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

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
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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...
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 simulating 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 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. 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). 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.

REFERENCES

[1] P. W. Burris, B. M. Phillips, and C. J. Lonigan, “Examining the relations of the home literacy environments of families of low SES with children’s early literacy skills,” J. Educ. Students Placed Risk, vol. 24, no. 2, pp. 154–173, 2019, DOI:10.1080/10824669.2019.1602473.

[2] N. A. Ahmad and A. F. Savugathali, “Engaging and facilitating learning language skills via multimedia systems amongst at-risk students,” J. Teach. Educ., vol. 05, no. 02, pp. 87–93, 2016.

[3] S. Neaum, “Engaging with literacy provision in the early years: Language use and emergent literacy in child-initiated play,” J. Early Child. Lit., vol. 0, no. 2001, pp. 1–26, 2018, DOI: 10.1177/1467879814512841.

[4] OECD, PISA 2018 Results (Volume I): What Students Know and Can Do, vol. III. 2019.

[5] S. Z. Zhang, T. Inoue, H. Shu, and G. K. Georgiou, “How does the home literacy environment influence reading comprehension in Chinese? Evidence from a 3-year longitudinal study,” Read. Writ., no. 0123456789, 2019, DOI: 10.1007/s11145-019-09991-2.

[6] T. Alatalo and B. Westlund, “Preschool teachers’ perceptions about read-aloud as a means to support children’s early literacy and language development,” J. Early Child. Lit., vol. 0, no. 0, pp. 1–23, 2019, DOI: 10.1177/1467879819852136.

[7] Y. B. Choo, T. Abdullah, and A. M. Nawi, “Digital Storytelling vs. Oral Storytelling: An Analysis of the Art of Telling Stories Now and Then,”Univers. J. Educ. Res., vol. 8, no. 5A, pp. 46–50, 2020, DOI: 10.13189/ujer.2020.081907.

[8] N. A. Ahmad, “Learning Reading Skills Independently Using Interactive Multimedia,”Univers. J. Educ. Res., vol. 8, no. 6, pp. 2641–2645, 2020, DOI: 10.13189/ujer.2020.080647.

[9] X. Liu, Y. Liu, and J. F. Tu, “Multimedia technology and learner autonomy: An experimental study for asymmetric effects,”Symmetry (Basel.), vol. 12, no. 3, pp. 1–11, 2020, DOI: 10.3390/sym12030462.

[10] H. F. Abenti, “How do I teach you? An examination of
multiple intelligences and the impact on communication in the classroom,” Lang. Commun., vol. 73, pp. 29–33, 2020, DOI: 10.1016/j.langcom.2020.04.001.

[11] K. Kumpulainen, H. Sairanen, and A. Nordström, “Young children’s digital literacy practices in the sociocultural contexts of their homes,” J. Early Child. Lit., vol. 0, no. 0, pp. 1–28, 2020, DOI: 10.1177/1468798420925116.

[12] R. Flewitt, D. Messer, and N. Kucirkova, “New directions for early literacy in a digital age: The iPad,” J. Early Child. Lit., vol. 15, no. 3, pp. 289–310, 2015, DOI: 10.1177/1468798414533560.

[13] S. A. Nagro, D. W. Fraser, and S. D. Hooks, “Lesson Planning With Engagement in Mind: Proactive Classroom Management Strategies for Curriculum Instruction,” Interv. Sch. Clin., vol. 54, no. 3, pp. 131–140, 2019, DOI: 10.1177/1053451218767905.

[14] Y. Liu, L. Zhu, and F. Liu, “Design of multimedia education network security and intrusion detection system,” Multimed. Tools Appl., 2020, DOI: 10.1007/s11042-020-08724-w.

[15] J. Choi, “Demystifying simultaneous tri literacy development: One child’s emergent writing practices across three scripts focusing on letter recognition, directionality, and name writing,” J. Early Child. Lit., vol. 0, no. 0, pp. 1–23, 2019, DOI: 10.1177/1468798419896064.

[16] T. Horowitz-Kraus and S. K. Holland, “Greater functional connectivity between reading and error-detection regions following training with the reading acceleration program in children with reading difficulties,” Ann. Dyslexia, vol. 65, no. 1, pp. 1–23, 2015, DOI: 10.1007/s11881-015-0096-9.

[17] X. Wang, H. Sun, and L. Li, “An innovative preschool education method based on computer multimedia technology,” Int. J. Emerg. Technol. Learn., vol. 14, no. 14, pp. 57–68, 2019, DOI: 10.3991/ijet.v14i14.10714.

[18] C. J. Wagner, “Online Teacher Inquiry as a Professional Learning Model for Multilingual Early Childhood Educators,” Early Child. Educ. J., no. 0123456789, 2020, DOI: 10.1007/s10643-020-01060-6.

[19] E. S. Anisimova, “Digital literacy of future preschool teachers,” J. Soc. Stud. Educ. Res., vol. 11, no. 1, pp. 230–253, 2020.

[20] J. A. Swanson, “Assessing the Effectiveness of the Use of Mobile Technology in a Collegiate Course: A Case Study in M-learning,” Technol. Knowl. Learn., vol. 25, no. 2, pp. 389–408, 2020, DOI: 10.1007/s10758-018-9372-1.