

Development of Pop-up Book Media Based on Scientific Literacy for Class V SD Muhammadiyah 1 Kisaran

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ABSTRACT

This study aims to determine the validity, practicality, and effectiveness of pop-up books in science lessons on the food digestive system. This type of research is the ADDIE (Analyze, Design, Development, Implementation and Evaluation) model development research. Data collection techniques in this study are observation, interviews, validation and tests. This research was conducted in class V. The results showed 1) Valid products in terms of material were 95%, media 96%, scientific literacy 92%, language 91%; 2) The product received a positive response from students with a percentage of 83%; and the proportion of classical completeness reaches 85% or most of the student learning outcomes are declared complete.

KEYWORDS

development; pop-up book; learning outcomes

INTRODUCTION

Natural science is a subject that studies events that occur in nature. Natural science lessons in elementary schools contain material about natural knowledge that is close to the lives of elementary school students, so students are expected to be able to recognize and know this natural knowledge in their daily lives (Indrastuti, 2017).

Natural sciences should be implemented properly in the learning process at school considering the importance of these subjects such as natural science which will be very useful for students' lives or work in the future, train students to think critically, and be able to hone the potential of children to be able to form a good personality qualified overall. But in reality, there are still many students who have low natural science learning outcomes because they have not reached the standard of completeness that has been set.

This fact can be proven by the results of repeat science lessons on Theme 3 Healthy Food in the last 3 years which were obtained by researchers during observations and interviews which took place in September 2022 in class V SD Muhammadiyah 1 Kisaran. The results of the repetition of Science lessons on Theme 3 Healthy Food for class V students showed a percentage of 84% in 20019/2020, a percentage of 44.44% in 2020/2021, and a percentage of 39.58% in 2021/2022.

Based on the data presented, it is known that there are some students who obtain learning outcomes that have not reached the minimum completeness criteria (KKM). This is because the media used by teachers in teaching is still monotonous and does not interest students, such as only using pictures in student books which can lead to boredom, laziness and low learning outcomes.

Based on the low grade V science learning outcomes, visualization is needed in the form of interesting pictures and media (Chalid, S., Hanim, H., Anggraini, Y., Bahri, H., & Damanik, U. A, 2022). By creating visualizations, the learning process on the theme of

Healthy Food that occurs can be displayed in more detail and will certainly attract students' interest in learning and understanding it (Haryoko, S, 2009; Hildayah, D,2019). One of the learning media that can attract students' interest to learn is in the form of pop-up book media.

Hanifah (2014) contends that pop-up book media may be a three-dimensional instructing help that can fortify children's creative energy and increment information so that it can make it less demanding for children to know the portrayal of the shape of an object, enrich lexicon and increment children's understanding. Moreover clarifies that pop-up book media may be a sort of 3D media that can have an curiously impact, since each page that's opened will show an decorated image and fabric contained within the pop-up book can be adapted to the educating fabric to be passed on.

Pop-up book media is anticipated to assist students' cognitive viewpoints in satisfying logical education to confront different challenges within the 21st century (Dewanti. H, 2018; Dwi, W, 2019; . Logical proficiency is one of the abilities required within the 21st century among 16 abilities recognized by the World Financial Gathering. Logical proficiency is vital for understudies to get it the environment, wellbeing, economy, present day social, and innovation. Hence, measuring logical proficiency is vital to decide the level of logical education of understudies in arrange to attain tall or great logical proficiency so that the quality of instruction in Indonesia can progress and be able to compete with other nations.

Based on PISA (Program for Worldwide Understudy Evaluation) information, Indonesia is included in a moo education level, to be specific within the foot 10 of 79 partaking countries when scientific education could be a exceptionally critical figure in deciding the quality of instruction in a country. Logical education is really not a unused thing within the world of instruction. Be that as it may, since the final two decades, logical proficiency has ended up the most point in each discussion with respect to the objectives of science instruction in schools (Alika, M.F, 2018).

Writing within the field of science instruction shows that scientific proficiency is progressively being acknowledged and esteemed by teachers as an anticipated learning result. Agreeing to Rahayu, A.I. (2014). logical education could be a person's capacity to get it science, communicate science (verbal and composed), and apply logical information to unravel issues so that they have a tall demeanor and affectability towards themselves and their environment in making choices based on logical contemplations. The decay within the comes about of students' logical education aptitudes in Indonesia is caused by a few variables. One of the components for moo logical proficiency is due to the need of intrigued within the learning media utilized.

It is often found in educational institutions that there are a number of learning media that are less than optimal, such as reduced numbers and components, poor quality, and media that are not accessible. So that if the media is forced to be used it will result in the student's position being burdened, from feeling burdened students will not be interested because before using the media, students must already be faced with problems to use and understand the media used. From then on they will not be interested in the same media in the future. So it is undeniable, it will produce boredom, laziness and impose learning risks on students. And in the end the learning objectives that should be carried out efficiently and effectively did not go well.

These problems require alternatives and appropriate steps to improve the quality of learning literacy which can also improve student learning outcomes. One way would be researchers do that by developing.

RESEARCH METHODS

This research is research development (Research and Development). Development research is research designed in a structured and systematic way to develop a product through certain stages and evaluations to test the quality level of the product being developed. The development research design used in this research is the ADDIE design (Analysis, Design, Development, Implementation, and Evaluation) (Sigihartini, N, 2018)..

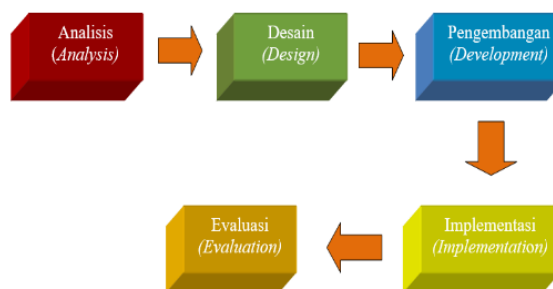


Figure 1. ADDIE Model Research and Development Scheme

The selection of the ADDIE model was based on the consideration that this model was developed systematically and based on the theoretical foundation of pop-up book design. Other analysis also explained that this model is also programmed with systematic sequences of activities so that it is easy to understand and implement for developing development products such as pop-up books (Masturah, Mahadewi, Simamora, 2018).

The following describes the steps of the ADDIE model development research: (1) Analysis. The first step of research and development is to analyze the needs of product development. Product development begins with the emergence of a problem that is not relevant to user needs. The analysis was carried out on three aspects, namely the curriculum, the characteristics of the students, and the needs of the students themselves. (2) Design. After the analysis phase is carried out, the next step is to carry out the design stage regarding the pop-up book media that will be made so that a prototype (example of teaching media) is obtained. This stage consists of four steps, namely determining the outline of the material and adjusting it to the Competency Standards and Basic Competency in the syllabus, collecting various information regarding the material, illustrations, and other materials to compile a pop-up book, choosing the form of presentation of the pop-up book.

The up book used is made as attractive as possible and in accordance with the demands of scientific literacy, and finally compiling a learning achievement test as an evaluation tool that distinguishes students who use the pop-up book teaching materials developed from students who only use ordinary textbooks. (3) Development. This stage is the stage of transforming the product design into a physical form, so that this activity produces a development prototype product. At this stage the researcher is also guided by a team of experts as a validator who provides assessments, criticisms and directions so that the resulting product is declared valid and worthy of proceeding to the next stage. (4) Implementation. At this stage after the product has been validated by validation experts, then implement the product being developed. The results of the development will be applied in the learning process. In this stage the developed pop-up book will be tested in real terms in the field to obtain an overview of the effectiveness of the product. (5) Evaluation. In this stage the researcher does evaluation which includes formative evaluation and summative evaluation. In the formative evaluation, data collection is carried out at each stage to improve the product. In this case the data referred to as a form of criticism, suggestions, and validator input. Furthermore, a summative evaluation is carried out at the end of the program to

determine differences in student learning outcomes and the effectiveness of the products developed.

This research and development was carried out at Muhammadiyah 1 Kisaran Private Elementary School. The subjects of this study were students of class Va as the control class and Vb as the experimental class. In a study, data collection techniques are the most important step in conducting a study, because the main purpose of research is to obtain data (Sugiono, 2016). The data collection instrument in this study is an assessment instrument to assess the products that have been developed. In this development research, the data collection techniques used were observation, interviews, validation, and tests. The data collection process uses instruments such as questionnaires and test instruments. Analysis of instrument validation test data was carried out using the product moment correlation formula, then product validation data was analyzed using the formula:

$$P = \frac{\sum x}{N} \times 100 \%$$

(Sihotang, 2015)

Information:

Q: Category percentage

Σ : Total score of answers

N: Total ideal score

Product effectiveness can be seen from the results of student learning completeness. Data on student learning outcomes were analyzed using the formula:

$$KB = \frac{T}{Tt} \times 100$$

(Trianto, 2018)

Information:

KB: Mastery learning

T: The number of scores obtained by students

Tt: The total score

RESULTS AND DISCUSSION

Research and development is carried out according to the stages of research and development of the ADDIE model (Analyze, Design, Development, Implementation, and Evaluation) as follows:

Analysis Phase

Analysis is the main stage in the ADDIE model development research to develop a product until finally the product is declared of quality. The results of the analysis of the curriculum and student characteristics indicate that learning resources are needed to support the digestive system material in humans. The media needed by students is teaching media that is able to help students in learning because it is presented with attractive pictures and explanations that are easy for students to understand.

Design Stage

Design planning is carried out in accordance with the analysis and data collection activities that have been carried out. The planning stage in this development research is based on ordinary reading books which do not contain elements of movement on the page so that researchers design and develop ordinary books into pop-up books that have a touch of interaction between the reader and the book. Next, the researcher started to design the design according to the needs of the students. The design used to make pop-up books consists of several components such as materials, pictures, and evaluations to determine learning outcomes. The selection of images is related to the content of the material which can help students understand the contents of the reading easily.



Figure 2. Pop-up book media design

Development Stage

At this development stage it is adjusted to the material design and product design design at the previous design stage, then validation is carried out on the pop-up book media product that has been produced. Pop-up book media is produced by utilizing the Microsoft office word 2021 software application and the Photoshop application.

In this development research, researchers used the help of 4 validators to assess material, media, literacy, and language. The average percentage of material is 95%, media is 96%, scientific literacy is 92% and language is 91%. These results are shown in the diagram below:

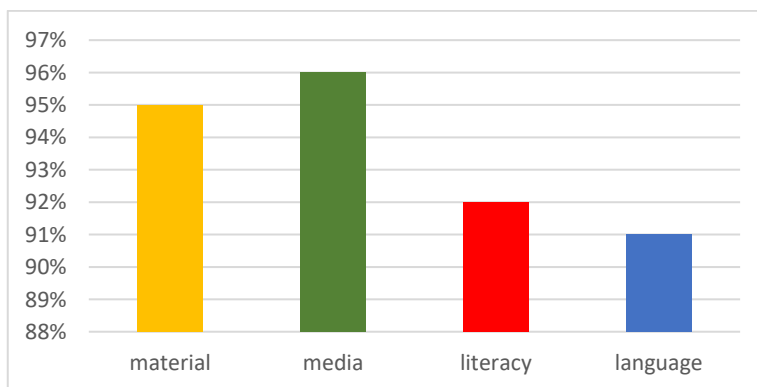


Figure 3. Product Validation Recapitulation Results

The picture above is a recapitulation of validation results by all experts or validators. It can be seen that the pop-up book media product belongs to the criteria of being suitable for use in the learning process, and it can be said that there is no need for revision or improvement of the pop-up book content.

Implementation Stage

At the implementation stage, the researcher began implementing the product to the user subjects, namely students in class Va and Vb at Muhammadiyah 1 Kisaran Private Elementary School. The trial process was carried out face to face by giving an explanation beforehand. After that, the researcher gave a post test and a student response questionnaire after using the pop-up book product as a learning medium.

The results of the student response questionnaire analysis showed that the majority of students had an interest in the pop-up book, 18 out of 22 students felt interested in the book. Whether or not the pop-up book media is effective can be seen through the results of the analysis of student learning completeness. The percentage of student learning completeness can be known through the learning outcomes data. In this study, student learning completeness was viewed from students' ability to understand the learning concepts described in table 1

Table 1. Student Learning Outcomes

Value	Pretest	Posttest
Lowest	40	80
highest	67	93
average	54	87

Based on the data above, it can be seen that there is a significant difference in the pre-test and post-test, to be precise in the percentage of students who pass. Thus, the ability to understand the concept of natural science material on the human digestive system has met classical completeness and the pop-up book learning media is declared effective.

Evaluation Stage

The final stage of this research and development is evaluation. At this stage, the researcher reconsidered suggestions or input related to learning media developed for students and teachers of class V Muhammadiyah 1 Kisaran Private Elementary School as product users. Evaluation is carried out to provide feedback on input from product users. The ultimate goal of evaluation activities is to measure the achievement of research and development objectives.

Based on the validation results of data collection instruments, both questionnaires and test instruments, as well as validation of learning tools and product development, the pop-up book media material for the digestive system in humans is declared to meet the validity criteria. Another criterion regarding the quality of learning media is the practicality of the teaching media itself. In the Big Indonesian Dictionary (KBBI), the word "practical" means easy and easy to use, so the practicality of the product in this study was measured using a teacher response questionnaire and a student response questionnaire as product users.

The results of the teacher response analysis showed that class teachers Va and Vb were interested in and happy to use pop-up book products for science lessons because the media in these books could meet students' learning needs. In addition to paying attention to the teacher's response, to find out how to use this pop-up book media is to analyze the results of the student response questionnaire. The practicality test was carried out on 22 students of

class Vb as product users. The results of the practicality test showed that 18 out of 22 students felt interested in the pop-up book media on the digestive system of humans.

From the time of observation to product trials, researchers found strengths and weaknesses in carrying out research, both those related to classrooms, teachers, students, and the researchers themselves. In science learning, it is seen that the teacher takes quite a long time to teach the material on the human digestive system to students, it is seen that students have difficulty understanding the organs related to the food digestive system and their functions. For this reason, additional learning resources are needed for students as a solution so that students understand the concept of food digestion well

CONCLUSION

Referring to the research results, a valid, practical, and effective pop-up book learning media product was obtained. Learning tools in the form of teaching media meet the product validity criteria of all experts or validators, where (1) the final results of material validation obtain an average percentage of 95%; (2) the final results of media validation obtained an average percentage of 96%; (3) the final results of scientific literacy validation obtained an average of 92%; and the final result of language validation obtained an average percentage of 91%. Thus it can be concluded that the product is very feasible to be used by teachers and students in learning natural science material on the digestive system. Pop-up book media meets practicality criteria. This can be seen from the student's response to product development which shows ease, pleasure, and interest in the pop-up book media. Based on the research results, the developed pop-up book media meets the product effectiveness criteria. This can be seen from the percentage of completeness in classical learning which reaches 83% or the majority of students are declared complete after studying the human digestive system with the help of pop-up book media. The results of this study help students improve their ability to understand science concepts and make pop-up book media an additional learning resource that supports teaching and learning activities.

REFERENCES

- Alika, M. F. (2018). Pengembangan soal model PISA untuk mengukur kemampuan berpikir tingkat tinggi siswa SMP pada materi pemanasan global. *Unnes Physics Education Journal*. 7(3), 58-65. <https://doi.org/10.15294/upej.v7i3.27678>
- Chalid, S., Hanim, H., Anggraini, Y., Bahri, H., & Damanik, U. A. (2022). Development of E-magazine Based on Flipbook Maker on the Pattern Drafting Home Clothing in the Faculty of Engineering Medan State University. *Randwick International of Education and Linguistics Science Journal*, 3(1), 101-111. <https://doi.org/10.47175/rielsj.v3i1.413>
- Dewanti, H. (2018). Pengembangan media pop-up book untuk pembelajaran lingkungan tempat tinggal kelas IV SD negeri pakunden kabupaten ponorogo. *Jurnal Kajian Teknologi Pendidikan*. 1(3), 221-228
- Dwi, W.(2019). Efektifitas media pop-up book pada pembelajaran kooperatif tipe make a match terhadap hasil belajar matematika. *Jurnal: Riset Pendidikan Dasar*. 2(2), 136-142.
- Hanifah, T. U. (2014). Pemanfaatan media pop-up book berbasis tematik untuk meningkatkan kecerdasan verbal-linguistik anak usia dini 4-5 tahun (studi eksperimen di tk negeri pembina bulu temanggung. *Belia*. 3(2), 46-54
- Haryoko, S. (2009). Efektifitas pemanfaatan media audio visual sebagai alternatif optimalisasi model pembelajaran. *Jurnal edukasi*. 5(1), 1-10.
- Hildayah, D. (2019). Penggunaan media visual, auditif, dan kinestetik untuk meningkatkan hasil belajar siswa. *Prosiding Seminar Nasional Pendidikan FKIP*.2(1), 137-146

- Indrastuti. (2017). Peningkatan aktivitas dan hasil belajar siswa melalui pembelajaran kooperatif tipe make a match. *Jurnal Pendidikan : Teori, Penelitian dan Pengembangan*. 2(8), 1037–1042.
- Masturah, Mahadewi, Simamora. (2018). Pengembangan media pop-up book pada mata pelajaran IPA kelas III sekolah dasar. *Jurnal EDUTECH*. 6(2): 212-221.
- Rahayu, A.I. (2014). Analisis penyajian panduan pembelajaran literasi sains dalam buku tematik terpadu kelas iv kurikulum 2013. *Mimbar Sekolah Dasar*, 1(2), 226–233.
- Sigihartini, N. (2018). Addie sebagai model pengembangan media instruksional edukatif (mie) mata kuliah kurikulum dan pengembangan. *Jurnal Pendidikan Teknologi dan Kejuruan*. 15(2), 277-286.