Development of Wetland-Based Pop-Up Book to Improve English Vocabulary and Numeracy Literacy Skill in Kindergarten

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ABSTRACT: This development research was motivated by children's low numeracy literacy and not being taught English vocabulary from an early age. This research aims to develop a wetland-based pop-up book to improve English vocabulary skills and numeracy literacy in kindergarten that is valid, practical, and effective. The type of research used is development research. The model used is the ADDIE model. The data analysis techniques used are quantitative descriptive and qualitative descriptive analysis techniques. Quantitative descriptive analysis is used to analyze the results of questionnaire data obtained from the results of validation questionnaires, teacher and student response questionnaires, as well as student learning outcomes tests in the form of scores. Qualitative descriptive analysis is used to analyze comments or suggestions from expert validators, teachers and students in the form of descriptive data. The research results show (1) the pop-up book is valid based on the assessment of Indonesian language experts with an average score of 3.8, English with an average score of 4, mathematics with an average score of 4 and design with an average score of 4, (2) practical pop-ups based on teacher assessment with an average score of 3.8, and (3) pop-up books are effective for children to use. Thus, wetland-based pop-up books to improve English vocabulary skills and numeracy literacy in kindergarten can effectively improve English vocabulary and numeracy literacy skills in kindergarten.

KEYWORDS: Pop-Up Book, Wetland-Based, English Vocabulary, Numeracy Literacy

INTRODUCTION

Kindergarten education is very important in developing children's English language skills from an early age. Developing English language skills must be done because English is used in communication, especially in education (Susini et al., 2021). For example, attending education at strata 1, 2, and 3 requires mastery of English because the literature used in learning uses English language literature, as does communication. For example, when working with multinational companies, master English to communicate with foreign investors.

Apart from children's English language skills, kindergarten children's numeracy literacy must also develop. Numeracy literacy is a child's ability to use symbols and numbers. Based on this understanding, numeracy literacy is important in developing children's skills in mathematics. Because mathematics is related to activities in daily life, such as shopping activities and objects around us (Prastitasari, 2018; Sakerani et al., 2022; Munahefi & Lestari, 2023), through mastering numeracy literacy and English vocabulary, children can live a quality life in the future so they can answer the challenges of this century.

The importance of developing English language skills and numeracy literacy differs from the facts in the field. In kindergarten, there is no learning while playing using English, especially getting to know English vocabulary. Apart from that, in the PISA results (2018), numeracy literacy scored 379, ranking 73 out of 79 participating countries. This result is down from 2015, when students' numeracy literacy scored 397, ranking 44 out of 49 participating countries. These results show that Indonesia is in a numeracy literacy emergency.

This problem aligns with facts found in the field based on observations of learning activities. The findings in the field were that the children in group A of Harapan Bangsa Kindergarten had 4 BSB children's English skills, 5 BSH children and 6 BB children. Regarding numeracy literacy, one child is BSB, three children are BSH, four are MB, and seven are BB. The low numeracy literacy of children is caused by children not knowing numbers and numbers from 1 to 5. Apart from learning outcomes, learning focuses on play activities, and no exciting books are available for kindergarten children.

Based on these problems, it is necessary to make improvements so that children's English vocabulary and numeracy can improve by developing interesting teaching materials. Teaching materials are a helpful tool to help teachers achieve success in the learning

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process (Prastitasari et al., 2018). An interesting teaching material is a pop-up book. A pop-up book is a book that can move, has a surprise effect, and has an image display that is different from the others (Jannah, Aisyah Raudhatul Hamid & Rostika, 2020). This type of book can arouse children's interest in reading by presenting exciting pictures, text, numbers and vocabulary. Pop-up books have excellent benefits for children, including children being active in studying the material presented because there are stories/vocabulary and exciting pictures in 3D, and they develop students' imagination. This statement aligns with (Setiyanigrum, 2020) that Pop-Up Books help foster children's interest in reading, increasing students' creativity and improving children's thinking abilities.

A fascinating Pop-Up Book is that it relates life around children. Learning related to life around children can be meaningful for children because it is based on students' real situations siswa (Prastitasari, 2019; Prastitasari et al., 2022; Prihandoko et al., 2023). For example, English vocabulary and numeracy literacy for children in Banjar Regency should be material taught in the environmental context of South Kalimantan. South Kalimantan is an island famous for its wetland areas. In line with the opinion of (Iriani et al., 2019) the geographical location of South Kalimantan, which has areas in the form of wetlands, can be used as a source and study for learning.

Wetlands are brackish areas, swamps, peat or water (Soendjoto, 2015). Wetlands have many advantages and benefits for the surrounding community, and knowledge of wetlands is important in regional development. Environmental education encourages behavioral changes that facilitate habitat protection and wetland conservation(Prastitasari, annisa, et al., 2022). Thus, students in this area are certainly very familiar with the wetland environment, both regarding the fauna in the wetland.

This research aims to produce a Wetland-based pop-up book to improve kindergarten children's English vocabulary and numeracy literacy that is valid, practical and effective. This research has development limitations, namely using limited user trials at Harapan Bangsa Kindergarten, Banjar Regency.

Therefore, developing a wetland-based pop-up book is a fascinating, innovative solution. Wetland-based pop-up books provide an imagination-stirring opportunity to learn about wetland animals and an interesting and interactive way to improve English vocabulary and numeracy literacy in kindergarten children. This research aims to produce a Wetland-based pop-up book to improve kindergarten children's English vocabulary and numeracy literacy that is valid, practical and effective. This research has development limitations, namely using limited user trials at Harapan Bangsa Kindergarten, Banjar Regency.

METHOD

This research uses research and development (R&D) methods because this research produces products in the form of pop-up. According to Yuliani et al., (2021), research and development methods are used to develop and test the product to see whether the product is valid, practical and effective. This research aims to develop a new pop-up, namely a wetland-based pop-up to improve English vocabulary and numeracy literacy.

The data analysis techniques used are quantitative descriptive and qualitative descriptive analysis techniques. Quantitative descriptive analysis is used to analyze the results of questionnaire data obtained from validation questionnaires, teacher and student response questionnaires, and student learning outcomes tests in the form of scores. Qualitative descriptive analysis is\ used to analyze comments or suggestions from expert validators, teachers and students in the form of descriptive data.

The research model used in developing wetland-based pop-ups is the ADDIE model (Aldoobie, 2015), this model is used based on the problem of the unavailability of wetland-based pop-ups to improve English vocabulary and numeracy literacy based on validity, practicality and effectiveness. According to Rohaeni (2020) there are generally five steps in developing the ADDIE model: (1) analysis, (2) design, (3) development, (4) implementation and (5) evaluation. The ADDIE model steps are presented in the following chart:
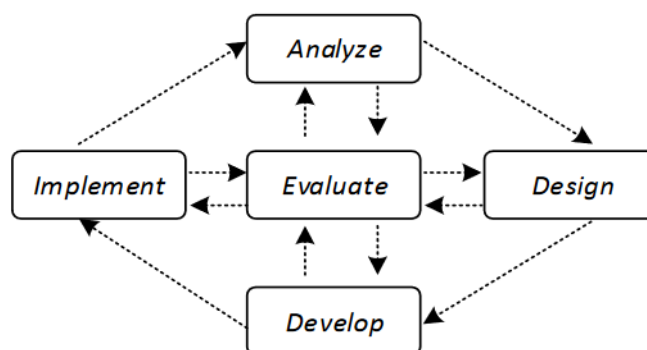

Figure 2.1. ADDIE Development Model Flow(2018)
Source: Rohaeni (2020)

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RESULTS

1. **Description of Pop-up Book Development Results**

   The resulting Pop-up Book of English vocabulary and numeracy literacy skills for kindergarten students consists of 5 types of animals in wetlands, which was implemented for four days. Overall, the pop-up book consists of 6 openings. The Pop-up Book of English Vocabulary and numeracy Literacy Skills for kindergarten students consists of 3 parts:

   a. This Pop-up Book at the beginning consists of (1) a cover, (2) an introduction, and (3) a place to fill in the student's photo and name.

   b. The content of the pop-up book presents readings about five types of animals in wetlands, including snakes, crocodiles, ducks, frogs and fish. Apart from introducing five types of animals, the pop-up book presents numbers including 1, 2, 3, 4, and 5 and English vocabulary for five types of animals and numbers.

   c. The final part of the pop-up book consists of (1) thanks, (2) Author Biodata, and (3) back cover.

2. **Expert Test Results on Development Products**

   Expert testing was conducted to measure the validity of the developed pop-up book. The pop-up book product was assessed by four experts: an Indonesian language expert, an English language expert, a Mathematics expert and a Design expert. The four experts are lecturers at Lambung Mnagkurat University with appropriate fields of expertise. The following are the results and description of the test results of the validators.

Table 3.1. Indonesian Language Expert Test Results on Kindergarten Pop-up Books

No	Indicator	Average (Va)	Validity Criteria	Result
1.	Material	4	Sangat Valid	
2.	Presentation	3,8	Valid	Not Revised
3.	Language	3,6	Valid	
Total Average Validity		3,8	Valid	**Not Revised**

Table 3.2 English Expert Test Results on Kindergarten Pop-up Books

No	Indicator	Average (Va)	Validity Criteria	Result
1.	Material	4	Very Valid	
2.	Presentation	4	Very Valid	Not Revised
3.	Language	4	Very Valid	
Total Average Validity		4	Very Valid	**Not Revised**

Table 3.3 Results of Mathematics Expert Tests on Kindergarten Pop-up Books

No	Indicator	Average (Va)	Validity Criteria	Result
1.	Material	4	Very Valid	
2.	Presentation	4	Very Valid	Not Revised
3.	Mathematic	4	Very Valid	
Total Average Validity		4	Very Valid	**Not Revised**

Table 3.4 Design Expert Test Results for Kindergarten Pop-up Books

No	Indicator	Average (Va)	Validity Criteria	Result
1.	Size	4	Very Valid	
2.	Cover Design	4	Very Valid	
3.	Content Layout	4	Very Valid	
4.	Book Content Typography	4	Very Valid	Not Revised
5.	Clarity of Colors, Images and Text of Book Contents	4	Very Valid	
Total Average Validity		4	Very Valid	**Not Revised**

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The revised pop-up book product is based on assessments and input, both in the form of comments and suggestions for the pop-up book. The following are the results of observations or recommendations on the pop-up book developed by language experts.

Figure 3.2 Validator Comments and Suggestions
Source: Researcher's Process

The following is the back cover of the pop-up book before revision and after revision based on suggestions and comments from language validators.

(a) before revision　　　　　(b) after revision
Figure 3.3 Cover *Pop-up Book*
Source: Documentation

3. **Practical Results by Users**

The pop-up book product for English vocabulary and numeracy literacy skills for kindergarten students was tested in one class. Teachers and students used this pop-up book during four meetings held in kindergarten. After implementing the lesson, the teacher filled out a teacher response questionnaire sheet using the pop-up book on English vocabulary and numeracy literacy skills for kindergarten students. Assessment is done by providing a checklist on one of the four assessment scores for the teacher response questionnaire and writing comments or suggestions. The following is data on the practicality of pop-up books from product trials for potential users, explained as follows.

Table 5.5 Results of Teacher Response Questionnaires on the Use of Pop-up Books

No	Indicator	Average (Va)	Practicality Criteria	Result
1.	Interest	4	Very Practical	
2.	Presentation of Material	3,8	Very Practical	Not Revised
3.	Language	3,5	Practical	
Total Average Practical		3,8	Practical	**Not Revised**

4. **Hasil Keefektifan oleh Pengguna**

The effectiveness results can be obtained from the post-test after using the English Vocabulary and Numeracy Literacy pop-up book for Kindergarten, which was tested in one class. The results showed that 87% or 13 out of 15 children could connect animal pictures with animal names in English, count the number of animals in the picture and connect them according to the numbers, and connect the number of animals to the correct English numbers. This result indicates that the child can remember the names of animals in English and recognize numbers and the English vocabulary of these numbers, as shown in the picture below.

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(a) Animal on English

(b) Numbers

(c) Numbers on English
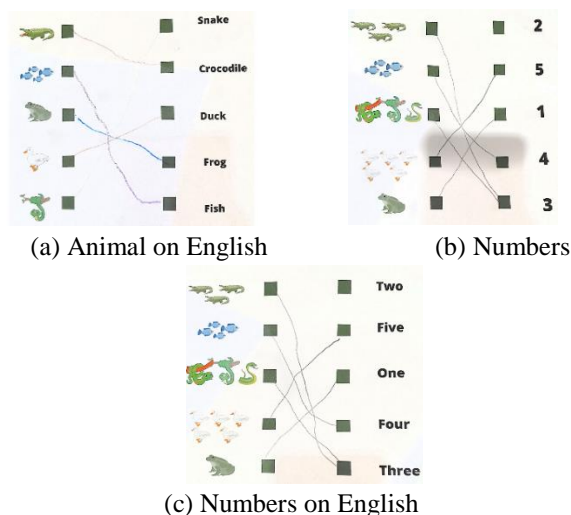
Figure 3.4 Effectiveness Results
Source: Documentation

This research was conducted on children at Harapan Bangsa Kindergarten, Sungai Tabuk, Banjar Regency. The subjects in this research were 15 Kindergarten A children. The development is developing a wetland-based pop-up book to improve English vocabulary and numeracy literacy. A *pop-up book* is a 3D book that has an appeal to children. When the page is opened, the image presented looks more prominent than the others (Winda et al., 2022). Using pop-up books can make it easier for teachers to transfer English vocabulary and numeracy literacy knowledge and encourage children to learn.

The model used in this research is the ADDIE model, which consists of five stages, namely (1) Analysis, (2) Design, (3) Development, (4) Implementation, and (5) Evaluation (Sugihartini & Yudiana, 2018). The following is a description of the implementation of the ADDIE model.

The analysis activities include problem identification, identifying the characteristics of mathematics and English learning in schools, and reviewing various theories and literature. Based on the first, namely the problem identification aspect, the activity carried out was to review the results of preliminary studies on mathematics and English subjects. The second aspect identifies the characteristics of mathematics and English learning at school. The activities carried out are looking at the books used at school and analyzing the books used. The third aspect is reviewing various theories and literature. The activities are reviewing the pop-up book concept, wetland concept, and theory of mathematical literacy abilities, reviewing previous research results and determining which pop-up book will be developed.

At the design stage, what is carried out is organizing the material that has been determined based on the curriculum study by selecting the material and subject matter. After determining the material and compiling the content of the material, the resulting design is designed using the software and applications used. The software used is Corel Draw and Canva. According to Masturah et al., (2018) in designing pop-up books, six principles must be considered, including a positive impression of pop-up books that are designed according to children's characteristics, using simple language that is easy for kindergarten children to understand, clarity of images in the form of illustrations. This layout makes children enjoy pop-up books with attractive images that can arouse children's motivation and arouse children's interest in learning to use pop-up books. This pop-up book uses colours that match the natural colours, namely the wetland environment. The colours used in the pop-up book are predominantly blue and green. Green is the colour of plants, and blue is the colour of water. Blue gives an excellent impression, while green gives a natural and beautiful impression. Using these two colours will make children feel like they are seeing wetlands.

The following design stage is to develop a validation sheet and teacher response questionnaire. Validation sheets are designed following BNSP but developed according to things assessed in the pop-up book, such as Indonesian language experts, English language experts, mathematicians and design experts. The teacher response questionnaire containing ten completed statements was assessed using a Likert scale (Taluke et al., 2019). The Likert scale is a psychometric scale that is often used in questionnaires and is widely used in research in the form of surveys. The scores used are 4, 3, 2, and 1. A score of 4 means strongly agree, three is agree, two is disagree, and one is strongly disagree.

The development stage is from the design stage, when the pop-up book is printed in a special printing press for pop-up books. Next, the printed pop-up book is assessed by the validator. (1) Indonesian language experts assess texts and animal names. The language used is Indonesian. The language (Indonesian vocabulary) used is appropriate for kindergarten

children. (2) English experts assess the English vocabulary presented in the pop-up book, such as English vocabulary for animals and numbers for the number of animals. The English vocabulary introduced is appropriate for kindergarten children. (3) mathematicians assess numeracy literacy presented in the pop-up book. The mathematics used is numbers and numbers. The numbers and numbers used are appropriate for kindergarten children. Moreover, (4) design experts assess the layout, images, composition of the type of writing, colours used, etc. The design used in the pop-up book is good and follows the base of this research, namely wetlands. The following is a presentation of the results of the pop-up book design.
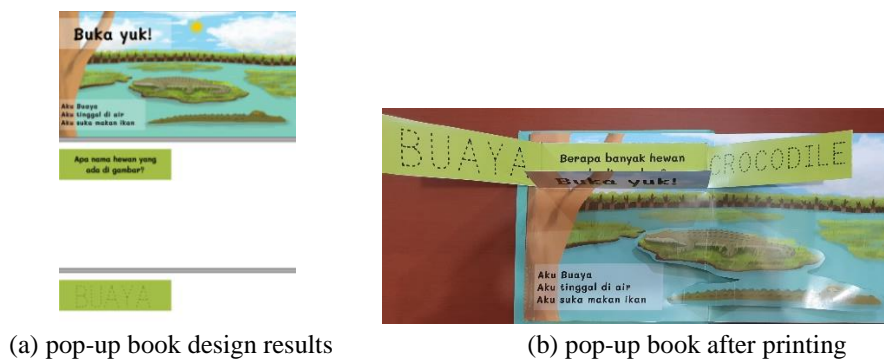

(a) pop-up book design results   (b) pop-up book after printing

Figure 4.1 Desain *pop-up book*
Source: Documentation

At the implementation stage, the pop-up book, which the validator had assessed, was tested at the Harapan Bangsa Kindergarten and tested on children. Before the trial, researchers taught class teachers the use of pop-up books. After the class teacher understands its use, the teacher uses it in the classroom. After learning to use pop-ups, class teachers were asked to fill out a teacher response questionnaire regarding the pop-up books that had been used. A teacher response questionnaire was used to assess practicality.

In the final stage, namely evaluation, children are asked to answer tests to measure the effectiveness of the pop-up book. There are three types of tests/pages presented. In the first test, children connected animals with their English vocabulary, in the second test, children connected the number of animals with numbers, and in the third test, children connected the number of animals with their English vocabulary for numbers.

CONCLUSIONS

This research shows that wetland-based pop-up books to improve English vocabulary and numeracy literacy skills in kindergarten are valid, practical and effective for use in kindergarten. So, using pop-up books can improve children's English vocabulary and numeracy literacy skills. Utilizing pop-up books in learning activities, especially in kindergarten, is important because children still think concretely.

The results of this research are expected to, (1) children can use pop-up books in learning, (2) teachers can develop pop-up books so that they can improve children's knowledge and motor skills, (3) school principals can provide facilities to teachers in developing pop-up books that can be used in learning and improving teacher competence and (4) other researchers can be used as references in developing books that are interesting to readers.

REFERENCES

1. Aldoobie, N. (2015). ADDIE Model. *American International Journal of Contemporary Research*, *5*(6). www.aijcrnet.com
2. Iriani, R., Herlina, A., Irhasyuarna, Y., Eko Sanjaya, R., & Brigjend Hasan Basri Kayu Tangi, J. H. (2019). Modul pembelajaran problem-based learning berbasis lahan basah untuk mempersiapkan calon pendidik berwawasan lingkungan lahan basah. *Jurnal Inovasi Pendidikan IPA*, *5*(1), 54–68. https://doi.org/10.21831/JIPI.V5I1.23337
3. Jannah, Aisyah Raudhatul Hamid, L., & Rostika, S. (2020). Media Pop Up Book Untuk Meningkatkan. *Jurnal Keislaman Dan Pendidikan*, *1*(2), 1–17.
4. Masturah, E. D., Mahadewi, L. P. P., & ... (2018). Pengembangan Media Pembelajaran Pop-Up Book pada Mata Pelajaran IPA Kelas III Sekolah Dasar. *Jurnal EDUTECH Univrsitas Pendidikan Ganesha*, *6*(2), 212–221. https://ejournal.undiksha.ac.id/index.php/JEU/article/view/20294
5. Munahefi, D. N., & Lestari, F. D. (2023). Pengembangan Kemampuan Literasi Numerasi Melalui Pembelajaran Tematik Terintegrasi Berbasis Proyek. *PRISMA, Prosiding Seminar Nasional Matematika*, *6*, 663–669. https://journal.unnes.ac.id/sju/index.php/prisma/
6. Prastitasari, H. (2018). *Pengembangan Bahan Ajar Berdasarkan Pendikatan Kontekstual pada Materi Bangun Datar untuk*

Siswa Kelas IV [Universitas Negeri Malang]. http://repository.um.ac.id/63299/

7. Prastitasari, H. (2019). PEMBELAJARAN MATEMATIKA BERBASIS PENDEKATAN KONTEKSTUAL. -, *5*(1), 83–88. https://www.rumahjurnal.net/index.php/PS2DMP/article/view/802

8. Prastitasari, H., annisa, muhsinah, sari, raihanah, Prasetyo, A. R., Jannah, F., & habibi, habibi. (2022). PELATIHAN PENGEMBANGAN PERANGKAT PEMBELAJARAN BERBASIS PENDEKATAN KONTEKSTUAL LAHAN BASAH BAGI GURU SD NEGERI PEMURUS 2 KABUPATEN BANJAR KALIMANTAN SELATAN. *ELEMENTARY SCHOOL JOURNAL PGSD FIP UNIMED*, *11*(3), 266–274. https://doi.org/10.24114/ESJPGSD.V11I3.26938

9. Prastitasari, H., Prastitasari, H., Isnani, N. M., Jumadi, J., Sari, D. D., & Wardhani, I. S. K. (2022). MINAT BELAJAR MATEMATIKA SISWA DI MASA PANDEMI COVID 19 DITINJAU DARI PERSPEKTIF GENDER. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, *11*(3), 849–861. https://doi.org/10.33578/jpfkip.v11i3.8959

10. Prastitasari, H., Qohar, A., & Sa'dijah, C. (2018). Pengembangan Bahan Ajar Berdasarkan Pendekatan Kontekstual pada Materi Bangun Datar untuk Siswa Kelas IV. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, *3*(12), 1599–1605. https://doi.org/10.17977/JPTPP.V3I12.12554

11. Prihandoko, Y., Prastitasari, H., Fendrik, M., & Istianah, T. N. (2023). Implementation of the PREMIER model based on river area to improve fourth-grade students' mathematical problem-solving ability. *Journal Of Teaching And Learning In Elementary Education*, *6*(1), 27–38. https://jtlee.ejournal.unri.ac.id/index.php/JTLEE/article/view/7955

12. Rohaeni, S. (2020). Pengembangan Sistem Pembelajaran Dalam Implementasi Kurikulum 2013 Menggunakan Model Addie Pada Anak Usia Dini. *Instruksional*, *1*(2), 122. https://doi.org/10.24853/instruksional.1.2.122-130

13. Sakerani, S., Prastitasari, H., & Purwanti, R. (2022). Development of Wetland-Based Teaching Materials to Improve English Vocabulary, Reading Literacy Skills, Early Childhood Numeracy and Elementary School. *International Journal of Social Science and Human Research*, *5*(9). https://doi.org/10.47191/IJSSHR/V5-I9-44

14. Setiyanigrum, R. (2020). Media Pop-Up Book sebagai Media Pembelajaran Pascapandemi. *Seminar Nasional Pascasarjana 2020*, *2016*, 217–219.

15. Soendjoto, M. A. (2015). Sekilas Tentang Lahan-Basah dan Lingkungannya. *Prosiding Seminar Universitas Lambung Mangkurat 2015*, 1–20.

16. Sugihartini, N., & Yudiana, K. (2018). Addie Sebagai Model Pengembangan Media Instruksional. *Jurnal Pendidikan Teknologi Dan Kejuruan*, *15*(2), 277–286.

17. Susini, M., Ndruru, E., & Warmadewa, U. (2021). *Strategi meningkatkan kemampuan berbahasa inggris 1,2*. *1*(2), 37–48.

18. Taluke, D., Lakat, R. S. M., Sembel, A., Mangrove, E., & Bahwa, M. (2019). Analisis Preferensi Masyarakat Dalam Pengelolaan Ekosistem Mangrove Di Pesisir Pantai Kecamatan Loloda Kabupaten Halmahera Barat. *Spasial*, *6*(2), 531–540.

19. Winda, P., Pangestu, W. T., & Malaikosa, Y. M. L. (2022). Pengaruh Penggunaan Media Pop-Up Book Terhadap Hasil Belajar Siswa Kelas V Di Sekolah Dasar. *Jurnal Holistika*, *6*(1), 1. https://doi.org/10.24853/holistika.6.1.1-7

20. Yuliani, W., Banjarnahor, N., kunci, K., Penelitian Pengembangan, M., & dan Konseling, B. (2021). METODE PENELITIAN PENGEMBANGAN (RND) DALAM BIMBINGAN DAN KONSELING. *QUANTA*, *5*(3), 111–118. https://doi.org/10.22460/Q.V5I3P111-118.3051