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Development of local wisdom-based synthetic analytical structural teaching materials for improving early reading students

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ABSTRACT

The proficiency of early reading skill students is below expectations. Pupils need to read initially to obtain information from the media, help the learning process run well, and master learning activities for the next stage. This study aims to (1) examine expert validation of SAS teaching materials based on local wisdom, and (2) determine the effectiveness of SAS teaching materials based on local wisdom in improving students' early reading. The employed research method was Research and Development. The subjects of this study were grade 1 elementary school students in Boyolali Regency. The data collection techniques used were questionnaires, observations, and tests. The data analysis was descriptive qualitative, and quantitative in the form of a t-test and effect size. This study's results indicate that (1) SAS teaching materials based on local wisdom obtained validity from experts with an average of 85% in the very valid and very practical categories; (2) SAS method teaching materials based on local wisdom have been effective in the high category. The results of this study indicate that the SAS method teaching materials based on local wisdom that was developed were able to improve the initial reading skills of grade 1 elementary school students in Boyolali Regency.

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Introduction

Early reading skills correlate with literacy (Ray, Dally, Colyvas, & Lane, 2021). Reading and writing literacy constitute one of the six essential forms of literacy that students must master, as outlined by the National Literacy Movement established by the Ministry of Education and Culture (Nugraha & Octavianah, 2020). In the 21st century, reading and writing literacy is more accurately referred to as information literacy (Muliastrini, 2020). Early reading skills represent the foundational stage of students' capacity to recognize letters through their symbols and sounds, identify and differentiate letters, engage in basic reading, and derive meaning from texts (M. Sinaga & Permatasari, 2021). Consequently, early-grade students in elementary education must acquire early reading skills. Previously, the government established the School Literacy Movement policy, but it encountered challenges owing to a shortage of reading materials, insufficient teaching resources, and a lack of reading space for pupils (Khusna, Mufridah, Sakinah, & Annur, 2022).

However, students in the early grades of elementary school exhibit non-fluent initial reading skills (Hasanah & Lena, 2021). Furthermore, PISA (Program for International Student Assessment) data from 2022 indicated that Indonesia's score for elementary school students' reading skills was 359, a decline from the previous year's score of 371 (OECD, 2023). The score is lower than that of ASEAN member nations Singapore (543), Vietnam (407), Malaysia (411), Brunei Darussalam (407), and Thailand (379) (Arifianto & Intan, 2025). Observational data from prior research in an elementary school in Indonesia indicated that knowledge acquisition occurred solely during formal learning. A limited number of students demonstrated the ability to read at a basic level, and there was a notable deficiency in students' skills to articulate letters. This is evidenced by students' inability to pronounce basic words and read simple sentences, as well as the observation that many students who can recognize letters still exhibit slow sequencing skills (Helminsyah, Mardhatillah, & Oyani, 2020).

Students struggle with detecting consonants, connecting words, and using intonation correctly while reading (Hanisah, 2022). Both internal and environmental influences impact pupils' early reading skills. Internal variables include student motivation and enthusiasm for studying. External determinants include the environment, the use of learning media, the competence of teachers to manage learning in the classroom, family support at home, and the mother's education (Oktaviyanti, Amanatulah, Nurhasanah, & Novitasari, 2022; M. Sinaga & Permatasari, 2021). Furthermore, issues in early learning might emerge when children do not get enough reading instruction (Arini, Fatayan, Pranata, & Bachrudin, 2022). Furthermore, in reality, many pupils still struggle with spelling, and stammer while reading, and make errors in identifying letters, words, and phrases (Mahendra & Eka Saputri, 2024).

Specifically, according to the findings of preliminary research conducted via interviews with grade 1 instructors at SDN Mojolegi, SDN 1 Gumukrejo, SDN 1 Krasak, SDN Ngemplak, SDN 1 Trayu, and SDN 2 Kuwiran in Boyolali Regency, the majority of kids, around 74 (70% of 106), were unable to read. A few pupils could read, but they were not proficient and continued to stammer. These pupils still struggled to recognize letters and put words together in phrases. The instructor claimed that when the pupils were tested for reading, they were still spelling and could not read fluently. Teachers still use the syllable spelling method in teaching pupils to read in classroom learning practices. Otherwise, a previous study confirms this by showing research findings suggesting the approach of reading without spelling has been useful in developing early reading abilities (Sulistyaningrum & Nursalim, 2025).

Based on these issues, researchers created local wisdom-based Structural Analytical Synthetic (SAS) teaching materials to help pupils improve their early reading skills. The SAS approach may help children improve their reading abilities (Sulaiman & Hasrianti, 2021). The SAS approach is beneficial because it adheres to linguistics (language science) concepts that see a sentence as the smallest language unit for communication and takes into account children's language experience to make learning more relevant (Nuryanah, 2021). According to previous studies, contextual instructional materials may help the learning process (’Anisa Safitri & Dewi, 2021). Contextual learning entails connecting subject matter with real-world situations and encouraging students to make connections between knowledge and its application in their daily lives (Nasution & Yusnaldi, 2024). Local wisdom is one of the aspects of contextual learning as a way of strengthening students' character (Sofiyah, Suwandayani, & Kumalasani, 2025). Local wisdom is incorporated into early reading teaching materials and is expected to improve the character of nationalism and local characteristics of students, which will be well preserved in the era of globalization and can develop students' uniqueness, culture, and regional advantages (Bria, 2020). Local knowledge may become a region's identity, which can help pupils gain regional understanding and become more interested in learning to read (Listiani, 2023). The local wisdom that will be included in the teaching materials is local wisdom in the form of culture such as typical foods, arts, buildings, or important places in Boyolali Regency.

This study is crucial because it will help pupils build their early reading abilities. Early reading is critical for children because it helps them build their language literacy, increase their receptive and expressive language, and acquire more vocabulary and topics (Towell, Bartram, Morrow, & Brown, 2021). Furthermore, early reading abilities in schools may predict future reading success at higher levels (Kanonire, Lubenko, & Kuzmina, 2022). Reading is also essential for students to get varied information, including content, and to comprehend the meaning of reading to broaden their knowledge and understanding (Ardhian, Ummah, Anafiah, & Rachmadtullah, 2020). If pupils' initial reading level is poor, it will influence their learning skills; they will struggle to recognize letters, and link sounds with letter symbols, and their future academic successes will make it difficult for them to find work (Andelia, Ahmad, & Putri, 2024). Furthermore, pupils who are not proficient in reading from the beginning will have a detrimental influence on their mental health and academic progress, as well as their self-confidence and enthusiasm to study (Andriana, Rokmanah, & Meisaroh, 2023).

Previous research on using the SAS approach to improve early reading skills included research on the adoption of the SAS approach in teaching reading skills to elementary school pupils (Nursuci & Kaltsum, 2022).

The research employed qualitative methodologies and discovered that the SAS approach in early reading skills may help grade II primary school kids improve their early reading abilities gradually and consistently. Second, (Sari, Daulay, & Nurhaswinda, 2020) conducted a study in an elementary school in Kampar City, Riau, to improve early reading abilities using the SAS approach. The study's findings demonstrated an improvement in pupils' early reading scores, with completion rates reaching 74.7%. The study employs the classroom action research approach. Third, study on the use of the SAS approach in early reading learning in the 21st century (Andriyani & Hermanto, 2022). The study conducted descriptive quantitative survey research. The study's findings demonstrated that there was a rise in each first reading learning meeting utilizing the SAS technique in the twenty-first century while studying online. From the first to the fourth encounter, everything went well. Furthermore, the results from the questionnaire distribution revealed that all parents of children agreed that instructors' average inclination to use the SAS approach in the 21st century in online learning was excellent. Fourth, picture storybooks created using the SAS (Structural Analytical Synthetic) technique boosted grade 1 pupils' early reading abilities (Wardhani, 2021). According to the study's findings, the media trial results were extremely suited for use as a learning tool to enhance beginning reading abilities. The research employs R&D methods.

However, this study differs from past studies in that the teaching materials developed are based on local knowledge from the Boyolali Regency, Central Java. Effective teaching materials include the following characteristics: the breadth of information or content is in agreement with the curriculum, the presentation of material satisfies the principles of learning, excellent language and readability, and an appealing book or graphic format. Furthermore, contextual educational materials have the potential to initiate a learning process. Contextual learning entails linking academic material to real-world circumstances and encouraging students to form connections between knowledge and its application in their everyday lives.

The goal of this research was to assess expert validation of SAS teaching materials based on local wisdom and determine the effectiveness of SAS teaching materials based on local wisdom in improving students' early reading. The findings of this research may help pupils improve their reading skills. This research might be one of the options for instructors to employ SAS teaching materials based on local knowledge to enhance students' character and awareness in their community.

Method

The research approach employed was Research and Development (R&D). The R&D research technique is a process for producing specific items and testing their efficacy (Sugiyono, 2023). This study's research and development phases are based on Sukmadinata's research and development model, which includes preliminary investigations (literature and field studies), model construction, and model testing. The preliminary study stage was completed with a literature review and a field investigation at the research site. During the development stage, the researcher created product drafts and prototypes, validated instructional material items with experts, and ran trials. During the product testing stage, the researcher performed an efficacy test utilizing the quasi-experimental approach using a Pretest-Posttest Control Group Design.

At the validation stage of teaching material products, the study's research subjects included material specialists, curriculum experts, language experts, and education practitioners. The content, curriculum, and language experts were validated by lecturers from one of Surakarta City's institutions who were specialists in their subjects and had at least a doctorate. Education practitioners included two elementary school administrators and supervisors. Purposive sampling procedures were used to choose study participants. Purposive sampling is a sampling strategy used by researchers to determine particular factors and aims (Etikan, Musa, & Alkassim, 2016). The characteristics that are considered in selecting expert validators are in addition to a minimum of a doctorate following their respective fields, a minimum of five years of teaching experience as a lecturer. The material expert validator (SS) is a lecturer with a functional position as a professor since 2008 with expertise in Indonesian language studies. The curriculum validator (S) is a lecturer who has expertise in the field of education, especially in Educational Research and Evaluation. The language validator (SY) is a doctoral lecturer with expertise in Indonesian Language and Literature Education. The expert validators are in the form of principal practitioners and supervisors who have previously had more than 10 years of teaching experience. Furthermore, the trial and testing of the effectiveness of the teaching material product involved grade 1 elementary school students in Boyolali Regency. Limited trials were carried out in grade 1 Indonesian language learning at SD Negeri 1 Trayu. A wider trial was carried out at SDN 2 Kuwiran. The location of the product testers was divided into two groups, namely the control group and the experimental group. The control group consisted of 1st-grade students from SDN 1 Gumukrejo, SDN Ngemplak, and SDN Balangan totaling 45 students. The experimental group consisted of 1st-grade students from SDN Mojolegi, SDN 1 Krasak, and SDN Cemoro totaling 48 students.

In this research, data were collected via questionnaire, observation, and test. The questionnaire was used to generate a score for experts to evaluate the viability of teaching materials for the usage of an early reading prototype using the SAS technique based on local knowledge. This questionnaire employs a Likert scale with a value range of 1 to 5. A rating of 1 is in the extremely bad category, while a score of 5 is in the very excellent category. Following that, the findings were transformed into percentages and then into qualitative data. In the limited and broader trial stage, data collection used questionnaires and observation data collection techniques. When testing the effectiveness of the product using an initial reading skills test. Indicators of the initial reading skills test include correct pronunciation, clarity of voice intonation, and reading fluency (Hasanudin & Puspita, 2017; E. S. Sinaga, Dhien, & Sumadi, 2022). All instruments used in this study have been validated by expert content and have been measured for reliability using Cronbach's Alpha. All items are reliable because their values are more than 0.6 (Sugiyono, 2023). The following are the contents of the questionnaire indicators used for expert validation of teaching materials:

Table 1 <Validation Questionnaire Instrument Indicators for Teaching Materials>

Number	Aspect	Indicator
1.	Content of	Conformity and clarity of content framework
2.	Material	Compliance with learning objectives
3.	Indonesian	Suitability of material description with learning elements and achievements
4.		Conformity of content with the scientific structure of the Indonesian language
5.		Accuracy, timeliness, and comprehensiveness of content coverage
6.		Suitability of book title with content
7.		Clarity of instructions
8.		Suitability of material content with learning elements and learning outcomes
9.		Clarity of key concepts/main points
10.		Suitability of illustrations to material
11.		Clarity of examples
12.		Suitability of practice questions to objectives
13.		Suitability of practice questions to the material
14.		Suitability of practice questions to learning outcomes
15.		Encourage students' curiosity
16.		Suitability to student abilities
17.		Consistency with social reality
18.		Level of usefulness in students' lives
19.	SAS Method	Structural Stage (Teaching materials display entire sentences)
20.	Content	Analytical Stage (Teaching materials display sentence analysis (Analytical)
21.		Synthetic Stage (Teaching materials display the entire sentence in the sentence structure)
22.	Local Wisdom Content	Knowledge about environmental conditions and community needs following the values/rules that apply in the area (typical foods, dances, music, buildings, etc.).
23.		Skills regarding environmental conditions and community needs by the values/rules that apply in the area (examples: batik skills, dancing, etc.).
24.		Behavior regarding environmental conditions and community needs following the values/rules that apply in the area (examples: ethics, customs, etc.)

Source: (Muhtarom, Eri Purwanti, & M. Yusuf Efendi, 2021; Wulandari, 2022; Yonanda, Supriatna, Hakam, & Sopandi, 2022)

Table 2 <Curriculum Validation Indicators>

Number	Indicator
1	Suitability to students' learning needs
2	Suitability to student characteristics
3	Compliance with the curriculum
4	Suitability of material development with learning outcomes
5	Meaningfulness in improving educator competence
6	It has utility value so it is useful for students and educators
7	Ease of understanding for students

Source: (A. Safitri, Noorhidayati, & Amintarti, 2021)

Table 3 <Language Validation Indicator>

Number	Indicator
1	Simplicity of sentence structure
2	Language that is easy for students to understand
3	Clarity of information
4	Use of Indonesian language rules
5	Effective and efficient use of language
6	The relationship between sentences, paragraphs, and concepts
7	Supporting presentation materials containing a foreword, table of contents, and bibliography

Source: (Nugroho, Lazuardi, & Murti, 2019)

Table 4 <Practitioner Validator Indicator>

Number	Indicator
1	Suitability of materials to students' learning needs
2	Suitability of materials to student characteristics
3	Suitability of material development with learning outcomes
4	Suitability of the material to the level of student development
5	The images and illusions presented are by the material
6	Ease of understanding for students
7	Teaching materials encourage student interaction with learning resources
8	Teaching materials encourage students to build their knowledge
9	The length of the sentences is according to the level of student understanding.
10	There is precision in the choice of words and sentences

Source: (Kusworo & Rahayu, 2021)

This study's data analysis consists of interactive analysis throughout the development stage and parametric statistics during product testing. The Miles and Huberman interactive model is used for qualitative data analysis, and it includes data gathering, data reduction, data presentation, and conclusion drafting (Miles, Huberman, & Saldaña, 2019). In parametric statistical analysis, before the hypothesis test is conducted, a prerequisite analysis test is conducted using normality, homogeneity, and balance tests. Hypothesis testing uses an independent sample t-test and effect size test to measure the effectiveness of local wisdom-based SAS teaching materials to improve the early reading skills of grade 1 students. The limitation of the method in this study is that the researcher does not have much time and energy so the number of research samples is not too many. Therefore, recommendations for further research require a wider scope to test the effectiveness of teaching materials.

Results and Discussions

Results of Validation of Teaching Materials by Experts

The following are Structural Analytical Synthetic (SAS) teaching material products based on local wisdom to improve beginning reading:

Figure 1 <Initial Display of Local Wisdom-Based SAS Teaching Materials>

Next, the following presents several displays of the contents of the SAS teaching materials developed based on the local wisdom of the city of Boyolali, Central Java.

Figure 2 <Core Display of Local Wisdom-Based SAS Teaching Materials>

Based on the data collection that has been carried out, the results of product validation by experts on local wisdom-based SAS teaching materials are as follows:

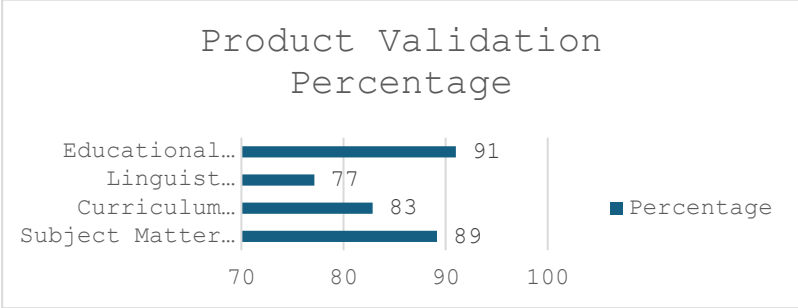

Figure 3 <Results of Validation of SAS Teaching Material Products Based on Local Wisdom>

The following are categories of product validation results and product practicality adopted from (Indriani & Lazulva, 2020):

Table 5 <Product Validation and Practicality Result Categories>

Number	Percentage Interval (%)	Validity Criteria	Practicality Criteria
1.	0-20	Not Valid	Not Practical
2.	21-40	Less Valid	Less Practical
3.	41-60	Quite Valid	Quite Practical
4.	61-80	Valid	Practical
5.	81-100	Very Valid	Very Practical

According to Figure 3 and Table 5, the results of the material expert validation were 89%, the curriculum expert validation was 83%, and the education practitioner validation was 91%. The three validation findings fall within the extremely valid and very practical category. Furthermore, the language expert validation findings earned a percentage of 77% and are classified as valid. Overall, this educational material had an average validity of 85%. This percentage is included in the very good category because it is in the range of 81-100% (Kusworo & Rahayu, 2021).

Based on the results of the percentage of expert validators, the language validation section has the fewest results compared to the others, this is because there are several inputs on the SAS method teaching materials based on local wisdom, including improvements in writing and readability of letters, punctuation, sentences need to be done and information and instructions carried out by students need to be added. However, the researcher has made improvements according to the validator's input.

After conducting expert validation and revising according to the validator's suggestions, the researcher conducted limited and broader trials to obtain student responses to the local wisdom-based SAS method teaching materials. The following are the results of the student questionnaire on the teaching materials:

Table 6 < Results of Student Response Questionnaire in Limited and Wider Trials>

Indicator	Subindicator	Response Results	
		Yes (%)	No (%)
Content or material	Ease of understanding the material	85	15
	Presentation of text and images	82	18
	Ease of understanding language	85	15
	Benefits of teaching materials	97	3
Quality of teaching materials	Image presentation	82	18
	The attractiveness of the image	85	15
	The writing is legible	100	-
	Easy to use	82	18
	Arouse a sense of pleasure or interest in reading	85	15

Based on Table 6, the results of the questionnaire of students' responses to the teaching materials in the limited trial revealed that in terms of the content/material of the teaching materials and the quality of the teaching materials, the majority agreed that it was easy to understand, presented and attracted interest and motivation to read. Students also responded that the SAS method teaching material book based on local wisdom was good. The results of the questionnaire are supported by the results of observations in the learning below:

Table 7 < Results of Observation Assessment of Student Learning Activities in Limited and Wider Trials>

Number	Observation Points	Assessment	
		Good	Less
1.	Activity in asking questions	-	√
2.	Activities in answering questions	√	
3.	Student activity in learning	√	
4.	Mastery of the skills required in reading	√	
5.	Seriousness in participating in learning	√	
6.	Effective use of time in studying	√	
7.	Courage in trying to read	√	
8.	Courage in displaying reading skills	√	

Based on Table 7, the results of observations regarding student learning activities in limited and broader trials ranging from activities in answering questions, to courage in displaying reading skills are already in good condition. Only activities in asking questions are still lacking. Furthermore, after the trial, the teaching material product is tested for effectiveness. This is supported by teachers who are ready to teach using SAS method teaching materials based on local wisdom to improve initial reading skills.

Results of the Effectiveness of SAS Method Teaching Materials Based on Local Wisdom

The following is a description of the comparative data of the pretest and post-test of beginning reading in the control class that used ordinary book teaching materials with the spelling or syllable method and the experimental class that used the SAS method teaching materials based on local wisdom:

Table 8 <Pretest and Posttest Data in Control and Experimental Classes>

Class/ Group	Data	N	Max	Min	Mean	Standard Deviation
Control	Pre-test	45	70	56	63,07	3,394
	Post-test	45	77	61	68,38	3,875
Experiment	Pre-test	48	72	58	63,33	3,657
	Post-test	48	82	67	74,02	3,911

Based on Table 8, the average posttest score for beginning reading is higher than the pretest in the control class. The average posttest score for the control class is 68.38, then during the pretest, it is 63.07. The average pretest score for students in beginning reading in the experimental class is 63.33, while during the posttest it is higher, namely 74.02. This shows that the initial reading score of students after using the SAS method teaching materials based on local wisdom is greater. So, it can be concluded that students in the experimental class have higher scores or better initial reading skills than students in the control class who do not use the SAS method

teaching materials based on local wisdom. The following is a percentage of the increase in students' initial reading:

Table 9 < Data on Percentage Increase in Pre-Test and Post-Test Scores>

Number	Group	Mean Value		Percentage Increase
		Pre-test	Post-test	
1.	Control	63,07	68,38	8,42%
2.	Experiment	63,33	74,02	16,88%

Based on Table 9, there was an increase in the percentage of initial reading scores of students in the control and experimental classes. However, the magnitude of the increase was greater in the experimental class by 16.88% while in the control class, it was only 8.42%. Furthermore, before the hypothesis test was conducted, a prerequisite analysis test was conducted, the results of which are presented in the following table:

Table 10 < Prerequisite Analysis Test Data Results>

Pengujian	Jenis Uji	Hasil Sig (2- tailed)	Keterangan
Pretest Data Normality Test	Kolmogorov Smirnov Test	Control= 0,200 > 0,05	Normal Data
		Experiment= 0,188>0,05	Normal Data
Posttest Data Normality Test	Kolmogorov Smirnov Test	Control=0,148> 0,05	Normal Data
		Control=0,153 > 0,05	Normal Data
Homogeneity Test	Levene Test	Pre-test=0,929>0,05	Homogeneous data
Balance Test	Independent Sample T-test	Pre-test= 0,717	No difference (balanced)

Based on Table 10, the results of the prerequisite tests carried out include normality, homogeneity, and balance tests. The results of the normality test for both control and experimental class data are normal because the Significance value (2-tailed) is > 0.05. Furthermore, the homogeneity test shows that the Sig (2-tailed) results are also > 0.05 so the data is homogeneous or comes from the same population variance. Then for the balance test, the data results show no difference, meaning that the skills of students in the control and experimental classes are balanced.

The results of the hypothesis test on SPSS reveal that the significance results (2-tailed) are 0.000 < 0.05 so there is a significant difference in initial reading skills between students in the experimental and control classes. Then to determine the effectiveness of the SAS method of teaching materials based on local wisdom, an effect size test was carried out using the Cohen formula. The results of the d'Cohen test show that the results of d = 1.45 are included in the high category.

Discussion

Based on the findings of expert validation on local wisdom-based SAS teaching materials, it is possible to infer that the teaching materials are both valid and useful for improving students' first reading abilities. However, the validation findings still get ideas and feedback from experts/validators. Language specialists' ideas resulted in improvements in the writing and readability of letters, words, phrases, and punctuation. As a result, the researchers changed the instructional materials based on expert feedback.

The advantages of SAS method teaching materials based on local wisdom include teaching materials in line with linguistic principles (linguistics), increasing consideration of students' language experience, and the SAS method (Structural Analytical Synthetic) following the principle of self-discovery through inquiry, and can help students become more fluent in reading and can form good characters, preserve the diversity of regional cultures, especially the culture of Boyolali City, introduce culture to the wider community, form national character and a sense of love for the country. However, the disadvantages of this teaching material are that the SAS method requires a lot of preparation of facilities so that it is considered difficult by educators, knowing letters and arranging them into syllables takes a long time, and if not repeated continuously, they will easily forget the sound of the letters, only suitable for urban areas. However, overall this SAS method of teaching material can increase learning motivation in reading.

The findings of this study on local wisdom-based SAS teaching materials yielded an average validity percentage of 85%, which is consistent with previous research indicating that picture storybooks synchronized using the SAS method (structural analytical and synthetic) are effective in improving students' early reading

skills (Fikriana, Herpratiwi, Rusminto, & Samhati, 2024). According to the research, pupils were eager to view and read SAS-based narrative books immediately. The product was verified by three media experts, three language experts, and three learning experts, and it was deemed practical based on the evaluation, resulting in a holistic average of 88% with a highly practical interpretation. The previous study has shown that classroom activities employing the SAS technique may increase grade 1 kids' early reading abilities (Sukmanah & Azmi, 2024). This is because the SAS approach emphasizes the development of reading abilities via the analysis and synthesis of syllables, words, and sentences, allowing pupils to progressively grasp and master reading skills.

The SAS teaching materials used in this research were combined with local regional knowledge to assist students in comprehending and boosting their interest in learning. They are contextual teaching materials that may relate learning to students' real-world experiences. Furthermore, the presence of local wisdom content aims to increase the sense of local wisdom in their environment, as well as an effort to maintain the existence of local wisdom amidst the rapid flow of globalization and awaken the character of Indonesia, so that learning, in addition to leading to mastery of technology, also leads to the development of local potential and the strengthening of Indonesian character. Then local knowledge attempts to promote character education in pupils (Hidayati, Waluyo, Winarni, & Suyitno, 2020; Syamsi & Tahar, 2021). Local wisdom serves as a learning resource to conserve local cultural knowledge, guide students through real-world learning, and make it simpler for students to comprehend learning abilities (S. P. W. Lubis, Suryadarma, Paidi, & Yanto, 2022).

The findings of the experiment on the prototype of the SAS method teaching materials based on local knowledge revealed that the usage of teaching materials improved the reading learning process in grade 1 primary school. The utilization of the prototype teaching materials based on local knowledge provided pupils with a fresh reading experience. The trial's observations indicated that students performed well in the activities of responding to instructor questions; they were also more engaged and passionate about learning, and they dared to demonstrate their reading abilities.

The results of the hypothesis test showed that there was a significant difference in the initial reading skills between students in the experimental and control classes. The magnitude of the effectiveness of the SAS method teaching materials based on local wisdom was tested for effect size with the result d = 1.45 which is included in the high category. The results of this study regarding the use of SAS method teaching materials based on local wisdom are the results of previous studies. One of the studies that has been conducted by (A'yuni, Hikmah, & Santi.S, 2025), revealed an increase in students' initial reading after the implementation of the SAS method. The difference with this study is that this study uses the RnD method while the study uses classroom action research.

Previous research also revealed that the implementation of the SAS method in reading learning in first grade helps students in beginning reading (Utami, Nurasiah, & Khaleda, 2022). This is because the SAS method has operational steps with a structural sequence, namely displaying the whole, analytics is the process of breaking down the form of sentences into word forms, from word forms to syllables from syllables to letters, and synthetic is a recombination to the original structural form. The study used a qualitative method. Other studies also support this reason and say that the SAS method is very helpful for students in learning to read early because this method can be a basis for analytical thinking and the steps used in reading make it easy for students to follow procedures and read efficiently on the next occasion (Helwah, Arisati, & Mufidah, 2023). Based on linguistic foundations, this method will help students master reading fluently.

In addition, previous research on local wisdom material is effective in improving students' reading skills (Fatmawaty, Farih, & Ningsih, 2023). The study also revealed that the use of local wisdom helps in developing a more contextual curriculum and teaching materials in learning. The research conducted by (Putri, 2023), also said that teaching materials that integrate local wisdom are effective in developing high-level reading skills.

The results of the literature review in previous studies also revealed that increasing student activity and learning outcomes in early reading can be done using the SAS (structural analytical synthetic) method (R. R. Lubis, Dwiningrum, & Zubaidah, 2021). In addition, SAS-based teaching materials are also needed to follow the initial reading process with some introductory content such as examples of letters, syllables, words, and simple sentences (Derlis, Utami, & Nidya, 2023). The results of this study indicate that teaching materials with the SAS method are needed to improve students' early reading skills.

The findings of this research on SAS teaching materials based on local knowledge, when combined with learning theory, are consistent with Gestalt psychology theory. The core of Gestalt psychology is totality or a whole that is more meaningful than just a collection of its elements; this analysis and synthesis process is the process by which every human being fulfills the desire to know (Silfiyah, Ghufron, Ibrahim, & Mariati, 2021). Gestalt theory is also consistent with the development of early-grade pupils, who think holistically (Pongpalilu, Hamsiah, Raharjo, Sabur, & Nurlela, L., Hakim, L., ... & Tresnawati, 2023).

The limitation of this study is that the content of this teaching material only contains local wisdom from one area of Boyolali. Overall, the findings of this research help to improve pupils' early reading abilities. The findings of this study also support government policies in improving the School Literacy Movement. Furthermore, it provides practical contributions for students and teachers as well as in learning Indonesian. The existence of this teaching material provides references or reading sources for students and teachers in the learning process so that they can improve early reading skills. This teaching material is also able to increase students' awareness to preserve the local wisdom of the Boyolali area because this teaching material is integrated with local wisdom. This teaching material is also contextual so that students feel involved in the learning process. This will increase their love for their local culture. Further study is needed to develop the media used together with this teaching material so that it has a longer impact on improving early reading skills.

Conclusions

According to the study's findings, SAS method teaching materials based on local wisdom have been declared very valid and practical for use by expert validators in their fields, as well as highly effective in improving the beginning reading skills of grade 1 elementary school students through product testing. These instructional tools help instructors enhance reading abilities, which benefits Indonesian language acquisition. More study is needed to improve the media used in conjunction with these educational materials so that they can have a longer-term influence on developing basic reading abilities.

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