Development of Interactive Learning Multimedia to Improve 5-6 Year Old Children's Understanding of Body Parts

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Abstract

Using unattractive teaching media will make it difficult for children to understand the lessons. This research aims to produce interactive multimedia learning in body parts material that has been proven valid and practical for children aged 5-6 years. This type of research uses the Alessi & Trollip development model. The subject of this research is Interactive Multimedia Learning Material on Body Parts, which goes through the planning, design, and development stages. The objects of this research were Group B children of Robbani Indralaya Kindergarten. The research procedures carried out in this research went through four stages: planning, design, development, and evaluation. Meanwhile, the data collection techniques used in this research are walkthrough, observation, interviews, and documentation. The data analysis technique uses walkthrough data analysis and observation data analysis. This media has proven to be valid and practical. Based on research on developing interactive multimedia learning material on body parts for children aged 5-6 years. So, this media can be used by teachers or parents to teach body parts to children aged 5-6 years.
Keywords: Early childhood, body parts, interactive learning multimedia.

Introduction

Age is a period of development and growth that greatly determines future development. According to the Department of National Education, early childhood is the most essential and fundamental initial period in human life's growth and development (Halimah, 2016). The early childhood education (PAUD) process ideally requires a planned learning process because early childhood learning requires the right approach (Ningsih et al., 2020).

According to the Curriculum Center, Research and Development Agency, and Ministry of National Education, early childhood learning is the interaction process between children, learning resources, and education in a particular learning environment to achieve predetermined goals. Second, by the characteristics of early childhood children who are active in various explorations in play activities, the learning process is emphasized in children's activities in the form of learning while playing. Third, learning while playing emphasizes potential development in physical, cognitive, language, social-emotional, artistic, and moral values. Fourth, implementing learning for early childhood needs to provide a sense of security for children of

that age. Fifth, by the nature of early childhood development, the learning process is carried out in an integrated manner. Sixth, the learning process will occur if children actively interact with the environment. Seventh, the teaching and learning program is designed and implemented as a system that makes it easy to learn while playing (Aziz, 2020).

In this way, teachers will be required to improve the quality of their learning implementation. One of them is choosing learning materials or materials that can make children comfortable participating in learning. The materials or learning materials that children will use must also be by the child's needs (Aziz, 2020). So that children can have fun playing while learning, and without realizing it, they have learned something. Teachers should use appropriate media to achieve the learning objectives (Abidin, 2017; Wahyuni, 2018). The media used by teachers in delivering lessons must also be based on learning needs and objectives. Creating learning media must have exciting elements so children can follow the lessons quickly and not get bored.

One learning medium that can attract children's attention is interactive learning multimedia. This interactive learning multimedia is very good for use in the learning process in the classroom. Daryanto (2016) stated that interactive multimedia is multimedia equipped with a controller that can be operated by the user so that the user can choose what they want for the following process. Various kinds of interactive multimedia can be mobile, game applications, or websites (Donna et al., 2021; Saputri et al., 2021; Yuliana et al., 2022; Zega et al., 2022). Meanwhile, learning is defined as creating an environment that allows the learning process to occur. From the description above, if we combine these two concepts, learning multimedia can be interpreted as a multimedia application used in the learning process, in other words, to channel messages (knowledge, skills, and attitudes). They can stimulate students' choices, feelings, attention, and will. So that the learning process occurs deliberately, has a purpose, and is controlled.

Materials and body parts, often called body anatomy, which is the science of analyzing the structure or tissue of living creatures, are needed to create interactive multimedia. Anatomy needs to be studied so that humans understand the function of their body and can look after it well. Knowing yourself is very important for young children because they will know their anatomy by knowing yourself. So that children will know who created them, what the functions of their body parts are, how to look after and care for them, what gender they are, and so on. This prompted the creation of interactive multimedia material about body parts, with practical and exciting packaging for children to learn from.

Based on observations carried out at three kindergartens, namely (1) Al Kautsar Indralaya Kindergarten, IT Robbani Indralaya Kindergarten, and Adila Mulia Palembang Kindergarten, researchers found that, on average, the media used by teachers was picture media, worksheets, and textbooks. This research will develop aspects of cognitive development; according to Bloom's theory written in his book, Khadijah (2016) reveals that the cognitive domain is an ability that results from the brain's work. Bloom divides this cognitive domain into six levels of ability: knowledge, understanding, application, analysis, synthesis, and evaluation. This means that these six levels, starting from C1, C2, C3, C4, C5, and C6, are levels of ability

from the lowest to the highest. Researchers will develop children's cognitive domain in the second stage, namely understanding; understanding is defined as the ability to understand the material; the understanding process occurs because of the ability to explain the material. In the three kindergartens, the children did not understand the lessons because the media used by the teachers did not support the children in cognitive development, which was the main factor. Teachers need media that interests children and can develop children's cognitive potential with interactive multimedia learning about body parts because there are many benefits to using interactive multimedia learning about body parts.

With interactive multimedia material on body parts, the learning process is more enjoyable; children are more receptive and very practical, which makes children more active in participating in learning and can develop children's cognitive potential. Judging from the development of the times, technology is becoming increasingly sophisticated daily. This is what makes researchers create learning media in the form of interactive multimedia with this innovation. The selection of interactive learning multimedia can provide new strategies for delivering material and make it easier to deliver material, and the media used is suitable for application according to the needs and learning objectives of early childhood (Rasmani et al., 2023).

Furthermore, from the results of interviews with teachers and principals conducted on February 1, 2018, at the IT Robbani Indralaya Kindergarten, the curriculum used is the 2013 PAUD Curriculum, classroom learning is not yet efficient because children are still walking around the classroom when learning takes place, children's understanding varies. Regarding what teachers teach, they do not get feedback on learning, the media is still not very supportive, such as picture media, worksheets, and textbooks, which make children bored, the existing facilities and infrastructure are complete, such as a large study room and an LCD that can support to conduct research. Therefore, children's enthusiasm for learning is more enjoyable when using computer learning because computers are still rarely used in the learning process. Based on this explanation, researchers are interested and need to conduct research entitled "Development of Interactive Multimedia Learning Material on Body Parts for Group B Children at the IT Robbani Indralaya Kindergarten".

This research aims to produce interactive multimedia learning material on body parts that is valid and practical. This research is helpful for various parties. For children, through the development of interactive multimedia, they can be more enthusiastic about participating in lessons. For teachers, it is hoped that this research will be helpful for class teachers in carrying out learning activities to help students overcome obstacles in achieving developmental tasks by using interactive, easy, practical, and compelling multimedia so that the selected material can be delivered and received well. Meanwhile, for other researchers, it is hoped that this research can become study material and provide insight for other researchers to develop interactive multimedia learning material about body parts in kindergarten that is even more relevant.

Literature Review

There are several relevant research results related to this research. Research by Putra and Ishartiwi (2015) examined the development of interactive multimedia learning to recognize numbers and letters in early childhood. As for the interactive multimedia research, the results show that the multimedia product produced is multimedia for learning numbers (1-10) and letters (AZ) for early childhood. The resulting multimedia product is suitable as a learning medium for recognizing numbers and letters based on validation. by material and media experts. Product feasibility is based on validation by material experts with excellent assessment results (4.66), validation by media experts with excellent assessment results (5), and assessment by children in one-on-one trials, small group trials, and operational trials with excellent results; the average of each aspect achieved proves this is above 81%. The child's assessment results include attractiveness, ease, and clarity of material instructions.

This also aligns with research by Faris and Lestari (2016), which examined the Animation Design for Interactive Alphabet Learning in Early Childhood. The results of this research are in the form of storyboard designs, state transition diagrams, implementation of interface designs, and testing with black box and white box testing. The presence of this interactive animation introducing the alphabet can help students understand and recognize letters and numbers with engaging learning media.

Furthermore, research by Firmantoro and Rikardo Nainggolan (2016) developed interactive animal recognition animations for early childhood education. The results of this research are interactive animations created using the System Development Life Cycle (SDLC) waterfall method, which provides a sequential software life flow approach starting from analysis, design, coding, testing, and supporting stages. Information technology-based learning methods through interactive animation have many advantages over conventional learning methods for children aged 1-5 years; interactive animation displays in education can help students convey material and be more communicative to remember the learning material more efficiently.

From several research results above, interactive learning multimedia can be used as a media to support a more exciting and effective learning process; through the use of multimedia that is designed in a varied and exciting way, it can create an active and enjoyable learning atmosphere and can increase motivation in learning.

Methods

The type of research taken by researchers is research development using the Alessi & Trollip development model. The subject of this research is Interactive Multimedia Learning Material on Body Parts, which goes through the planning, design, and development stages. The objects of this research were Group B children of Robbani Indralaya Kindergarten aged 5-6 years. The research procedures carried out in this research went through four stages: planning, design, development, and evaluation.

The data collection techniques used in this research are walkthrough, observation, interviews, and documentation. The data analysis technique uses *walkthrough data analysis* and observation data analysis. The results of the expert *walkthrough* were analyzed descriptively as input

for revising interactive learning multimedia. The input is written on the validation sheet. The validation sheet given to the expert is in the form of a Likert scale. The Likert scale uses four answer categories, namely Very Good (SB), Good (B), Not Good (TB), and Very Bad (STB) (Sugiyono, 2017), as seen in Table 1 with the following formula.

$$\text{Percentage Value} = \frac{\text{Earned Score}}{\text{Maximum Score}} \times 100 \%$$

Source: (Sunarti & Rahmawati, 2014)

Table 1. Validation Value Categories

Answer Categories	Statement Score
Very good	4
Good	3
Not good	2
Very Not Good	1

Source: Modification (Sugiyono, 2017)

The percentage value results from media expert validators and material experts are presented in tabular form. Next, find the average value using the following formula.

$$X = \frac{\sum X}{N}$$

Note:

X   = Average value (Mean)

$\sum X$ = Number of data values

N Number of subjects/data

Source: (Sudjana, 2016)

Next, the average obtained is adjusted to the category of product validity level, as seen in Table 2 below.

Validity Value Category Formula:

N   = lots of data $NR = \frac{sr}{st} \times 100\%$ and

Sr   = low score $NT = \frac{st}{st} \times 100\%$

St   = high score $P = \frac{R}{N}$ R= NT −NR

Table 2. Product Validity Level Categories

Average	Category

82 –100	Very Valid
63 –81	Valid
44 –62	Invalid
22 –43	Very Invalid

Source: Modification (Sugiyono, 2017)

Observation sheet for assessing children in the form of a Likert scale using four answer categories, namely Developing Very Well (BSB), Developing According to Expectations (BSH), Starting to Develop (MB), and Not Yet Developing (BB).

Table 3. Observation Value Categories

Answer Categories	Statement Score
Developing Very Well	4
Developing According to Expectations	3
Starting to Develop	2
Undeveloped	1

Source: Modification (Sugiyono, 2017)

Data from observations are presented in table form, then, the percentage value of observation results from *one-to-one* and *small-group evaluation trials is calculated* using the following formula.

$$\text{Percentage Value} = \frac{\text{Earned Score}}{\text{Maximum Score}} \times 100\ \%$$

Source: (Sunarti & Rahmawati, 2014)

The results of the percentage values from the *one-to-one evaluation* and *small-group evaluation trials* are presented in table form. Next, find the average value using the following formula.

$$\text{x} = \frac{\sum X}{N}$$

Source: (Sudjana, 2016)

Note:

X   = Average value (Mean)

$\sum X$ = Number of data values

N   = Number of subjects/data

The average observation value is converted into specified categories, as in Table 4 below.

Practical Value Category Formula:

N　　　= lots of data

Sr　　= low score

St　　= high score

$NR = \frac{sr}{st} \times 100\%$ and

$NT = \frac{st}{st} \times 100\%$

$P = \frac{R}{N}$　　　　$R = NT - NR$

Table 4. Product Practicality Level Categories

Number	Category
82-100	Very Practical
63-81	Practical
44-62	Quite Practical
25-43	Less Practical

Source: (Amirono, 2017)

Results

The research results show that interactive multimedia learning about body parts for children aged 5-6 years has proven valid and practical. These findings are based on data obtained by researchers, which will be presented in several subtitles, namely Expert Review Results, One-to-one Evaluation Results, and Small Group Evaluation Results. The following is a more complete explanation.

Expert Review Results

Expert Review is a stage to see the validity of the media and multimedia *content* /material for interactive learning on body parts developed by researchers. This stage aims to obtain valid media and multimedia *content /material for interactive learning about body parts.* 2 (two) aspects are validated, namely the material aspect and the media aspect. The researcher made 1 () theme because he specifically made material about body parts, namely the theme of me.

The recapitulation of validation results carried out by media and material experts can be seen in Table 5 below.

Table 5. Validity Test Results

Variable	%	Category
Media	93.8	Very Valid
Material	87.5	Very Valid
Average	90.6	Very Valid

Based on the data in Table 5, the results show that media and material validation obtained an average value of 90.6 % with a very valid category. It is said to be very *valid* in the sense of getting an average score of 90.6%, where the validity level is in the range of 82 – 100, which is categorized as very *valid* because it is feasible and meets the criteria for interactive learning multimedia in terms

of indicators and assessment points in the media and media aspects. Material that the author has explained previously. Thus, the interactive multimedia learning product with body parts material that has been developed is suitable for testing at the *one to one* and *small group stages* by following the suggestions/comments from the two validators. The researchers immediately corrected the suggestions and comments received from the validator by following the validator's suggestions and comments. The revised prototype is called Prototype 1. Next, the revised prototype (prototype 1) is tested at the *one-to-one stage*. The results of improving the prototype resulted in prototype 1.

One-to-one Evaluation Results

This stage is to see the practicality of interactive multimedia learning products that media and material experts have validated. This per-person trial involved 3 (three) children with high, medium, and low abilities, and they took turns using prototype 1. At this stage, the researcher directed using interactive learning multimedia, such as a mouse on a computer/laptop. Then, the children did the existing exercises on interactive multimedia. Then, the child researchers took turns using prototype 1. When the children used prototype 1, the researchers observed the children during the learning process to directly observe and assess the children's activities and behavior towards prototype 1. The results of the observations carried out at the *one-to-one* can be seen in Table 6 below.

Table 6. One-to-one Evaluation Practicality Test Results

User	%	Category
1	82 %	Very Practical
2	84%	Very Practical
3	80%	Practical
Average	82%	Very Practical

Based on data from Table 6, it was found that in the observations of 3 children as respondents, an average score of 82% was obtained in the convenient category. It is said to be very practical in the sense of getting an average score of 82%, where the level of practicality is in the range of 82-100, which is categorized as very practical because the child has reached an excellent level of development according to the material indicators of body parts, such as the child matching the body parts in the picture of the parts. Head, the child differentiates the valuable function of the body parts; the child completes the missing letters in the body parts with one letter, and the child completes the missing letters in the body parts with two letters. The media is accessible for children to use, attracts the child's attention, is fun for children, and the material is easy for children to understand, which can be seen when children participate in learning activities using interactive multimedia. Based on expert validation and children's observations, prototype one was revised to become prototype 2, which will be tested at *the small group evaluation stage*.

Small Group Evaluation Results

This stage is to see the practicality of interactive learning multimedia products validated by media and material experts and the *one to one testing stage*. This small group trial involved nine children with high, medium, and low abilities, and they took turns using prototype 2. At this stage, the researcher directed using interactive learning multimedia, such as a mouse on a computer/laptop. Then, the children did the exercises on interactive multimedia. Then, the child researchers took turns using prototype 2. When the children used prototype 2, the researchers observed the children during the learning process to directly observe and assess the children's activities and behavior toward prototype 2. The results of the observations carried out at the *small group stage* can be seen in Table 7 below.

Table 7. Small Group Evaluation Practicality Test Results

User	%	Category
1	84 %	Very Practical
2	86 %	Very Practical
3	86 %	Very Practical
4	90 %	Very Practical
5	94 %	Very Practical
6	82 %	Very Practical
7	88 %	Very Practical
8	88 %	Very Practical
9	94 %	Very Practical
Average	88%	Very Practical

Data from Table 7 found that in the observations of 9 children as respondents, an average score of 88% was obtained in the convenient category. It is said to be very practical in the sense of getting an average score of 88%, where the level of practicality is in the range of 82-100, which is categorized as very practical because the child has reached an excellent level of development by the material indicators of body parts, such as the child matching the body parts in the part picture. Head, the child differentiates the valuable function of the body parts. The child completes the missing letters in the body parts with one letter, the child completes the missing letters in the body parts with two letters, the media is accessible for children to use, attracts the child's attention, is fun for children, and the material is accessible for children to understand which can be seen when children take part in learning activities using interactive learning multimedia.

Table 8. Average Practicality Test

Stage	%	Category
One to one	82%	Very Practical
Small groups	88%	Very Practical
Average	85%	Very Practical

Based on the data in Table 8, it was found that the overall results of *the one-to-one* and *small-group stages* obtained an average score of 85% in the convenient category. It is convenient because it gets an average score of 85%, where the level of practicality is 82-100. It is categorized as very practical because the child has reached an excellent level of development achievement by the material indicators of body parts that the author has explained previously, which can be seen when the child follows learning activities using interactive multimedia. Thus, the interactive multimedia learning product with developed body parts material was declared valid, practical, and suitable for use as learning media and learning materials for group B children from *expert review, one-to-one evaluation, evaluation,* and *small group evaluation* results.

Discussion

The findings of this research indicate that the developed multimedia interactive learning multimedia product on body parts is declared valid and practical. The percentage value from *expert review* validation results based on material and media experts, an average score of 90.6 %, was obtained with a very valid category. It is very *valid*; that is, it is feasible and meets the criteria for interactive multimedia learning in terms of indicators and assessment points in the media and material aspects.

The expert review stage has met the requirements and is suitable for testing with revisions by suggestions from experts. This aligns with research by Mahardika and Destiana (2014), who developed interactive animations for kindergarten students to learn about recognizing animals and means of transportation. The product it produces meets the criteria for being very suitable for use because it has been validated by material and media experts based on assessment criteria for interactive learning multimedia. Thus, interactive multimedia learning material on body parts developed by researchers can be used in the following testing stage. Next, the interactive learning multimedia that has been validated is then tested at the *one-to-one evaluation stage*.

The percentage value of children's observations regarding the use of interactive multimedia learning material on body parts at the *one-to-one evaluation stage* obtained a value of 82 % in the very practical category, which means the child has reached the level of development according to the indicators. The use of interactive multimedia learning material on body parts is reasonably practical. The results of the revision of prototype 1 obtained prototype 2.

The small group evaluation stage is used to see the practicality of interactive multimedia learning through product trials on children—prototype trial 2. Children are observed again in the *small group evaluation stage* trials. The percentage value of the *small group stage observation evaluation* results is 88% in the practical category, which means it has met all achievement indicators.

In the one-to-one and *small-group evaluation* stages, an average score of 85% was obtained in the practical category. It is very practical for children because interactive multimedia material on body parts is accessible for children to use, attracts children's attention, is fun for them, and is easy to understand. In line with research by Putra and Ishartiwi (2015) regarding the development of interactive multimedia learning to recognize numbers and letters for early childhood, *the small group evaluation stage* was used to see the practicality of interactive multimedia learning with an

average score of 81%. Based on the description and data analysis of the research results, it was found that the interactive multimedia learning product with the developed body parts material was very *valid* and practical for children, so it could be used as teaching material in learning for children aged 5-6 years.

In addition, research by Julia et al. (2017) concerning the Development of Learning Multimedia to Introduce several Concepts to Global Maju Khatulistiwa Kindergarten Children aligns with this research. This research uses research and development methods. Meanwhile, the development stages were carried out based on the research and development of Borg and Gall. The final result is a multimedia learning product to introduce the concept of numbers. The results of children's learning using multimedia in learning to recognize the concept of numbers can be seen in the pretest results; the average value is 4.98, and the posttest value shows that the average value is 8.68, which means that children's cognitive values have increased more than before using multimedia during the process. Learning.

Several studies described above provide support for the findings of this study. This shows that multimedia products have proven effective in supporting various learning processes in early childhood. So, teachers or parents can use this multimedia product to teach body parts to their students or children.

Conclusion

This media has proven valid and practical based on research on the development of interactive multimedia learning material on body parts for children aged 5-6 years. Interactive learning multimedia was declared valid based on the validation results of *an expert review* of media and material experts. Interactive learning multimedia was also stated to be very practical based on the results of the *one-to-one* and *small-group evaluation trial stages.* It is said to be very practical, which means that the child has reached an excellent level of development achievement by the material indicators of body parts, the media is accessible for the child to use, attracts the child's attention, is fun for the child, and the material is accessible for the child to understand which can be seen when the child takes part in learning activities using interactive learning multimedia. So, researchers suggest using interactive multimedia learning material on body parts for children aged 5-6 years.

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