

## **Development of Wetland-Based Teaching Materials to Improve English Vocabulary, Reading Literacy Skills, Early Childhood Numeracy and Elementary School**



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**ABSTRACT:** This research was motivated by low English vocabulary skills, reading literacy and numeracy based on data and findings in the field. In addition, it is also caused by English being removed from subjects in elementary schools and the absence of facilities to stimulate students to improve reading and numeracy literacy in kindergarten children and early grade elementary school students. Based on these problems, researchers create or develop teaching materials in improving English vocabulary skills, reading literacy and numeracy of kindergarten and elementary school students in the early grades of elementary school. Teaching materials are a product needed in learning to improve teacher efficiency and improve student performance. Teaching materials found in the field are still unable to improve students' English vocabulary skills, reading literacy and numeracy. In addition, the teaching materials used by students are not based on the environment around students, especially wetlands. This research uses a type of research and development (Research and Development) using the Plomp model intended to produce a product. The research stage can be detailed as follows: (1) earlystage research, (2) prototype stage, wetland-based teaching materials, (3) development results are tested based on validity, practicality, and effectiveness. This research produced teaching materials based on Tanah Basah to improve English vocabulary, reading literacy and numeracy skills of low-grade children. The teaching materials developed are in accordance with the development of Plom. The results of the research on this teaching material product were assessed by 4 validators of linguists, mathematicians, English linguists, and design experts and the results showed that the teaching materials criteria were valid to be applied in schools. In the practicality test assessment, obtain practical categories, both kindergarten and low-grade teaching materials. And the effectiveness test assessment obtained an effective category on kindergarten and low-grade teaching materials.

**KEYWORDS:** Development of Wetland, English Vocabulary, Reading Literacy Skills, Early Childhood Numeracy and Elementary School

### **INTRODUCTION**

Vocabulary is the most important part in developing children's language competence, teachers must develop children's vocabulary skills to communicate well, especially for English language skills (Nurapriani, R., Yanuarsari, R., Ruswandi, A., Muchtar, H., & Hakim, L. (2019). There is widespread agreement in the field of early childhood education that vocabulary is important for the achievement of literacy and that reading aloud can support the growth of English vocabulary (Hoffman, J. L., Teale, W. H., & Paciga, K. A., 2014; Siregar, A. S. B., Tobing, E. G. L., & Fitri, N. R., 2021). Reading and numeracy literacy is a type of literacy that is known by humans from an early age without realizing it and is always related in everyday life as expressed (Mulat, 2017; Tyas & Pangesti, 2018). Through mastery of reading literacy and numeracy a person can live a better and quality life so as to be able to answer challenges both globally and internationally. This expectation is in line with the expectations of PISA, which is an international institution that measures the literacy ability of students around the world that reading and numeracy literacy is an understanding of interpreting, using, and being able to communicate written texts in the form of words, numbers, and mathematical symbols (OECD, 2006).

Abidin, Mulyati, Yunansah (2018) in early development, literacy was defined as the ability to use Language and images in a rich and diverse form to read, write, listen, speak, see, present the ability to think critically about ideas. Basyiroh, I. (2018) Literacy development in children is closely related to the ability to read and write in children.

This research is motivated by the fact that there are still many literacies learning practices or reading and writing learning in conventional Early Childhood Education institutions. Reading and writing learning sits neatly on a table such as literacy practices

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in elementary, junior high and high schools where reading and writing learning in early childhood should be done by playing. The principle of learning while playing or playing while learning should not be lost in learning in early childhood education, especially in literacy learning so that language teachers play an important role in developing and teaching literacy skills. Metiri Group (2013) one of the literacy skills that students must have been Basic Literacy or language proficiency (in English) and counting at the level necessary to function in work and in society to achieve one's goals and to develop one's knowledge and potential in this Digital Age.

Teacher performance is everything that affects how much they contribute to the organization (Syarifuddin A, Suriansyah, A, 2022). Based on the description above, the reading literacy and numeracy skills of Indonesian students showed very concerning results. In the results of PISA (2018), reading literacy obtained a score of 371 with a rating of 74 and numeracy literacy obtained a score of 379 with a ranking of 73 out of 79 participating countries. This result is down from 2015. In addition, in the results of TIMSS (2015), student numeracy literacy obtained a score of 397 with a ranking of 44 out of 49 participating countries. Based on these results, it shows that Indonesia is in a state of literacy emergency.

GLS or known as the school literacy movement sees that the results of reading literacy and student numeracy show that student ability results are still low and not as expected by the government (Puspendik: 2019). In line with the results of Gipayana's research, M. (2016) shows that students' knowledge and writing ability are relatively low, the classroom environment has not been conducive, and the grading system has not spurred students to write better. Then Gipayana, M. (2016) revealed a number of data from a survey from (IEA) regarding the literacy ability of Indonesian children that around 50% of grade VI elementary school students in the six provinces of the Primary Education Quality Improvement Project (PEQIP) target area have low student reading ability, this is because students get more memorization lessons.

This problem is in line with the facts of the findings in the field which were explored through the observation of learning activities in the classroom and student learning outcomes in the subject of Indonesian mathematics. Based on the results of learning Indonesian language, grade 1 students of SDN Gambut 8 are still relatively low, as can be seen from 30 students, only 13 students obtained scores above KKM. Data from the daily math test results of grade 1 students of SDN Gambut 8 are still not optimal, only 10 students have obtained scores above KKM. This is because learning has not been designed to activate students in learning, the absence of a literacy program before starting learning so that students' interest in reading in the early grades. In Indonesian language learning, students are not directed to read comprehension, furthermore, the low student learning outcomes in mathematics subjects are due to students' lack of understanding in the concept of numbers and number addition operations so that there are errors in solving problems including mentioning the total number of numbers contained in the figure and errors in counting, the material presented is concrete but has not been linked to the surrounding environment students, and the teaching materials used are less attractive to students. In addition, in English language skills, the problem is constrained by the elimination of English subjects in learning at the basic level so that there is a lack of vocabulary for students and English is also not taught in everyday life so that students' ability in terms of English vocabulary is lacking. The findings in the field, that group B children of Harapan Bangsa Kindergarten from English skills were 3 BSB children, 2 BSH children, and 5 BB children. In the numeracy ability (number) of 4 BSB children, 2 BSH children, 3 MB people and 1 BB child. Learning is abstract, the material is not associated with the surrounding environment of the child.

The findings in this field are supported by the results of research by Nurdianti (2010) stated that the low literacy of students is caused by Indonesian people being an alliterate society, meaning that people who can read, but do not yet have the desire to make reading habits as daily activities. Then Kharizmi, M. (2015) the school system still does not provide opportunities for literacy traditions to students, the teaching model in the classroom is delivered with a teacher center approach that positions students as listeners. Lubis, E. L. S. (2019) The role of teachers is very important and central in creating literacy in subjects. In line with Dewi, P. Y. A. (2019) schools have a very important role in instilling a culture of reading and writing (literacy) in students.

Based on these problems, it is necessary to make improvements so that the increase in English vocabulary, students' reading and numeracy literacy skills can be improved through the provision of teaching materials. Teaching materials are a useful tool to help teachers achieve the success of the learning process so that they can make students achieve learning goals as expected (Prastitasari, 2018). This type of book is used in learning which contains materials and practice questions to measure students' understanding after studying the material. Teaching materials have a very important function in the learning process. According to Prastowo (2016: 239-240) the functions of teaching materials can be distinguished based on the needs of teachers and students. For teachers, the function of teaching materials is a guide in the learning process, creating an active learning process, and making changes that are usually active teachers become facilitators. For students, teaching materials can be used freely anywhere and anytime without having to rely on the teacher in learning, and students can learn according to their abilities.

Students are still bound to personal experiences that are still concrete and not yet formal (Ibda, 2015; Suparno, 2001:87). Sears (2003:9) suggests that by using a contextual approach the instructor or teacher will be helped in learning activities that he has designed based on real situations so as to encourage students to apply it to their lives. Through the use of teaching materials based on a contextual approach, it is hoped that the learning taught will be more meaningful because it is based on the real situation of students. Yuwono (2009: 19) argues that in learning students should be given material or problems related to the environment around students. For example, English vocabulary, reading literacy and numeracy for students in Banjarmasin should be the material taught

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in the context of the environment and socio-culture of South Kalimantan. South Kalimantan is an island famous for its wetlands and rivers.

Wetlands are brackish areas, swamps, peat, or waters (Soendjoto, 2016). Wetlands have many advantages and benefits for the surrounding community, knowledge of wetlands is important in the development of environmental education areas encourage behavior change that facilitates habitat protection and wetland conservation (Ibrahim, I., Aminudin, N., Young, M. A., & Yahya, S. A. I., 2012). Thus, the students in this city are certainly very familiar with the wetland environment, both regarding the flora, fauna, physical environment, and socio-cultural of the wetlands.

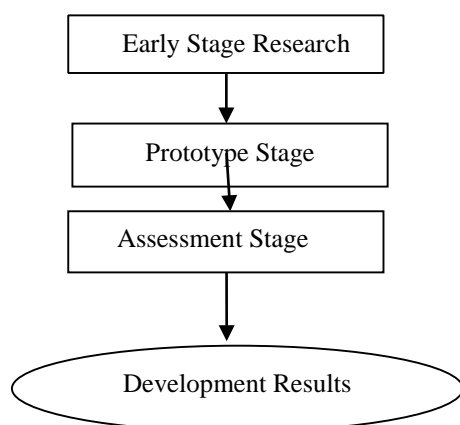
Students of SD Negeri Gambut 8 in 1<sup>st</sup> grade, Banjar Regency and group B children of Harapan Bangsa Kindergarten are the subjects of this teaching material product trial because this school is surrounded by wetlands and is on average domiciled in wetland areas so that students are very familiar with wetlands. Research conducted by Aini, et al (2018) found that the validity of teaching materials thanks to valid categories, the practicality of teaching materials is well categorized, and the effectiveness of teaching materials based on the learning outcomes of medium category products and based on the learning outcomes of good category learning processes.

The purpose of this study is to produce Land-based Teaching Materials To improve English vocabulary, reading literacy and numeracy skills of low-grade children that are valid, practical, and effective. This research has development limitations including this material only for Students of SD Negeri Gambut 8 in 1<sup>st</sup> grade and group B children of TK Harapan Bangsa, Banjar Regency and user trials in the development of this teaching material using limited user trials at SD Negeri Gambut 8 and TK Harapan Bangsa, Banjar Regency.

### METHOD

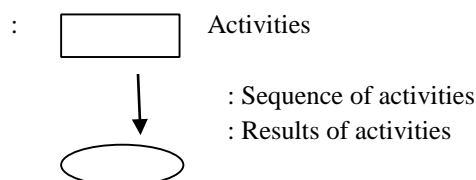
This research uses research and development (R&D) methods. Sugiyono (2009) research and development methods are research methods used to produce certain products, and test the effectiveness of these products. To be able to produce certain products, research that is a needs analysis (survey or qualitative method is used) and to test the effectiveness of the product so that it can function in the wider community, research is needed to test the effectiveness of the product (experimental methods are used). This research was conducted for nine months and aimed to develop new teaching materials, namely wetland-based teaching materials in improving English vocabulary, reading literacy and numeracy in kindergartens and elementary schools of Banjar Regency.

The research model used in the development of wetland-based teaching materials is the Plomp model (2013), this model is used based on problems, namely the unavailability of wetland-based teaching materials to improve English vocabulary, reading literacy and numeracy skills of AUD and early grades of elementary schools based on validity, practicality and effectiveness. The steps for developing the Plomp model are 3 steps in general, including the initial research, prototype stage, and assessment stage (Plomp & Nienke. 2013: 15). The steps of the Plomp model are presented in the following chart:



**Figure 4.1. Plomp Development Model Pipeline (2013)**

**Source:** Plomp & Nienke (2013) Information:



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## RESULTS

### 1. Description of Teaching Materials for Kindergarten

The teaching materials for English Vocabulary, Literacy and Numeracy for Kindergarten B students produced in this study consisted of 2 learnings that were carried out for 4 days, namely (1) My Home Environment, and (2) My School Environment. Overall, the teaching materials consist of 31 pages.

Teaching materials for English Vocabulary, Literacy and Numeracy for kindergarten B students consist of 3 parts, including:

- a) This teaching material in the initial section consists of: (1) cover, (2) preface, (3) instructions for the use of teaching materials, (4) about literacy, and (5) table of contents.
- b) The content of the teaching materials consists of learning 1 and 2, which consists of activities that must be carried out by students in learning. These learnings include: Let's Tell a Story, Let's Try, Let's Count, and Let's Practice. Ayo Cerita activity, there are activities to observe pictures, read stories, and read vocabulary Indonesian and English about the environment around students such as the home and school environment. Then the Ayo Berhitung activity, there is an activity of students calculating the number of pictures and pairing the numbers. Let's Practice activities, there are activities for students to rewrite the letters or vocabulary contained in the worksheets in the boxes provided.
- c) The final teaching materials consist of: (1) Notes, (2) Bibliography, and (3) Author's Biodata. The presentation of the 3 parts of the teaching materials is as follows: (1) notes contain blank sheets that can be used to write down important things, (2) the bibliography contains references as reference material in the form of material in developing teaching materials, and (3) the author's biodata contains the author's biodata ranging from names to works that have been produced by the author.

### 2. Description of Teaching Materials for Elementary Schools

The Teaching Materials for English Vocabulary, Literacy and Numeracy for grade 1 elementary school students produced in this study consisted of 4 lessons, namely (1) My Morning Activities, (2) My Afternoon Activities, (3) My Afternoon Activities, and My Evening Activities. Overall, the teaching materials consist of 65 pages.

This teaching material consists of 3 parts, including: (1) the initial part, (2) the content part, and (3) the final part. The following will explain in detail per-part of the teaching materials, namely:

- a) This teaching material in the initial section consists of: (1) cover, (2) preface, (3) instructions for the use of teaching materials, (4) about literacy, and (5) table of contents. The presentation of the results of the development of teaching materials for English vocabulary, literacy and numeracy is the initial part described as follows.
- b) The content of the teaching materials consists of learning 1, 2, 3, and 4, which consists of activities that must be carried out by students in learning. These learnings include: Let's Observe, Literacy Activities (Let's Read), Let's Participate, and Let's Practice. Let's Observe activities, there are activities to observe pictures and there are questions to measure students' initial understanding of what activities are carried out in the morning, afternoon, afternoon, and evening. Let's Read activities, there are stories, getting to know vocabulary Indonesian and English, and counting the number of them from the picture. The Let's Tell a Story and Let's Practice activities contain assignments for students. Let's tell stories can be done verbally or in writing consisting of 7 questions. Meanwhile, Let's Practice is carried out in writing which contains vocabulary Indonesian, English, and counts the amount contained in the pictures of reading activities that have been carried out.
- c) The final teaching materials consist of: (1) Notes, (2) Bibliography, and (3) Author's Biodata. The presentation of the 3 parts of the teaching materials is as follows: (1) notes contain blank sheets that can be used to write down important things, (2) the bibliography contains references as reference material in the form of material in developing teaching materials, and (3) the author's biodata contains the author's biodata ranging from names to works that have been produced by the author.

### 3. Expert Test Results against Product Development

Expert tests are carried out to measure the validity of the developed teaching materials. Teaching material products are assessed by 4 experts, namely, Indonesian experts, English linguists, mathematicians, and design experts.

**Table 1. Results of expert Indonesian Test of Kindergarten Teaching Materials**

Number	Indicator	Average (Va)	Validity Criteria	Information
1.	Material	3,5	Valid	No Revision
2.	Serving	3,8	Valid	
3.	Linguistics	3,4	Valid	
Total Average Validity		3,6	Valid	No Revision

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**Table 2. Results of the English Language Expert's Test of Elementary School Teaching Materials**

Number	Indicator	Average (Va)	Validity Criteria	Information
1.	Material	3,3	Valid	No Revision
2.	Serving	3,6	Valid	
3.	Linguistics	3,3	Valid	
<b>Total Average Validity</b>		3,4	Valid	No Revision

**Table 3. Results of the English Language Expert's Test of Kindergarten Teaching Materials**

Number	Indicator	Average (Va)	Validity Criteria	Information
1.	Material	3,8	Valid	No Revision
2.	Serving	4	Very Valid	
3.	Linguistics	4	Very Valid	
<b>Total Average Validity</b>		3,9	Valid	No Revision

**Table 4. Results of the English Language Expert's Test of Elementary School Teaching Materials**

Number	Indicator	Average (Va)	Validity Criteria	Information
1.	Material	4	Very Valid	Tidak Revisi
2.	Serving	4	Very Valid	
3.	Linguistics	4	Very Valid	
<b>Total Average Validity</b>		4	Very Valid	Tidak Revisi

**Table 5. Results of Mathematicians' Tests on Kindergarten Teaching Materials**

Number	Indicator	Average (Va)	Validity Criteria	Information
1.	Material	3,8	Valid	Tidak Revisi
2.	Serving	3,8	Valid	
3.	Mathematicality	3,8	Valid	
<b>Total Average Validity</b>		3,8	Valid	Tidak Revisi

**Table 6. Results of Mathematicians' Tests on Elementary School Teaching Materials**

Number	Indicator	Average (Va)	Validity Criteria	Information
1.	Material	3,5	Valid	Tidak Revisi
2.	Serving	3,8	Valid	
3.	Mathematicality	4	Very Valid	
<b>Total Average Validity</b>		3,84	Valid	Tidak Revisi

**Table 7. Results of Mathematicians' Tests on Kindergarten Teaching Materials**

Number	Indicator	Average (Va)	Validity Criteria	Information
1.	Size	4	Very Valid	No Revision
2.	Cover Design	3,8	Valid	
3.	Content Layout	3,2	Valid	
4.	Book Content Typography	3,6	Valid	
5.	Clarity of Colors, Images and Text of the Contents of the Book	4	Very Valid	
<b>Total Average Validity</b>		3,6	Valid	No Revision

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**Table 8. Results of Mathematicians' Tests on Kindergarten Teaching Materials**

No	Indicator	Average (Va)	Validity Criteria	Information
1.	Size	4	Very Valid	No Revision
2.	Cover Design	3,4	Valid	
3.	Content Layout	3,7	Valid	
4.	Book Content Typography	3,2	Valid	
5.	Clarity of Colors, Images and Text of the Contents of the Book	4	Very Valid	
<b>Total Average Validity</b>		3,5	Valid	<b>No Revision</b>

**Table 9. Results of the Questionnaire of Teacher Responses to the Use of Kindergarten Teaching Materials**

Number	Indicator	Average (Va)	Validity Criteria	Information
1.	Interest	4	Very Practical	No Revision
2.	Presentation of Material	3,8	Practical	
3.	Language	3	Practical	
<b>Total Average Practicality</b>		3,8	Practical	<b>No Revision</b>

**Table 10. Results of the Questionnaire of Teacher Responses to the Use of Elementary School Teaching Materials**

Number	Indicator	Average (Va)	Validity Criteria	Information
1.	Interest	4	Very Practical	No Revision
2.	Presentation of Material	3,8	Practical	
3.	Language	4	Very Practical	
<b>Total Average Practicality</b>		3,9	Practical	<b>No Revision</b>

Teaching materials are one of the components of learning that contain instructional material in the student environment that can stimulate students to learn. which has a relationship with the achievement of competencies in learning activities, teaching materials should contain systematic discussions in a unified whole, arranged in sequence according to the rules of writing teaching materials and interrelated between discussion components (Olayinka, 2016; Oluwagbohunmi, 2014; Perwitasari, 2017; Prastowo, 2013; Sons & Ultimates, 2019; Pilendia, 2020; Rokhmawati, et al, 2019; Nurlaila, 2011).

The teaching materials developed must pay attention to or the elements that make teaching materials that make quality (Wahyudi, 2012). Meanwhile, Olawale (2013) divided the types of teaching materials into three, namely audio, visual, and audiovisual. The development of teaching materials has stages that must be carried out. Akbar (2016: 36) stated that the steps that must be taken are, (1) identifying learning problems in the classroom through observation and reviewing the teaching materials used, (2) analyzing the curriculum based on KD, formulating learning indicators and objectives, (3) designing draft teaching materials based on theory, expert validation using instruments, (4) testing trials of teaching material drafts with limited tests and (5) revision of teaching material drafts based on expert assessments. Based on this opinion, this study used a model of procedures for developing Plomp teaching materials. The stages begin with the initial research stage, prototype stage, and assessment stage. Teaching materials developed in printed form, namely wetland-based textbooks. The textbooks developed are student books. The student book contains material containing stories containing English vocabulary and introduction to mathematics based on wetlands. By producing these teaching materials, it is hoped that it can facilitate students in learning and improving English vocabulary, reading literacy and numeracy in accordance with daily life.

Teaching materials can be developed according to the character of each area, for example, such as wetland-based areas, which include brackish areas, swamps, peat, and waters, natural or artificial, permanent or temporary, water that flows or is still (stagnant), fresh, salty, including areas with seawater whose depth at high tide does not exceed six meters, there are 3 categories of wetlands based on their general location and relation to human activities, namely marine wetlands, land wetlands, and artificial wetlands (Soendjoto, 2015). The geographical location of South Kalimantan, which has an area in the form of wetlands, can be used as a source and study of learning (Iriani, R., 2019). The results of research by Khairunnisa, S., & Salamah, S. (2018) in the city of Banjarmasin, many schools are located quite strategically with areas or areas of the natural environment that are characteristic of the geography of the city of Banjarmasin, namely the wetland area, therefore it is necessary to develop a learning model for

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environmental education based on the distinctive character of the local environment. Ridho, M. H., Wati, M., Misbah, M., & Mahtari, S. (2020) teaching materials can be used in the learning process in the classroom to determine the practicality and effectiveness of the teaching materials developed.

### CONCLUSIONS

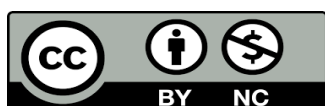
Based on the implementation of activities that have been carried out in this study, it was obtained that it has produced teaching materials with Bas ah Land-based teaching materials to improve English vocabulary, reading literacy skills and numeracy of low-grade children. The teaching materials developed are in accordance with the development of Plom. The results of the research on this teaching material product were assessed by 4 validators of linguists, mathematicians, English linguists, and design experts and the results showed that the teaching materials criteria were valid to be applied in schools. In the practicality test assessment, obtain practical categories, both kindergarten and low-grade teaching materials. And the effectiveness test assessment obtained an effective category on kindergarten and low-grade teaching materials. Based on the results that have been described, it is hoped that this teaching material can be a teaching material for learning in kindergarten and elementary schools to improve students' literacy and numeracy skills and increase the preservation of English vocabulary. Therefore, further research can be carried out on advanced development to improve the abilities of Indonesian students in the international arena, especially literacy and numeracy.

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