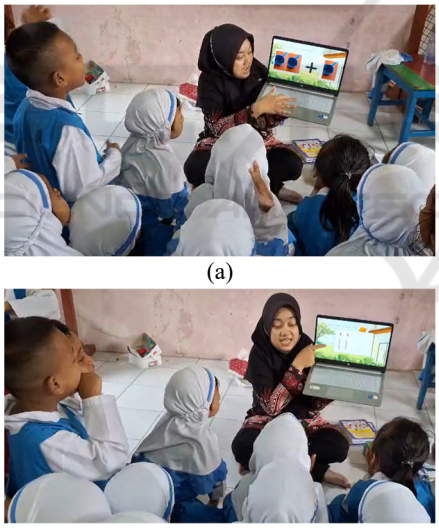
> "Introducing literacy through animated video learning media provides a different learning experience for children. Children are more enthusiastic and motivated to learn to spell and read the captions together, following the audio from the video" (interview with teacher SR).

> "Children are more familiar with their immediate environment, especially their home, and the various parts of the house, through animated learning videos than through worksheets" (interview with teacher NI).

This demonstrates that the visualization of images and nouns encourages students to look at and read the captions. In line with the above, it is explained that digital learning media, especially in reading, has transformed the conventional reading experience into an immersive and interactive form through the use of tools such as 3D videos and audiovisual animations (Sun, 2025). In addition to introducing objects in the bedroom, these learning videos can also be used to introduce the uses of each object.

4.3 Bathroom

Observations of implementation in the field revealed that when the teacher showed a video of the bathroom menu, students were very enthusiastic about the learning process. Students were able to name objects that matched the pictures.



(a)

(b)

Figure 8: Implementation of video viewing.

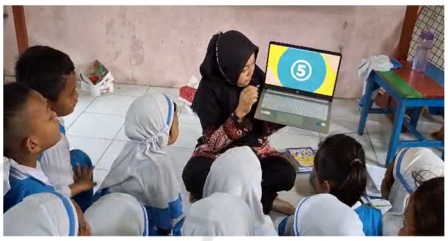
Meanwhile, interviews with teachers revealed that

> "After showing the video, when they saw a picture of a ladle, the children immediately counted the number of ladles in the picture and then answered, counting together until they were competing to answer" (interview with teacher SR).
> "If I gave them a worksheet with a counting activity, the children quickly gave up and were reluctant to write down the results" (interview with teacher NI).

This indicates that students were enthusiastic about this interactive video-based learning medium. Students were very enthusiastic in answering the questions in the video. This learning video made it easier for children to understand the objects in the bathroom, making it a real learning experience, even though it was still in the form of visual images.

4.4 Kitchen

Observations of implementation in the field revealed that when the teacher showed a video of the kitchen menu, students were very enthusiastic about the learning process. Students were able to name objects that matched the pictures.



(a)

(b)

Figure 9: Implementation of video viewing,

Meanwhile, teacher interviews revealed that

> "The children seemed enthusiastic in answering questions in the interactive learning video" (interview with teacher SR).
> "Using laptops as learning media was very enjoyable and increased the children's interest in recognizing letters and objects around the home, especially in the kitchen" (interview with teacher NI).

This demonstrates that video-based digital learning media can spark interest in learning and support children's literacy and object-matching skills.

Table 3: Implementation results.

Observation Indicator	Average Score	Percentage
Children focus on following the teaching video	3,80	95%
Name the objects according to the picture	3,60	90%
Active participation during learning	3,73	93,25%
Counting objects according to the picture	3,80	95%

Evaluate

The evaluation phase is based on expert advice, which is then implemented. These results lead to suggestions such as adding sound or music if the child has successfully answered the questions in the learning video.

5 DISCUSSION

Based on the analysis and its relationship to the digital era, which has opened up opportunities and challenges in digital life for early childhood, the digital era requires more complex thinking capacity and cognitive skills, both in students and educators (Mhlongo, 2023). One challenge refers to data showing that 37.02% of children aged 1-4 years and 51.9% of children aged 5-7 years have access to the internet (https://www.komdigi.go.id/). Given the high rate of internet usage among children, this also presents an opportunity to pay attention to the digital content accessed and digital literacy assistance as part of character education implemented in schools and at home.

Starting in late 2024, the Indonesian Ministry of Primary and Secondary Education has developed a curriculum with a deep learning approach as a conscious, meaningful, and enjoyable learning approach integrated with the use of technology in learning. The curriculum is more engaging with the integration of video-based learning media, training for teachers to optimize the use of video in learning, and the importance of parents' role in supporting early childhood learning motivation through a selection of educational and relevant videos (Hudain, 2023). Referring to the current government policy, namely the deep learning approach in early childhood education, the current research integrates the use of technology in developing digital learning media based on interactive video learning "What's inside my house?" for children aged 5-6 at the Palur PKK Kindergarten.

The development of digital learning media in the current research was made using laptops or smartphones with the help of the Canva application by considering the content, context, and needs of students. During its implementation, children appeared enthusiastic about participating in learning, especially when shown the learning video "What's inside my house?". The creation of the learning video was adjusted to the principles of learning media design referring to several things, including 1) digital learning media must be child-friendly, 2) digital learning media must be of high quality in terms of content, context, and usability, 3) the digital learning media developed must be appropriate to students' needs (Suryani, 2023). This is in line with research findings showing that educational software and applications can be developed into digital learning media to attract children's interest in participating in learning and understanding the concepts taught (Susanti, 2019). Visual and audiovisual components can help improve children's memory and understanding of thinking concepts (Hudain, 2023). By providing digital learning media accompanied by elements of games, visual and audiovisual animations, as well as parental guidance, children can be happier and are able to stimulate aspects of child development.

Forms of digital learning media suitable for early childhood include interactive learning applications, learning videos, educational games, simple 2D and 3D media, interactive audio and multimedia (Suryani, 2023). Referring to these forms, one of the learning media developed in the current research is an educational game-based learning video, such as guessing objects found in the rooms of the house. The development of digital learning media in the form of an interactive learning video "What's inside my house?" is a game that aims to introduce the spaces and objects in the house. Here, not only introduces the spaces and objects, but this learning video explains the function of each room in the house, thereby stimulating cognitive, language, and social-emotional development. In line with the objectives of the current research, information technology (ICT)-based educational applications such as interactive games, instructional videos, and digital teaching aids can enhance children's cognitive development (Hilmiah, 2024). By utilizing technology packaged in this game-based learning video, the learning process can be more enjoyable and meaningful for children.

Digital technology serves as an effective pedagogical tool to encourage and develop critical thinking skills (Jodoi, 2021). The use of digital learning media based on designed learning videos has

had a positive impact on the stimulation of children's development through the use of technological tools such as laptops or tablets for students at the Palur PKK Kindergarten. This aligns with research findings that children aged 3-5 years have the ability to access technological devices such as laptops, smartphones, or iPads, thus requiring attention to the impact and applications specifically designed for early childhood groups (Livingstone, 2020). The duration of children's access to laptops, smartphones, or tablets can increase with age. Research results show differences in the influence of digital media use on children's cognitive development (Pedrotti, 2024). A 28.7% negative impact on children's cognitive development occurs when media use is unsupervised by parents, accesses non-educational content, and accesses for longer durations. Meanwhile, a 5.3% negative impact occurs when media use is accompanied by parents, uses educational content, and uses media simultaneously with parents. This leads to a negative relationship with attention and working memory in children's cognitive development. Likewise, the role of teachers in teaching new learning materials developed through the use of technology as a digital learning medium for children is crucial.

The use of technology on children not only has negative but also positive impacts. The positive impact found in the results of the current study is that researchers found that students at the Palur PKK Kindergarten have followed the learning material in a fun and meaningful way. Students more easily understand the learning material through the display of the learning video "What's inside my house?" They better remember the rooms in the house and their contents. In addition, this learning video becomes more meaningful and provides new knowledge for students after viewing this video. For example, during the display of the learning video, several students said that there is no living room in their house and they now know the objects in the living room (interview with teacher SR). By providing digital learning media, children are also able to operate digital devices independently, demonstrate spatial understanding of object placement in applications, demonstrate conceptual understanding of the material being taught (Tang, 2024). Through the display of learning videos, it has contributed to the involvement of children's experiences and knowledge, behavior and emotions related to the focus of knowledge, understanding of content, increased motivation, and a fun and innovative learning environment. Innovation in digital learning media can be achieved through engaging and meaningful learning, not only engaging children but also fostering interest in learning, enhancing conceptual understanding, and developing cognitive, motor, social, and emotional aspects. Digital learning media can train children to operate digital devices independently, demonstrate spatial understanding of object placement within applications, and demonstrate conceptual understanding of the material being taught. However, when using animated video-based digital learning media, the role of a mentor is essential, and social interaction with others remains a crucial aspect to consider.

6 CONCLUSIONS

Digital learning media designed based on interactive learning videos "what's inside my house?" provides material about rooms and their functions (family room, living room, bedroom and bathroom), objects in each room, in the video also includes sound and images so that the learning video is more interesting and interactive. The interactive learning video "what's inside my house?" can stimulate various child developments, namely cognitive, language and social emotional. Students can better understand and stimulate aspects of their development through quizzes given such as distinguishing objects in the family room, spelling letters to become nouns in the bedroom, matching words with pictures and counting the number of objects. Thus, the implications of the game-based learning video "what's inside my house?" can be a digital learning media used by teachers to support conscious, meaningful and fun learning, interactive, contextual, and have a positive impact on developmental aspects.

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