

# Multimedia Technology to Stimulate Children's Literacy Ability: Study in Kindergarten in Sleman

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**Abstract** Literacy ability helps children learn to read more easily and increase children's success at school. This study aims to describe the use of multimedia technology in literacy learning in kindergarten in Sleman, including (1) Lesson plan, (2) implementing the use of multimedia technology in children's literacy learning, and (3) assessment of children's literacy abilities stimulated using multimedia technology. This research is qualitative. Data collection uses observation, interviews, and document review techniques. The validity of the data is obtained through data triangulation. The data analysis technique was conducted using an interactive model. The results showed that: (1) Lesson plan is adapted to the national curriculum, scientific learning approaches, and learning center models, and integrated with the development of other aspects arranged in semester, weekly and daily programs. (2) Implementation of the use of multimedia technology in literacy learning is implemented in the foothold of learning centers with steps: (a) concentration of attention and focus, (b) orientation, (c) modeling, (d) stage of children's play, and (e) summary. (3) Assessment of children's literacy abilities stimulated using multimedia technology is carried out with observation techniques, the results of assignment work, and anecdotal notes, procedures carried out include recording child development, summarizing notes, and describing in the form of short sentences covering competencies in the national curriculum.

**Keywords** Multimedia Technology, Literation Ability, Early Childhood

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## 1. Introduction

The development of literacy skills in early childhood plays a very important role. Children's literacy activities can be important predictors of future academic success [1]. Literacy skills help children more easily to read for children's success at school. The great literacy skills make it easier for children to think in more sophisticated ways. [2]. Children who have the ability of literacy from an early age will cause the child to become a learner throughout his life. Learning media provided to support children's literacy skills must have age-appropriate instructions in early literacy skills, such as reading together and sharing writing [3].

Literacy or reading and writing ability of children in Indonesia is still relatively low. This can be seen from the results of PISA research in 2018, which showed that the average reading comprehension of students in Indonesia obtained a rank 74 from 80 Country [4]. Literacy learning media available can predict all literacy skills that emerge and then read words and reading comprehension [5]. This means that the literacy ability of students is low above, also influenced by the stimulation received by children just before entering the formal school level. Therefore, it is very important to get children used to doing literacy activities from an early age.

In this world, there has been an integration of digital

technology for communication, collaborative knowledge construction, reading, and multimedia learning in the education system [6]. The advent of technology brought new changes in language learning because it offers a new way for students to explore the target language in its functional use [7]. The era of globalization is marked by the rapid use of information technology products. Learning in early childhood, especially in Kindergarten, begins to develop towards learning that utilizes modern methods. Several technologies can be used during the teaching and learning process, to increase children's interest in learning literacy. This technology makes learning more fun, especially for children. In preschool, for example, a curriculum that contains various instructions will be more enjoyable if it includes elements of technology. Teachers and parents can use technology to increase children's knowledge by using interactive multimedia tools [2].

Multimedia has a strong influence on enhancing and optimize reading skills as it provides opportunities to extend children's respective needs [8]. It also increases children's interest and engages their attention in reading activities. Multimedia is the use of various media formats simultaneously or sequentially in a presentation or learning program [9]. The use of multimedia technology is a combination of media formats that are digitally manipulated by computers. Multimedia animation will support students from passive to active learning [10]. Research shows digital technology and media support children to interact with others, as well as how children discover and understand their knowledge and themselves [11].

The use of multimedia technology has now opened a new era in the development of media used in the teaching and learning process in kindergartens. Multimedia technology also has an impact on children's early experiences of literacy, which are increasingly complex and require mastery in various modes, including words, images, and sounds, with various tools and content [12]. Multimedia is considered as an interesting learning and teaching media based on its ability to touch various senses: vision, hearing, and touch. This is a good alternative as a tool for teaching and learning.

Multimedia is one of the many factors that have the greatest influence on growth, psychological development, and behavior change in all ages, especially children. The availability of multimedia technology in the education process has a very important meaning. Responding to the influence of multimedia technology on such child development, educators must know in advance about the substance of multimedia technology and be able to become a part of them. That is, technology is not stuttering, and from that knowledge, educators can maximize the positive side, and step by step can minimize the negative effects. Education must also develop along with the development of existing technology because the

purpose of education itself is to prepare students through guidance, teaching, and or training activities for their role in the future. This study will answer the question of how to stimulate literacy skills using multimedia technology, starting from the learning plan, implementation, and assessment?

## 2. Materials and Methods

A qualitative approach is used in this research. The use of multimedia technology in learning to be studied includes the lesson plan, implementing the use of multimedia technology in learning literacy, and evaluating the literacy abilities of children stimulated using multimedia technology in Kindergarten in Sleman. The subjects of this study were teachers, principals, and curriculum sections in Kindergarten in Sleman. The instrument used in this study was the researchers themselves using interview guidelines, observation guidelines, and structured documentation guidelines. Research requires several data collection methods to obtain the desired data. Documentation collection, interview notes, direct observation, and participant observation were used for data collection in this research. Interviews, observation, and documentation study were used as data collection methods in this study. The validity of the data in this study used triangulation, using reference materials, and negative case analysis. The data analysis used was component analysis. Data analysis was carried out by systematically searching for and collecting data obtained from the results of data collection in the form of observations, interviews, and documentation techniques. The data analysis used in this research is the interactive analysis model from Miles & Huberman.

## 3. Results

### 3.1. Lesson Plan

The use of multimedia technology in learning is designed because these learning resources are liked by children and increase children's learning motivation. The use of technology in the classroom has the potential to create increased children's motivation, increased social interaction, positive outcomes, increased children's learning, and increased children's involvement in learning.

The planning that has been prepared follows the approach and curriculum used in kindergarten. The existence of a curriculum in education is very important, namely as a guide for developing children's abilities in achieving learning goals. In the curriculum, all child development is stimulated. Not only focus on one aspect of development. This means that the learning curriculum does not only side with one aspect of development, but

integrally develops other aspects of development that exist in children. Aspects of child development also develop along and cannot be separated from one another (mutual support).

The learning model used in Kindergarten in Sleman is the center model. The most distinctive feature in this model is the existence of a step (scaffolding) which is done by the teacher to children during activities at the center. Scaffolding can be said to be the foundation that forms or the framework of the contents of the educational program that will be built on children. Four main footholds exist in each center, namely the foothold of the playing environment, the foothold of experience before playing, the foothold of experience when playing, and the foothold of setting after playing. These four steps support the child's experience or play activities and also the management of children, learning literacy using multimedia technology can be comfortable and enjoyable.

The learning approach used in kindergarten in Sleman is scientific approach. This curriculum emphasizes the modern pedagogical dimension in learning, which uses a scientific approach (scientific approach) in the learning of all subjects (integrated thematic), and the process of obtaining and collecting information is done by authentic assessment. The scientific approach is intended to provide understanding to children in knowing, understanding various materials using a scientific approach, that information can come from anywhere, anytime, not dependent on the direction of the teacher's information.

The use of multimedia technology in kindergarten in Sleman is done at the IT center. At IT centers children can interact directly with multimedia technology in the form of a set of computers. From observations, it is known that at the IT center, children operate their respective computers (1 child 1 computer). Computers are recognized by teachers as providing convenience in providing literacy learning.

In addition to using computers, the use of technology in literacy learning is also carried out using projectors and projector screens. The teacher provides material in the form of PowerPoint text slides that are tailored to the theme. The material presented by the teacher includes text, images, animation, and sound. These components succeed in making children focus on learning and easily understand the contents of learning.

Literacy learning material in kindergarten Sleman models contains several indicators, namely: writing and reading his name, mentioning the symbols of letters that are known, recognizing the sound of the initial letters of the names of objects around them, understanding the relationship between sound and shape of letters, and understand the meaning of words in the story. These indicators are following Ministry of Education Regulation number 146 of 2014, which consists of: recognizing the sound of the initial letters of the names of objects around them, writing and reading their names, mentioning known

letter symbols, understanding the relationship between sound and letter form, and understand the meaning of words in the story. These indicators are then included in the planning of literacy learning in Sleman Model Kindergarten.

The learning planning program in the Sleman Kindergarten consists of semester programs, weekly learning plans, and daily learning plans. The semester program is a derivative of the curriculum. In the semester program, there are basic competencies that will be developed in children. The semester program is further translated into a weekly learning program plan. The semester program planning contains a list of one semester themes including the allocation of time for each theme by adjusting the effective day of the educational calendar which is flexible. Weekly planning is arranged in the form of a weekly activity unit that contains indicators, and activities planned in one week according to the theme and sub-theme of the week. Weekly programs that have been prepared are then translated into daily programs. Weekly program planning is a plan of activities prepared for one week of learning. The daily program contains learning activities carried out for one day, according to the learning model used. The daily program contains semesters/days/dates, themes / sub-themes, materials/indicators that are relevant to children's activities, play activities, media and learning resources, learning steps, and assessment plans. Learning plan is a daily program planning that will be carried out by educators daily or by the school's program.

Based on the explanation above, it can be seen that the use of multimedia technology in literacy learning can be carried out and achieve the objectives if planned well. The preparation of the learning planning program in the Sleman Kindergarten is carried out by teachers, curriculum sections, and school principals. In addition to being written in writing, multimedia technology used to develop children's literacy skills must be presented in the process of designing weekly activities by the teacher. The application used is prepared by the center teacher and the class teacher. Presentations by teachers are made so that each teacher knows the learning to be done in one week. Also, this presentation aims to accommodate suggestions and comments from each teacher so that the learning to be carried out is quality learning.

### 3.2. Implementation

The use of multimedia technology in learning Kindergarten in Sleman is integrated with learning activities in the national curriculum with a central learning model and a scientific learning approach. Learning activities carried out with the learning center model in question are the step of the playing environment, the step of experience before playing, the step when playing and the step after playing. In the implementation of learning

by using multimedia technology in learning in kindergartens in Sleman, main environmental step activities are filled with the concentration and focus stages. Activities on an experience footing before playing, filled with the orientation phase and the modeling stage. The step when playing is filled with the children's play stages, and the activities on the step after playing are filled with the summary stages.

The use of multimedia technology in learning literacy is done by integrating scientific-based learning. When children learn by using multimedia technology, children do activities to observe images, reason pictures or material on a computer screen, explore information using the internet, ask teachers, and communicate what they have learned during learning.

Aspects of literacy ability that are stimulated by using multimedia technology in kindergarten in Sleman refer to indicators of achievement of early childhood development at 5-6 years of age on basic competencies 4.12, which shows the ability of early literacy with various works, the indicators are: mentioning letter symbols known, recognize the sound of the initial letters of the names of objects around them, understand the relationship between sound and shape of letters, read their names, write their names, understand the meaning of words in the story.

When simulating a child's ability to: mention known letter symbols, recognize the initial letter sound of the names of objects in their surroundings, understand the relationship between sound and letter shape, the teacher makes the material in the form of a flash player that is named intelligent children's learning program. This program is made by the teacher. This program contains some content, namely: reading, writing, arithmetic, and educational games. Recognize the letters of teachers in kindergartens in Sleman using reading content. In reading it is divided again into several parts, namely: recognize letters, recognize the names of objects and animals around and recognize animal sounds. Children can recognize letters easily, due to attractive images, sounds, and animations.

Next, in stimulating the child to understand the meaning of words in the story, the teacher prepares a learning video. The observations showed that when children watched the learning video, the classroom atmosphere was conducive and directed. The children sit watching the learning video to completion. The children were interested in the video presented by the teacher. They follow the storyline by occasionally reading the text available on the video.

### 3.3. Assessment

Teachers used observation assessment techniques, works, and anecdotes to assessing children's literacy abilities. Assessment is carried out during the learning process in the sense that the child being assessed does not

feel that he is being observed. This means that kindergartens in Sleman conduct authentic assessments of children when learning. The assessment procedure carried out is the recording of child development, summarizing notes, and describing in the form of short sentences which include competencies in the curriculum.

## 4. Discussion

For learning to be carried out following what we want, learning plans are needed. The teacher needs to plan how to use learning strategies that are found in the results of research in all areas of content. Using this engagement strategy into teaching must be wise and systematic, which is why teachers must have a proactive and mature learning plan [13]. A lesson plan that will utilize multimedia technology is certainly different from learning planning without multimedia technology. In planning material or programs to be used in learning literacy using, multimedia technology has the following steps: (a) determine the indicators to be achieved by children, (b) formulate ideas, (c) collect material, d) create material, (e) adjust to the age of child development, (f) presentation. In carefully planned learning activities, children can freely choose what they want to learn (verbally, through body movements, or in writing) and can follow sequential steps in literacy learning [13]. The overall system design principles include (1) Overall plan: The various functions involved in implementing a step-by-step system, the learning plan must be adopted first, then the principle of step-by-step implementation must be adopted to make full use of management knowledge and skills relevant projects, and system implementation must be carried out under the software life cycle process [14]. Other things that need to be planned in literacy learning are strong illustrations, reflections on diversity in class, variations in types of books, books related to current themes and books with high-quality texts [15]. Based on that, learning planning must be done carefully, because literacy stimulation strategies use complex multimedia technology.

Whatever the media, literacy learning strategies must still refer to the national curriculum. At present, the media to support education, especially early childhood education, has many technologies that are suitable in the classroom including interactive multimedia. Interactive multimedia is an evidence-based device and instruction [8] which has been proven to be able to improve children's ability to read, decode, and also read fluently [16], and can also increase children's interest and involve their attention in reading activities [2]. Multimedia technology can also make preschool professional teachers meet social needs [17]. Multimedia technology models, especially online, can be used to provide an easily accessible and effective space for professional learning [18]. Studies have shown an insufficiently high level of digital literacy of future

teachers [19]. Therefore, there is no doubt about using multimedia technology in learning literacy in kindergarten. Literacy learning using multimedia technology certainly has a unique stage. Based on observations, these stages are (a) concentration of attention and focus, (b) orientation, (c) modeling, (d) stage of children's play, and (e) ) summary. Learning in early childhood must be done in stages. The most decisive step if learning has succeeded is summary. In summary, children express what they have done during literacy learning. In this section, the teacher can provide open-ended questions for children. Open questions related to text and images and contextual text talks are highlighted as important during reading [15].

Learning assessment is an important point in the implementation of the professional learning process. From the assessment, we can find out whether the methods and media that we use are effective or not. The International Society for Technology in Education (ISTE) has developed new skills standards and pedagogical insights that must be possessed by kindergarten educators through grade 12 in this digital age ([iste.org/standards](http://iste.org/standards)). These standards include details about facilitating and inspiring student learning and creativity; designing digital experiences and assessments; modeling digital work and learning; promoting digital citizenship and responsibility; and engage in professional growth and leadership that effectively uses digital tools and resources [20].

## 5. Conclusions

Planning for the use of multimedia technology in literacy learning is well developed. This plan is adapted to the national curriculum, scientific learning approaches, and central learning models. Planning aspects of the development of children's literacy are integrated with the development of other aspects arranged in the semester, weekly, and daily programs. In planning material or programs that will be used in learning literacy using multimedia technology has the following steps: (a) determine the indicators that will be achieved by children, (b) formulate ideas, (c) collect material, d) create material, (e) ) adjust to the age of child development, (f) presentation. The use of multimedia technology in kindergarten in Sleman is done because the learning resources are liked by children and increase children's motivation.

Implementation of the use of multimedia technology in learning literacy is implemented in the foothold of learning centers with steps: (1) concentration and focus, (2) orientation, (3) modeling, (4) stage of children's play, and (5) summary. Aspects of children's literacy abilities that are stimulated using multimedia technology are: writing and reading their name, mentioning known letter symbols, recognizing the initial letter sound of the names of objects in their surroundings, understanding the relationship

between sound and letter shape, the understanding meaning of words in the story.

Assessment of children's literacy abilities that are stimulated using multimedia technology is carried out with observation techniques, the work of assignments, and anecdotal notes. The procedures carried out include recording child development, summarizing notes, and describing in the form of short sentences which include competencies in the national curriculum. The constraints experienced when using multimedia technology in literacy learning are technical obstacles. Kindergarten in Sleman has other activities that can be used as substitutes for literacy learning activities using multimedia technology

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