Volume 7 Issue 2 (2023) Pages 2373-2382
Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini
ISSN: 2549-8959 (Online) 2356-1327 (Print)

Multimedia-Based Learning Media Development to Improve Early Childhood Expressive Language Ability

Entep Hamdillah Ghofur[1], Sri Nurhayati[1]✉
Pendidikan Masyarakat, Institut Keguruan dan Ilmu Pendidikan Siliwangi, Indonesia(1)
DOI: 10.31004/obsesi.v7i2.4416

Abstract
Currently, rapid technological development has led to children growing up as a more intelligent generation with the use of multimedia. However, on the other hand, it has not yet been able to provide a positive effect on educators and young children. The purpose of this study is to develop multimedia-based learning media and to produce valid, practical, and effective learning media products. The type of research conducted is research and development (R&D). Data collection techniques used in this study are interviews and questionnaires. The development procedure refers to the ADDIE model. Based on the results of the validity test by 2 experts was categorized as valid, the practicality test by 2 educators was categorized as very practical, technical and economical, while the effectiveness test was conducted by 21 children aged 5-6 years with an effective category. The conclusion obtained is that multimedia-based learning media developed have been proven effective in improving the expressive language abilities of early childhood aged 5-6 years. The implication of this research is the need to produce multimedia-based learning media widely as an alternative form for teachers in using learning media to facilitate the delivery of material that can improve the expressive language abilities of early childhood aged 5-6 years.

Keywords: *learning media; multimedia; early childhood; expressive language*

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✉ Corresponding author : Sri Nurhayati
Email Address : srinurhayati@ikipsiliwangi.ac.id (Bandung, Indonesia)
Received 2 February 2023, Accepted 7 May 2023, Published 7 May 2023

Introduction
Early childhood education is crucial to the development of early childhood personality(Musa et al., 2022; Nurhayati, Qudsi, et al., 2023; Nurhayati & Rosita, 2020). In a broader context, the role of early childhood education remains unequal when compared to the condition of young children who are not prepared for preschool.The current state of early childhood is characterized by a lack of emotional readiness for habituation to acquiring moral, cognitive, linguistic, social, and artistic religious values; consequently, the development of children has not been as anticipated.The implementation of language learning is not yet the maximum use of media by educators that has been provided by the school, children are still not developing optimally and lack of adequate facilities and infrastructure to support the implementation of activities using animation media in accordance with the theme (Hariyanti, 2019; Husna & Eliza, 2021). Children find it very difficult to concentrate on listening to educators' explanations or stories; therefore, to improve children's expressive language ability, it is necessary to use learning media (Hariyanti, 2019; Kartika et al., 2020; Yuniati & Rohmadheny, 2020; Yus & Saragih, 2022).

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The learning curriculum, learning management, learning strategies, monitoring systems, and/or learning evaluation tools are some of the factors that can be analyzed and substantially contribute to the learning process in multimedia-based learning media (Marsegi et al., 2023; Musa et al., 2022; Nurhayati, Hidayat, et al., 2023; Winarti et al., 2022). These components are dynamically evolving to satisfy the needs of children. In addition, the climate or learning circumstance incorporated into ECCE units influences the success of language and social-emotional learning. This is understandable because each ECCE unit has a unique learning environment based on the requirements of its students. Consequently, it is necessary to implement a learning medium that adheres to the principles of early childhood education based on the cultural values of learning through play activities and in accordance with the children's requirements, experiences, and the significance of their future insights. Therefore, it is anticipated that multimedia-based learning media will have a positive effect on the language and social-emotional development of children (Yus & Saragih, 2022).

According to the observation results the current condition of early childhood at the Al Ghofur Kindergarten in Sumedang Regency is that they are not emotionally prepared to undergo learning habits from aspects of moral and religious values, cognitive, language, social, and arts, resulting in inadequate development of the child's potential. Language learning implementation is not maximized by the use of available media by educators, and children' expressive language are still not developing optimally due to the lack of adequate facilities and infrastructure to support multimedia-based learning activities that are appropriate to the theme. Children have difficulty concentrating on explanations or stories presented by educators. To improve their expressive language abilities, appropriate stimulation is needed with media and methods that are suitable for the age and characteristics of children aged 5-6 years.

Based on the preceding description, it is necessary for educators to develop learning media that will later influence children, so that the process of learning activities will be in accordance with their requirements and characteristics. Learning in early infancy has a positive effect on the growth of children's imagination, listening skills, and overall indicators of their ability improvement (Rachmah et al., 2021). Early childhood Education in is in dire need of the implementation of multimedia-based learning media that prepares educators to provide services based on the stage of child development and enhances children's skills.The goal of the development of multimedia-based learning media is to increase the competence, growth, motivation, and knowledge of educators so that they can be more creative and innovative in designing the learning process so that children are not overloaded with learning and their interest in learning is maintained (Kartika et al., 2020; Veryawan et al., 2021).

The ECCE learning principles consist of learning through play, being oriented to child development, being oriented to children's needs, being child-centered, being active, being oriented to the development of character values, being oriented to the development of life skills, being supported by a conducive environment, being oriented to democratic learning, and utilizing learning media, learning resources, and resource persons. Learning media can be used to channel messages from sender to receiver in order to stimulate the thoughts, feelings, interests, and attention of students in such a way that the learning process occurs, thereby making learning meaningful as an educator's effort to assist children in carrying out learning activities in order to achieve significant learning outcomes (Maghfiroh & Suryana, 2021). Due to the concrete thinking phase of child development, the function of media in education, particularly early childhood education, is growing in significance. An educator must use media when presenting information to young children so that the information can be properly received or assimilated, and it is expected that behavioral changes will occur in the form of abilities in terms of knowledge, attitudes, and skills. Media is a learning component that can enhance learning outcomes. Media, defined as everything that can be used to channel messages or learning content, stimulate children's thoughts, emotions, attention, and abilities so as to promote the accomplishment of the process of activities prompted by educators.

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Therefore, when children play, they are already engaged in a learning activity through the use of creative learning techniques and educational media. Educators can use learning media to convey messages to children, stimulate their thoughts, emotions, attention, and interests, and direct their attention so that the learning process occurs and occurs more efficiently. The use of media in early childhood learning activities generally seeks to convey a portion of learning activities, provide reinforcement, and provide motivation. Media is anything that can be used to transmit messages from sender to receiver in order to stimulate the thoughts, emotions, interests, and attention of students in a manner that facilitates the learning process. Media consists of everything that can transmit messages and sources across specific boundaries, distances, spaces, and periods. Message recipients receive and interpret messages (information) using one or all of their senses. Media within the scope of education are media used for learning activities to optimize the learning outcomes of students.

Multimedia is the use of personal computers to present and combine text, sound, images, animation, and video through the use of tools and connections (links), allowing users to navigate, interact, create, and communicate, thereby focusing children's attention on the meaning and significance of what they observe(Arnada, 2018; Nurhayati, 2021; Putra, 2015; Rasmani, 2022, 2023; Trinaldi, 2022; Wayan Aryani & Pramunditya Ambara, 2021). The research also showed that interactive multimedia-based learning media such as videos developed were categorized as very good and that the developed videos learning media in early childhood learning proven to be more effective, more interesting, varied, and motivating and provided a more meaningful learning experience.(Ali, 2022; Trinaldi, 2022; Turnip & Wijayaningsih, 2022; Wati et al., 2022; Yuniarni et al., 2019). Based on recent research, the expressive language abilities of young children are influenced by several factors such as audiovisual media (Yus & Saragih, 2022), and role-playing learning methods (Kartika et al., 2020a; Yuniati & Rohmadheny, 2020). More research needs to be addressed on the effect of multimedia based learning media on early childhood's expressive language improvement. The purpose of this study is to develop a valid and suitable multimedia-based learning medium to enhance the expressive language skills of young children. This learning media is developed by combining multimedia, storytelling method, and role-playing, which have been proven to significantly influence the development of expressive language in young children. The implication of this research is the need to produce multimedia-based learning media widely as an alternative form for teachers in using learning media to facilitate the delivery of material that can improve the expressive language abilities of early childhood aged 5-6 years. The novelty of the research includes the development of multimedia-based learning media, especially for the theme of medicinal plants to introduce medicinal plants around young children and develop expressive language abilities of early childhood simultaneously.

Methodology

This study used Research and Development method. Analysis, design, development, implementation, and evaluation constitute the ADDIE development procedure. The ADDIE model is the most genetic learning design model because it was developed systematically and is founded on the theoretical basis of learning design. The phases of ADDIE's research and development are illustrated in Figure 1.

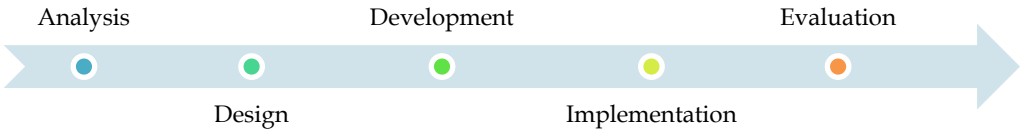


Figure 1. ADDIE Phases

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The ADDIE model has the following development procedures: (1) The analysis stage consists of a requirements analysis and a characteristic analysis; during the analysis stage, an investigation is conducted on the characteristics and context of learning. (2) The design phase includes both the material design and the design of the learning video media framework. (3) The development stage entails the creation of learning video media based on the design chosen by the researcher. Two validators Prof. Dr. Enceng Mulyana and Prof. Dr. Heris Hendriana (as learning media experts) and two resource persons conducted a validation test following the development stage Mrs. Elis Taryamah, M.Pd and Mrs. Fanisya (as early childhood educators). This investigation was conducted in Playgroup Al Ghofur Sumedang Regency during the implementation phase. Group B consisted of one educator and twenty-one five- to six-year-old children. The data used in this development is primary data, meaning it was obtained directly from research subjects, namely media experts, learning content experts, as well as children and educators who engage in learning with ADDIE model-based learning video media. Validity, practicability, and efficacy characterise the instruments used in this study. The researcher followed several steps, including: A. Analysis, B. Designing the Product, and D. Development followed by product validation. Data collection for this study was conducted through unstructured interviews with class teachers and observing the children. The learning media validation indicators are presented in table 1.

Table 1. Learning Media Validation Indicators

Aspects	Indicators
Message Design	The media exhibits ease of use
	appropriate shape, sound, and color of each button
	The media further demonstrates appropriate composition and integration of color and music
	attractive design layout
	The text is easily legible
Operation	the media is user-friendly
Accuracy and Clarity	The images are clear and appropriately sized
	the font used is easily readable

Results and Discussions

The results of research on this advancement are presented, including data and product trials of medicinal plant-related learning media themes. (a sub-theme of lemon tea). Using these learning modules and videos, this product provides materials for the education of young children. This section describes the findings of the conducted research.

Stage 1 - Analyze

The first analyse stage, needs analysis, is based on the analyse stage in Playgroup Al Ghofur, the need for a learning media that can be used to facilitate children in understanding the theme material of family medicinal plants, subtheme lemon tea. Second, the analysis of child characteristics based on this stage of analysis relates to several things related to nature and character; essentially, every child has different dispositions. In early childhood planning, this is the case for children. The landscape of Playgroup Al Ghofur is diverse. As a result of the variety of traits and personalities, there are a variety of learning approaches and interests and skills among children. In general, children enjoy video media with attractive and colourful designs that generate a sense of enjoyment and enthusiasm for the purpose of motivating children to continue the learning process.

Stage 2 - Design

In the design phase of this investigation, the focus is on the family of medicinal plants, with lemon tea as a subtheme. In this research, a highly original and engaging video medium

DOI: 10.31004/obsesi.v7i2.4416

for children will be created, complete with vibrant shapes and distinct sounds and accompanied by upbeat music. The multimedia design show at figure 2.

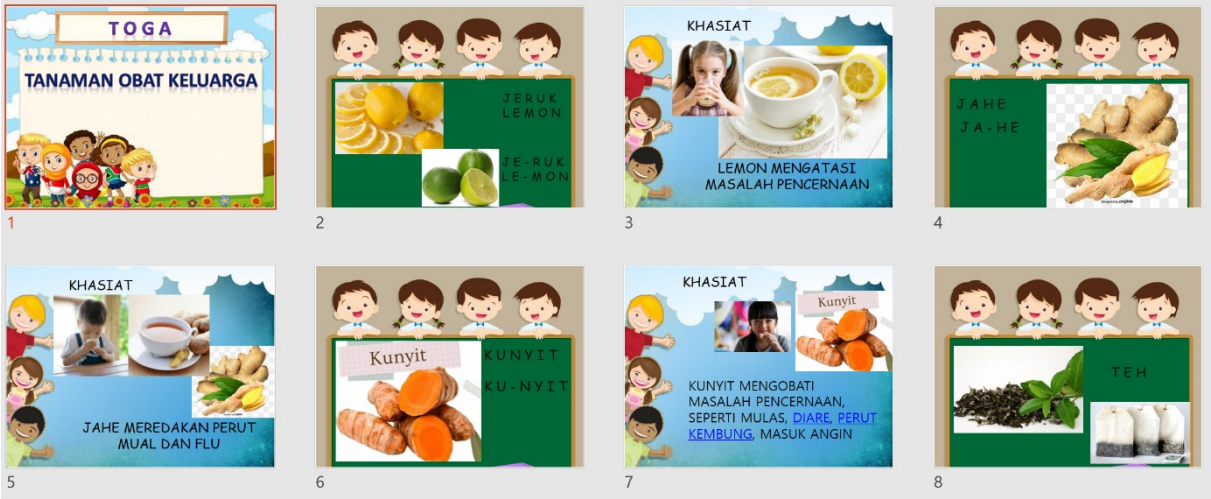


Figure 2. Multimedia-Based Learning Media Design theme: medicinal plants

Stage 3 - Development

Development Phase: The validation sheet analyzed in this section is a learning media validation sheet that evaluates a number of criteria as very valid (table 2).

Table 2. Validity data for instructional media (Modules and Videos)

Efektivitas media pembelajaran berupa modul ajar dan video pembelajaran

Aspek	Indikator	Jenis
Desain Pesan	Media mudah digunakan	Valid
	Bentuk dan warna pada masing-masing tombol dalam media sudah sesuai	Valid
	Komposisi dan kombinasi warna dan musik yang tepat dan serasi	Valid
	Desain tampilan	Valid
	Keterbacaan teks	Valid
Pengoperasian	Kemudahan penggunaan media	Valid
Ketepatan dan Teknik	Gambar dalam media sudah terlihat jelas dan sesuai	Valid
Kejelasan	Ukuran huruf yang digunakan sudah jelas dan mudah dibaca	Valid

(sumber : Hasil penelitian)

Correlations

Correlations

		x1	x2
x1	Pearson Correlation	1	-,100
	Sig. (2-tailed)		,798
	N	9	9
x2	Pearson Correlation	-,100	1
	Sig. (2-tailed)	,798	
	N	9	9

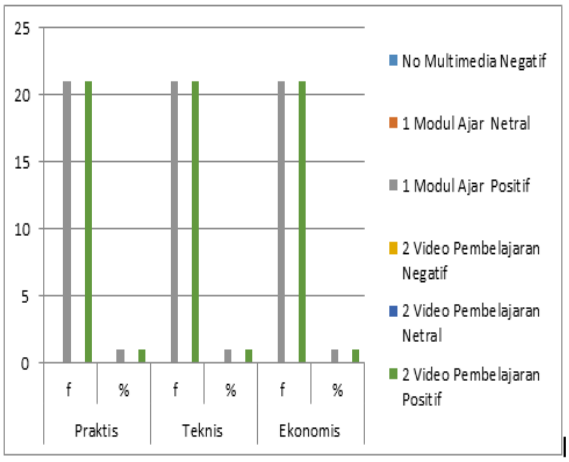
Stage 4 - *Implementation*

Implementation Stage: At this stage, the validators (expert teams) deems the learning media to be legitimate, the media can be used in learning activities attended by 21 children in group B1. This trial was conducted three times; at the first, second, and third meetings, participants learned through the use of modules and videos centered on the family of medicinal plants and the subtheme of lemon tea. Supervisor one's validation result is 0.94, indicating an extremely high level of validity, while supervisor two's validation result is 0.80, indicating a high level of validity. The average validity of the two supervisors is 0.87, which falls within the high validity category. The validation result of resource person one is 0.90, which corresponds to a very high level of validity, and the expert validation of resource person two is 0.91, which corresponds to a very high level of validity as well. The institution's faculty members serve as resource persons. The effectiveness sheet analyzed in this section is comprised of data generated from related learning media trial experiments in accordance with

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the content created using learning media. 100 percent of the 21 students in group B1 were deemed effective, while zero percent were deemed ineffective. Table 3 provides additional specific data.

Table 3: Child Performance Data



Kelayakan media pembelajaran

No	Media pembelajaran	Kriteris Respon	Praktis		Teknis		Ekonomis	
	Multimedia		f	%	f	%	f	%
1	Modul Ajar	Negatif						
		Netral						
		Positif	21	100%	21	100%	21	100%
2	Video Pembelajaran	Negatif						
		Netral						
		Positif	21	100%	21	100%	21	100%

(Sumber: Hasil Penelitian)

Stage 5 - *Evaluation*

School educators and lecturers conduct this evaluation phase by analysing research data gathered from validators (expert teams) regarding the validity of learning media. The components of learning media are required to have practical feasibility, based on the simplicity of learning materials using media, technical feasibility, media potential in relation to media quality, cost feasibility, and feasibility, in reference to the belief that the fundamental characteristics of modern education are the efficiency and effectiveness of learning bells. Simplifying and manipulating media, learning aids, and materials is one strategy for lowering expenses. The results of the learning media expert validations indicate a percentage score of 95% with an interval range of 81%-100%. The multimedia-based instructional media has been identified by the subject matter experts as having advantages, such as the use of color and sound in Microsoft PowerPoint, which provides visually appealing and attention-grabbing materials for children. However, the multimedia-based instructional media was also noted to have a disadvantage in that it may not be maximally effective if the school lacks the necessary supporting infrastructure, such as projectors and laptops. The media and subject matter experts have suggested that the functionality of the multimedia-based instructional media should be further optimized by presenting sentences and voiceovers in Microsoft PowerPoint more expressively, and incorporating motivational statements in the materials. Although there are still areas that need improvement, the multimedia-based instructional media has been deemed suitable for use. In developing this multimedia-based instructional media using the ADDIE model, the researcher encountered several limitations. The ADDIE model was only utilized up to the development and expert validation stage, as well as the wider testing, and the media was only focused on medicinal plants in the local area.

Discussions

Learning media has become an important component of modern education. It is used to enhance the learning experience and to make learning more engaging, fun and effective (Kartinih et al., 2018; Khairunnisa & Ain, 2022; Rachmah et al., 2021; Tasliyah et al., 2020; Yus & Saragih, 2022). The use of learning media has been found to be particularly beneficial for young children, who are highly visual and respond well to colourful and interactive content (Yus & Saragih, 2022). This research results the use of learning media in the education of young children about medicinal plants, with a particular focus on the sub-theme of lemon tea. The first stage of the research was the needs analysis, which revealed the need for learning

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media to facilitate children's understanding of medicinal plants. The analysis also identified the diverse nature and character of the children at Playgroup Al Ghofur, which required a variety of learning approaches to cater to their different interests and skills. The research found that children respond well to video media with attractive and colourful designs that generate a sense of enjoyment and enthusiasm for the learning process. This is in line with previous research by Yus and Saragih (2022) which stated that audiovisual media has significant influence on early childhood learning.

The second stage of the research focused on the design of the learning media, with a particular emphasis on the family of medicinal plants and the sub-theme of lemon tea. The research team created an engaging and original video medium for children, complete with vibrant shapes, distinct sounds, and upbeat music. In the development phase, the learning media was subjected to a validation sheet analysis, which evaluated a number of criteria for validity. The results indicated that the instructional media, which comprised both modules and videos, was highly valid. In the implementation stage, the learning media was used in learning activities attended by 21 children in group B1. The trial was conducted three times, and the results were highly positive, with 100 percent of the children deemed effective. The effectiveness sheet analysis also revealed that the learning media was highly effective in enhancing the children's understanding of medicinal plants, particularly the sub-theme of lemon tea. The final stage of the research was the evaluation phase, which involved the analysis of data gathered from validators (expert teams) regarding the validity of the learning media.

The components of the learning media were required to have practical feasibility, technical feasibility, media potential, cost feasibility, and feasibility in terms of the efficiency and effectiveness of learning. The research found that the learning media met all of these criteria and was highly effective in enhancing the learning experience of young children. The research study confiems the importance of creating engaging and interactive learning media that cater to the diverse nature and character of young children as the previous research (Islam et al., 2014; Mulyana et al., 2020; Pratiwi, 2019; Putra, 2015; Yus & Saragih, 2022). The findings of this study have significant implications for the design and development of learning media for young children especially to improve their expressive language ability. The findings of this research also demonstrate that the development of highly engaging and effective learning media for young children is possible, and it can facilitate their learning and understanding of complex topics such as medicinal plants. The learning media was found to be highly valid and effective, and it could be a valuable tool for educators and parents alike in providing an effective learning experience for young children. The research also highlights the importance of considering the diverse range of learning approaches and interests and skills among children, as this can influence the effectiveness of learning media as previous studies also highlighted (Khairunnisa & Ain, 2022; Solihin, 2020; Turnip & Wijayaningsih, 2022; Wati et al., 2022; Yus & Saragih, 2022).

Conclusion

Implemented in Playgroup Al Ghofur are learning media that have been developed into valid and efficient media. Due to the fact that learning media can convey difficult-to-understand material, such as the theme of family medicinal plants and the subtheme of making lemon tea, learning media can be arranged with delivery schedule issues and tailored to children's needs. They are equipped with RPPH curriculum protocols for the learning process, and the display is designed to attract children's attention through the use of images, audio, visual, color, and interactivity, among other features. Based on the information provided, the limit of the study findings is primarily focused on the development and validation of learning media for young children to understand the theme of family medicinal plants, with a sub-theme of lemon tea. The study was conducted in a specific context, namely at Playgroup Al Ghofur, which means that the results may not be generalizable to other

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contexts. Additionally, while the study found that the learning media was highly valid in facilitating learning among the 21 children who participated in the trial, the sample size was relatively small, which may limit the generalizability of the findings. Moreover, the study only focused on one sub-theme of the family of medicinal plants, and it is possible that other sub-themes may have different learning requirements and outcomes. Finally, while the study evaluated the effectiveness and validity of the learning media, it did not assess the long-term impact of the learning materials on children's knowledge retention or application in real-life contexts. Therefore, the generalizability of the study's findings to long-term learning outcomes is needed to be investigated further.

Acknowledgement

The researchers would like to thank the experts, the Al Ghofur foundations, principals, educators and students of Playgroup Al Ghofur Sumedang Regency. Hopefully this research will provide benefits for early childhood learning and teaching worldwide.

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