



Local Wisdom-Based Articulate Storyline Application: A New Way to Improve Reading Literacy for Elementary School Students in the West Papua Region

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Abstract: Literacy is crucial for instructors and students because it promotes understanding in reading, writing, and communication tasks. To provide various benefits, this study incorporates local knowledge into Articulate Storyline educational media. In response to the difficulties mentioned, this study attempts to use the Articulate Storyline program as a teaching tool to increase students' reading literacy. This study employs a quantitative methodology and focuses on factors and how they interact. The one-shot case study approach was employed to investigate the learning program's immediate effects. This design focuses on observing the impact at a single time point without using a control group. The study was conducted in SD INPRES 9 and SD INPRES 50 Papua, focusing on 4th-graders. As a result of receiving the same treatment, the high, medium, and poor groups have various degrees of literacy. Compared to other groups, the high group has superior literacy, whereas the medium group has better literacy than the low group. By encouraging active and significant engagement, technology in education raises the standard of learning. All student groups benefit significantly from developing literacy skills in primary schools since it allows them to decide for themselves what information to trust.

Keywords: articulate storyline application, local wisdom, reading, literacy skill, elementary school

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INTRODUCTION

The Fourth Industrial Revolution is characterized by significant and rapid technological advancements (Pecina & Sládek, 2017; Tien, 2020; Hassoun et al., 2023). The interconnectivity of everything becomes evident through the internet. Advancements in technology have made global information easily accessible (Espinoza et al., 2016). The education field continuously adjusts to integrate changes and technological advancements in learning (Zhang et al., 2020). The need for innovation in technology development is essential to improving the efficiency of the learning process (Dhawan, 2020; Serdyukov, 2017). An important innovation in education is the creation of learning media, which plays a vital role in teaching and learning (An, 2020; Lawrence & Tar, 2018; Nemorin et al., 2023). These media platforms are designed to facilitate meaningful learning and develop essential 21st-century skills in education. Educational institutions must address the task of equipping students with adaptable problem-solving skills to enhance their success in both their professional and personal lives (Szabo et al., 2020). Education is crucial in developing individuals and societies (Bowen, 1996; Hart, 2013; Reggina & Indriani, 2023). Improving the reading skills of elementary school students is a critical objective in education (Wigfield et al., 2016). Reading is a crucial skill that underpins learning across various disciplines (Spiro et al., 2017). Most educational activities in schools involve reading (Roe et al., 2018; Alam & Mohanti, 2023). Reading is fundamental to the process of acquiring knowledge. Reading involves three main components: the text itself, the sensory perception of the text, and the interpretation and comprehension of the text. Reading and comprehension are essential skills relevant to formal education and various aspects of life (Bereiter & Scardamalia, 2018). Developing reading comprehension skills is crucial for academic success and should begin in the early years of education (Kahu & Nelson, 2018).

Reading proficiency is essential for learning (Collins et al., 1989; Al-shaboul et al., 2023). Literacy skills in reading are essential for teachers and students as they facilitate comprehension in reading, writing, and communication activities (Olbata et al., 2022). In the learning environment of SD INPRES 9 and SD INPRES 50 in Sorong Regency, some students lack a complete understanding of the significance of reading and writing. In some remote regions of Indonesia, numerous obstacles impede the development of students' reading skills.

Rural regions frequently face challenges accessing sufficient educational resources, including textbooks, libraries, and qualified educators. Moreover, the lack of representation of cultural diversity and local knowledge in reading materials hinders students' ability to relate to the learning environment in remote communities. Papua and West Papua provinces exhibit the highest illiteracy rates. According to a report by UNESCO and the Ministry of Education and Culture 2012, Indonesia had an illiteracy rate of 4.43%, equivalent to approximately 6,730,682 individuals. The illiteracy rates varied among provinces (Havisa et al., 2021). The provinces with the highest illiteracy rates are West Nusa Tenggara (16.48%), East Nusa Tenggara (10.13%), West Sulawesi (10.33%), and Papua (36.31%) (Nursalim & Sudibyo, 2018). The study by UNICEF (2014) examined the disparities in literacy rates between remote and urban regions in Papua and West Papua, compared to urban areas. In Papua province, around 37% of the population resides in highland areas, while 41% live in lowland districts that are easily accessible. Families and children residing in remote and isolated regions face pronounced economic and educational disparities. There is a notable disparity in literacy rates between urban and remote areas in Papua. The illiteracy rate in remote areas (49%) surpasses that of urban areas (Nursalim & Sudibyo, 2018).

To overcome these challenges, developing a novel approach that leverages local wisdom as the foundation for learning is necessary. Local wisdom encompasses the intergenerational transmission of knowledge, values, and practices within a particular community or society (Darmadi, 2018). Incorporating local wisdom in education can improve the pertinence and attractiveness of learning for students (Ishengoma & Vaaland, 2016; Wahyudiati & Qurniati, 2023). One potential solution is the utilization of e-learning technology, specifically Articulate Storyline. Articulate Storyline is a software used to create e-learning content. It allows users to develop interactive and engaging digital learning modules (Orsborn, 2017). Articulate Storyline facilitates the creation of visually appealing and user-friendly learning materials, enhancing their accessibility for students. Different software applications can be utilized for the development of educational media.

Articulate Storyline is a software provided by *articulate.com*. Maula (2023) suggests that this software enables the creation of interactive presentations and learning materials by integrating text, audio, images, animations, and video. When creatively designed and accompanied by high-quality content, this software has the potential to enhance students' interest and motivation in comprehending the material. Articulate Storyline has progressed from versions 1 and 2 to version 3, which offers enhanced capabilities (Dewi et al., 2022). The Articulate Storyline software has been utilized in diverse academic disciplines, including biology instruction (Habib, 2020), Islamic jurisprudence (Falah & Rusydiyah, 2022), Mathematics (Saputro & Lumbantoruan, 2020), and Social Studies (Mahmud, 2020). Several studies suggest that Articulate Storyline software positively affects student learning motivation and outcomes. Articulate Storyline software has not been utilized in reading literacy instruction across its various versions (1, 2, and 3).

This study includes indigenous knowledge in Articulate Storyline educational media to offer multiple advantages. Students' connection to the learning content is enhanced when it is presented within the context of their culture and surroundings. This will increase their motivation and interest in learning. Furthermore, implementing e-learning technology such as Articulate Storyline can address the issue of limited physical access to educational resources in remote regions. Husna (2022) states that electronic devices like computers, tablets, and smartphones enable students to access learning modules anytime and anywhere. This study seeks to evaluate the efficacy of utilizing Articulate Storyline, incorporating local wisdom, to enhance the reading skills of elementary school students residing in remote regions of Indonesia. The research is anticipated to enhance the development of an inclusive and culturally relevant learning approach in remote areas. The research problem is formulated as follows: (1) How is the picture of high, medium, and low literacy groups in Papua after using the media application articulate storyline? (2) Are there literacy differences between high, medium, and low groups after using the media application articulate storyline? (3) Which group has better literacy after using the media application to articulate the storyline?

METHODS

This study used a quantitative approach, focusing on variables and their interrelationships (Creswell & Poth, 2015). The study used a one-shot case study design to examine the immediate effects of the learning program. This design does not involve a control group and focuses on observing the impact at a single point in time. The study was conducted in SD INPRES 9 and SD INPRES 50 Papua, explicitly focusing on 4th-grade students. The elementary schools in West Papua were chosen as the research location because of their different geographic and social characteristics. The limited and remote accessibility conditions in Papua may impact students' learning process and academic achievements. This research aims to utilize the Articulate Storyline application as a learning tool to improve students' reading literacy in response to the challenges mentioned above. The research data were collected using a reading literacy assessment instrument. The assessment components of reading literacy included reading comprehension and critical thinking skills. Before being used in the research, this research instrument was subjected to external validity testing by expert evaluation.

Table 1. Criteria for Reading Literacy Assessment Aspects

Aspects of Reading Literacy Ability Assessment
Reading Comprehension
Ability to identify main ideas
Detect detailed information
Draw a conclusion
Make inferences from the text
Critical Skills
Ability to identify strong or weak arguments
Recognize bias or deception in text
Involvement of aspects of the five senses
Shows written objects
Focus the description on the object being written

The research data were analyzed using hypothesis testing procedures. The hypothesis was tested at a significance level of 5%. Before conducting the t-test, assumption tests, such as normality and homogeneity tests, must be performed. The normality test used the Kolmogorov-Smirnov method, and the homogeneity test used Levene's.

RESULT AND DISCUSSION

An overview of the literacy abilities of high, medium, and low groups in Papua after using the articulate storyline media application.

Table 2. Overview of the literacy abilities

Group	Total	Mean	Category
High	4	67,5	Medium
Medium	8	60,3	Medium
Low	5	44,4	Low

The table shows that students with high initial abilities have an average literacy score of 67.4, which falls within the medium category. In contrast, students with moderate initial abilities have an average literacy score of 60.3, which falls within the low category. The low initial ability group had an average score of 44.4 compared to the other groups, placing them in the low category. The data shows a minimal contrast between the averages of the high and medium groups, whereas the low group exhibits a vital difference. Before using the one-way ANOVA test to see differences in student literacy, a prerequisite test was conducted, namely the Normality and Homogeneity Test.

Table 3. Tests of Normality

Tests of Normality						
	Group	Kolmogorov-Smirnov^a				
		Statistic	df	Sig.	Decision	Remark
Literacy	High	.441	4	.200	H0 is accepted	Normally Distributed
	Medium	.270	8	.089	H0 is accepted	Normally Distributed
	Low	.301	5	.159	H0 is accepted	Normally Distributed

According to the Kolmogorov-Smirnov test results, all groups show values greater than 0.05. Thus, the null hypothesis (H0) has been accepted, meaning that the average literacy of each group is derived from a population that follows a normal distribution. The subsequent step involves conducting the homogeneity test, as displayed in the table below.

Table 4. Test of Homogeneity of Variance

	Levene Statistic	df1	df2	Sig.	decision	remark
Literacy	4.218	2	14	.220	H0 is accepted	Humogen

The table above shows that the homogeneity test result has a p-value of 0.220 above 0.05. Therefore, H0 is accepted, showing that all groups have the same or homogeneous characteristics. The next step will be to conduct an ANOVA test to examine the differences in the mean literacy among the three groups.

Table 4. ANOVA test

	Sig.	Decision	Information
Between Groups	.000	H0 is rejected	There are differences in literacy between the three groups

Based on this table, it can be seen that the significance of the One Way Anova test results is smaller than 0.05 ($0.000 < 0.05$), so H0 is rejected. The literacy of the three groups is significantly different. This means that the high, medium, and low groups have different literacy levels after the three groups received the same treatment. The group shows improved literacy skills after using the Articulate Storyline media application. A post-hoc test will be conducted to compare the literacy levels of the two groups and identify the group with superior literacy skills.

Table 5. Post hoc test – Tukey HSD

	Sig 2 tailed	Sig 1 tailed	Decision	Remark
High – Medium	0.022	0.011	H0 is rejected	The literacy of the high group is better than that of the medium group
High – Low	0.000	0.000	H0 is rejected	The literacy of the high group is better than the low group
Medium - Low	0.000	0.000	H0 is rejected	The literacy of the medium group is better than the low group.

This table shows that the high group has better literacy than other groups, while the medium group has better literacy than the low group. This study highlights how using the Articulate Storyline media application in education can improve students' literacy skills. This is related to constructivist theory and the use of technology in education. The constructivist theory highlights the role of students in actively constructing knowledge and understanding through their interactions with the environment and learning materials (Kalpana, 2014; Ondog & Kilag, 2023). Interactive media has been found to promote active student engagement, enhance comprehension, and enhance literacy skills (Johnson et al., 2016; Ohler, 2013). The TPACK theory integrates a teacher's knowledge of content, pedagogy, and technology and supports using technology-based learning approaches (Santos & Castro, 2021; Bwalya et al., 2023). Integrating Articulate Storyline as a learning media in this context demonstrates the incorporation of technology in teaching, enhancing engagement and meaningful learning. The Articulate Storyline application, which is based on local wisdom as a learning media in remote areas of Papua, holds significant value. The use of technology in education improves the quality of learning by promoting active and meaningful engagement (Montrieux et al., 2015; Ratheeswari, 2018). Limited access to educational resources is a common challenge in remote areas. However, this application offers a flexible alternative by utilizing technological devices. Interactive content, such as images and audio, has been found to capture students' attention and increase their motivation to learn (Kao et al., 2016; Lange & Costley, 2020). Incorporating local wisdom into educational content fosters a sense of connection and strengthens cultural identity among students (Albantani & Madkur, 2018; Meristin & Supriatna, 2023). This approach improves educational access and acknowledges the cultural narrative context in learning. Using visual learning aids, such as pictures and interactive images with narrative elements, has a beneficial effect on the reading proficiency of fourth-grade elementary school students. Active student participation and expression of ideas are improved, leading to improved learning outcomes (Engelke et al., 2016; Paolini, 2015). Several studies (Daryanes et al., 2023; Gardner et al., 2020; Heliawati et al., 2022; Nissa et al., 2021) suggest considering the potential benefits of using the articulate storyline application in the learning process. This application enables teachers to create easily comprehensible learning materials based on storylines. Different file formats, including photos, videos, animations, and audio, can be incorporated into the articulate storyline application (Donnellan, 2021). Teachers have the option to incorporate questions in the form of quizzes. The utilization of this media facilitates the gathering of information by teachers based on students' comprehension levels, while also enabling adaptable learning following students' individual learning preferences. This approach offers active and creative learners opportunities to engage in the educational process.

Differences in acquisition and literacy scores can be observed based on the prior knowledge levels, categorized as high, medium, and low groups. Previous knowledge substantially facilitates learning (Wigfield et al., 2016; Dziubaniuk et al., 2023). Prior knowledge is advantageous for developing literacy skills in the high and medium groups, as they have already acquired proficient reading comprehension abilities. In contrast, the low group's deficiency lies not in their prior knowledge but in their lack of basic literacy skills. Students in the low group have not improved their literacy skills due to their already proficient basic reading comprehension abilities. Reading comprehension is a fundamental skill that aids in developing literacy (Kremmel & Harding, 2020; Alneyadi et al., 2023). Prior knowledge plays a crucial role in the development of literacy. Prior knowledge for literacy includes reading comprehension, information processing, and vocabulary mastery. Facilitating

literacy skills in elementary schools is crucial for all student groups, as it empowers them to make informed decisions about information. Significant differences exist in reading comprehension among high, medium, and low student groups. Reading comprehension is crucial in promoting student literacy (Chevalier et al., 2018; Dong et al., 2020; Shanahan & Shanahan, 2014). The study's significance lies in its impact on education. Articulate Storyline enhances literacy skills through active engagement. Technology integration improves access to education, especially in remote areas, while acknowledging local culture strengthens students' identity and learning relevance. Emphasizing essential literacy development across student groups establishes a vital foundation for future literacy proficiency.

CONCLUSION

This study demonstrates how integrating Articulate Storyline into the classroom might help students' literacy abilities. This concerns constructivist theory and how technology is used in the classroom. In Papua's rural communities, using the Articulate Storyline application based on local knowledge as a learning tool has tremendous significance. The three groups' literacy levels are very different from one another. As a result of receiving the same treatment, the high, medium, and poor groups have various degrees of literacy. Compared to other groups, the high group has superior literacy, whereas the medium group has better literacy than the low group. By encouraging active and significant engagement, technology in education raises the standard of learning. All student groups benefit significantly from developing literacy skills in primary schools since it allows them to decide for themselves what information to trust.

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