

Development of Traditional Parmayaman-Based Digital Flifbooks in Increasing Scientific Literacy in the Disruptive Era

Nirwana Anas¹, Ahmad Tarmizi Hasibuan^{1*}

¹State Islamic University of North Sumatera, Medan, Indonesia.

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Corresponding Author:
Ahmad Tarmizi Hasibuan
roszi0508@gmail.com

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Abstract: The Covid 19 outbreak has reduced elementary age children's interest in reading, especially in the field of science. This becomes a problem, which makes education practitioners to make online learning interesting and fun. Digital Flipbook media is a "Patent" solution that is applied to children. One of the suitable learning materials to be made into Flipbook learning media is local Parmayaman. Local Parmayaman can also improve Science Literacy. This research uses an R&D approach with development steps. The product trials used in this study used a pre-experimental design with the one-group pretest-posttest method. The type of data used is qualitative and quantitative. The research results show that it has passed the validation of media experts, material experts, and scientific literacy instrument experts. Flipbook digital media based on local Parmayaman is valid and suitable for use as learning media after going through the improvement stage according to the suggestions and comments given by experts. Judging from the validation results of media experts by 94%, material expert validation results by 93%, and Science Literacy instrument experts by 93% and "valid and very feasible". Judging from the results of the main field trials on 43 students, it was obtained from the scores of students working on Science Literacy questions using the pretest and posttest. These values are averaged and then N-gain is calculated. The calculation results obtained N-gain of 0.705. The N-gain score is included in the high category.

Keywords: Digital media; Flipbook; Science literacy

Introduction

The Covid-19 outbreak became an international pandemic after it was announced by the World Health Organization (WHO) (Pratiwi et al., 2020) and with the rapid spread in Indonesia, starting in March 2020, this has resulted in changes to life in Indonesia from various aspects (Agung, 2020). The significant change that is so prominent is in terms of education where previously learning was carried out face-to-face. But with the arrival of the Covid-19 outbreak, education has become online or often referred to as virtual (Cholifah et al., 2022). This has an impact on education practitioners to make online learning fun by developing interesting learning media (Sadikin et al., 2020).

Learning media is a tool used to convey the contents of learning material that can stimulate someone to learn. Learning media can be in the form of print or audiovisual and its equipment. So that the media can be

seen, heard, or read (Agustira et al., 2022). The development of interesting learning media can be realized by creating an interesting and conducive learning atmosphere. The meaning is by using audiovisual technology teaching materials or one of them is a digital book by integrating multimedia content into digital media or it can be called Multimedia Flipbook (Marliani, 2021).

Flipbook is a form of presenting book learning media in virtual form. Using flipbook media can assist teachers in presenting more interesting electronic teaching materials. This is because, flipbooks can present various pictures, videos, writing, animations, and so on (Sugianto et al., 2017).

Flipbooks can make interactive learning media because there are moving animations, video, audio, and so on, so that learning becomes more interesting and not monotonous (Habibi, 2017). Through previous research on the use of flipbooks in learning can increase student

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learning interest and affect their learning outcomes, students become easier to understand the material so as to increase the achievement of learning outcomes (Fitri et al., 2020).

Flipbooks are also structured to allow students to read, view pictures, listen and view videos, and can practice the procedures contained in the media (Maf'ula et al., 2017). The advantage of this media is that it can include files in the form of pdf, images, videos, animations, and has template designs, features such as backgrounds, control buttons, navigation bars, links and backgrounds so that the flipbook is made more attractive. Flipbooks can help improve students' mastery of abstract matters or events that cannot be presented in class (Cholifah et al., 2022).

One of the suitable learning materials to be made into Flipbook learning media is local *Parmayaman* because the delivery requires real-life pictures to increase students' understanding of the various types of local *Parmayaman*. The Flipbook media that will be developed is media which contains features in the form of real-life pictures that explain various kinds of local *Parmayaman* in Indonesia.

Parmayaman or game is a movement or recreational activity with the aim of having fun, filling spare time, or light exercise (Gandasari, 2019). Local *Parmayaman* or traditional games are games that have been passed down from one generation to the next. The game contains good value, positive, valuable and desirable. Local *Parmayaman* contains educational values that are indirectly visible, but are protected in a multidimensional symbol and values which include a sense of togetherness, honesty, discipline, courtesy, mutual cooperation, and other aspects of personality. Indonesia is rich in local varieties of *Parmayaman*. Local *Parmayaman* can be used as a means of education for children to stimulate the growth and development of children (Hidayat, 2013). Local *Parmayaman* is a traditional game that is adopted from the life conditions of the social environment of children in rural areas (Mahardika, 2021). In line with this statement, he concluded that "traditional games are activities that are carried out voluntarily and cause pleasure for the perpetrators, governed by game rules that are carried out based on hereditary traditions" (Ilyasaf et al., 2020).

Nearly no one plays local *Parmayaman* in society today. This can be seen from the activities of children who play with technology or modern games. Along with the changing times, traditional games are slowly being forgotten by most Indonesian people. In fact, not a few of them are not familiar with traditional games at all. Traditional games actually have benefits for society (Wahyuniati et al., 2023). Apart from not spending a lot of money, it can also nourish the body, both physically and mentally, and foster a sense of social solidarity by not dissolving the cultural values that exist in society. In

this study teaching materials were developed on the basis of local *Parmayaman* in accordance with the theory that learning that connects local potential with learning materials will help students meet learning objectives. Students who have learning experiences related to local wisdom will tend to get cognitive improvements because they are more motivated.

Local *Parmayaman* can also improve Scientific Literacy. This can be seen from Hidayat (2013) which states that Scientific Literacy is a basic aspect that must be possessed by students which is used to absorb various sources of information received. Literacy Science reading can be used as a means for students to know, understand, and apply the knowledge they get at school (Utami et al., 2021). Scientific Literacy includes the meaning of doing technology, thinking critically, being sensitive to the surrounding environment, and being able to apply the concepts read (Budiasuti et al., 2023). Someone can be said to have Scientific Literacy ability if they can understand something because they read and do something based on their reading comprehension (Iskandar et al., 2019).

This encourages researchers in the Industry 4.0 generation to explore local *Parmayaman* by creating interesting and fun learning by making local *Parmayaman*-based digital flipbooks to improve Elementary students' Science Literacy (Nurhabibah et al., 2023). This Flipbook media will be tested in learning in elementary schools to determine the validity and effect of using local *Parmayaman*-based Flipbook media which will awaken local *Parmayaman* and to increase the Scientific Literacy of elementary students in Batang Baruhar Jae Village during the Disruption era.

Method

Research uses an approach (R&D) with development steps (R&D) (Sugiyono, 2014). The systematics of research can be below.

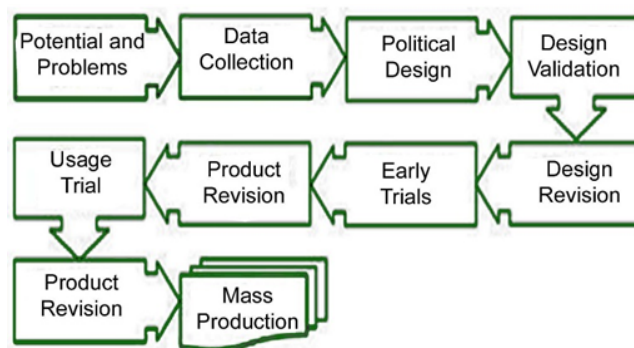


Figure 1. The flow of making a flipbook

Product trial design used in this study used a pre-experimental design with the one-group pretest-posttest method.

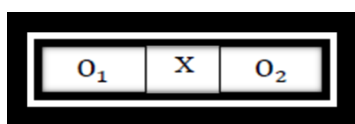


Figure 2. Pre-experiment formula

It can be explained that O₁ is the Science Literacy of students before being given the learning treatment using Digital Flipbook Media based on Local *Parmayaman* by providing pretest instruments, X is the treatment given to students in the form of learning with Digital Flipbook Media based on Local *Parmayaman* (result of development), and O₂ is Science Literacy after students get treatment by giving a posttest. The tryout was carried out in 5 stages, namely material expert validation, media expert validation, reading Science Literacy instrument expert validation, preliminary field trials, and main field trials. The subject of the material expert validation test was 1 PGSD lecturer who was an expert in thematic learning. The subject of the media expert validation test is 1 lecturer who is an expert in the development of instructional media. The subject of the media expert validation test is 1 lecturer who is an expert in Scientific Literacy. The subjects of the preliminary field trial were fifth grade students at SDN outside Batang Baruhar Jae village with a total of 19 students. The subjects of the main field trials were grade V students at SDN 111220 and SDN 101340 Batang Baruhar Jae with a total of 43 students.

The type of data used in this research is qualitative and quantitative data. Qualitative data in this study were obtained from interviews, questionnaires, and observations. Quantitative data in this study were obtained from the results of material expert validation, media expert validation, Scientific Literacy instrument expert validation, results of working on Scientific Literacy questions, and results of working on student response questionnaires.

The data collection instruments in this study were divided into three, namely preliminary study instruments, product development instruments and product trial instruments. Preliminary study instruments include interview sheets and learning descriptive observation sheets (Sukmawati et al., 2023). Product development instruments are in the form of product validation sheets, and Scientific Literacy instrument validation sheets (Indriana et al., 2023). Flipbook digital product trial instrument based on Local *Parmayaman*.

Result and Discussion

Research and development resulted in a product in the form of Digital Media Flipbook based on Local *Parmayaman* to Increase the Science Literacy of Elementary School Students in Batang Baruhar Jae Village, Era Disruspi. This research and development

uses the studies and development research method with the following steps: (1) potential and problems, in this stage field observations (surveys and observations), this stage is carried out by way of interviews and observations conducted at SDN 111220 and SDN 101340 dated June 13 2022 to analyze problems in students' learning and Science Literacy. The results of observations made in the field showed that the use of media for the learning process was implemented at SDN 111220 and SDN 101340 Batang Baruhar Jae only using student books so that students felt bored while studying in class. In terms of local *Parmayaman* material, many students do not know the existing local *Parmayaman*. While the results of the questionnaire given to students showed that students had difficulty understanding the material presented and also that students' scientific literacy was very low; and gathering information, in this stage conducting needs analysis, curriculum analysis, and analyzing material; and the results of the product design developed in the form of Flipbook virtual media based on Local *Parmayaman* to Increase the Science Literacy of Elementary School Students in Batang Baruhar Jae Village during the disruption era which has been described through storyboards. This development product is also equipped with a guidebook for the use of media with size B5 wherein the guidebook contains KI, KD, instructions for using media, and questions on scientific literacy.

In the process of making this media is the final process of making media. The steps that must be taken in making virtual Media Flipbook based on Local *Parmayaman* to Increase Science Literacy of Elementary School Students in Batang Baruhar Village during the disruption era are by downloading the corporate edition PDF flip application, preparing material in word of various local *Parmayaman* then converting the record into PDF, opening the application flip PDF company version and import PDF material into the application, then you can add music to the application or pictures etc., then save it on the internet so that it can be easily accessed from cellphones. Flipbook virtual media based on Local *Parmayaman* to Increase Science Literacy of Elementary School Students in Batang Baruhar Jae Village. Product Design Validation was carried out by media experts, material experts, and Scientific Literacy instrument experts with the validator PGSD Yogyakarta State University lecturer.

Based on Figure 2, it can be seen that the percentage of the results of the media expert validator's assessment obtained a score of 94% was categorized as valid without revision, material experts obtained a score of 93% which was categorized as valid without revision, scientific literacy instrument expert validation obtained a score of 93% categorized as valid without revision, and student responses in the main field trial it can be seen that the total score obtained at 111220 and SDN 101340 is 4090

with an average of 95, so it can be categorized as "Very Good". Based on the scores obtained from SDN 111220 and SDN 101340, it can be concluded that Digital Media Flipbook based on Local *Parmayaman* to Improve Scientific Literacy of Elementary School Students in Batang Baruhar Jae Village in the Disruption Era is appropriate to be used as a supplementary learning media. Product Design Revisions were carried out according to suggestions and comments from experts and Preliminary Trials were carried out on fifth grade students with a total of 19 students by looking at the level of student knowledge from high, medium to low. The results of the preliminary trials were obtained from the scores of students doing the Science Literacy questions using the pretest and posttest, then these values were averaged and then N-gain was calculated, and the calculation results obtained an N-gain of 0.733, the N-gain score was included in the high category (Asyhari et al., 2015).

Then the Product Revision was carried out after carrying out an initial trial by looking at the grades and comments from the students; and the Usage Trial was carried out at SDN 111220 and SDN 101340 with a total of 43 students obtained from the scores on students' Science Literacy questions using the pretest and posttest then these values were averaged then calculated N-gain, from the calculation results obtained N-gain of 0.705, score N-gain is included in the high category. Product revisions refer to suggestions and comments from the results of observations on usage trials. As for the revisions made, namely when practicing local *Parmayaman* it would be better not to be in a hurry so that students better understand local *Parmayaman* and the values contained in local *Parmayaman*. Local *Parmayaman*-based Digital Flipbook Media to Improve Reading Science Literacy for Elementary School Students in Batang Baruhar Village in the Disruption Era received a good response, namely making all students aware of various kinds of local *Parmayaman* and also being able to increase students' Science Literacy.

The final product is Digital Media Flipbook based on Local *Parmayaman* to Improve Science Literacy of Elementary School Students in Batang Baruhar Jae Village in the Disruption Era. Based on initial observations made by researchers with homeroom teachers for class V SDN 111220 and SDN 101340 before using local *Parmayaman*-based digital flipbook media, the media used in schools was less varied. This makes it difficult for students to understand the material and also students do not know the various kinds of local *Parmayaman*. Students find it difficult to understand material that only pays attention to notebooks and is only limited to student books, there are no other supporting books. In line with learning media are all forms and means of conveying information that are made or used in accordance with learning theory, can be

used for learning purposes in conveying messages, stimulating students' thoughts, feelings, concerns, and willingness so that they can encourage a learning process that is intentional, purposeful, and controlled (Mahnun, 2012).

The use of learning media that can improve Scientific Literacy is needed for students, namely the use of flipbook media. Flipbook is a form of presenting book learning media in virtual form (Mulyaningsih et al., 2017). According to Cholifah et al. (2022) the use of flipbooks helps teachers present more interesting electronic teaching materials, because flipbooks can present pictures, videos, writing, animations, and so on. Local *Parmayaman* material is material that is important to use for learning support books. The local *Parmayaman* supplement book is one of the efforts to introduce local culture or wisdom in Indonesia. According to Kurniasari et al. (2019) Local *Parmayaman* or traditional games are games inherited from ancestors that are mandatory and need to be preserved because they contain local wisdom values. In line with this statement, Dewi et al. (2020) concludes that "traditional games are activities that are carried out voluntarily and cause pleasure for the perpetrators, governed by game rules that are carried out based on hereditary traditions". Local *Parmayaman* can also improve Scientific Literacy, this means that the definition of Scientific Literacy must take into account the nature of a concept that examines existence, contextual, consequences, relative, and culturally bound. After using local *Parmayaman*-based digital media flipbooks, students' scientific literacy has increased, students tend to be enthusiastic about learning, and know the context of reading content because many local *Parmayaman* practices are taught directly. As well as the media developed is categorized as appropriate for use as a supplementary book in learning after product validation tests and usage trials have been carried out (Su'udiah et al., 2016).

This is proven through the validation of material experts, validation of media experts, validation of reading Science Literacy instruments, student response questionnaires and observations that have been made. The following are the supporting aspects which state the feasibility of Local *Parmayaman*-based Digital Flipbook Media to Increase the Scientific Literacy of Elementary School Students in Batang Baruhar Village in the Disruption Era.

Conclusion

Based on the research that has been done, it can be concluded that Digital Flipbook media based on Local *Parmayaman* to Improve Scientific Literacy of Elementary School Students in Batang Baruhar Village during the Disruption Era has passed the validation of media experts, material experts, Science Literacy

instrument experts. Flipbook digital media based on local *Parmayaman* is valid and suitable for use as learning media after going through the improvement stage according to the suggestions and comments given by experts. Seeing from the results of the validation of media experts by 94%, the results of the validation of material experts by 93%, and the scientific literacy instrument expert by 93%. Based on the results of the above, the product developed by the researcher, namely Media Digital Flipbook based on Local *Parmayaman* to Increase the Science Literacy of Elementary School Students in Batang Baruhar Village during the Disruption Era, is said to be "valid and very feasible" to be used as a supplementary learning media. Digital Media Flipbook based on Local *Parmayaman* to Improve Science Literacy of Elementary School Students in Batang Baruhar Village during the Disruption Era which was developed can increase students' Science Literacy. Judging from the results of the main field trials on 43 students, it was obtained from the scores of students working on Science Literacy questions using the pretest and posttest. These values are averaged and then N-gain is calculated. The calculation results obtained N-gain of 0.705. The N-gain score is included in the high category. So it can be said that flipbook digital media can improve the Science Literacy of elementary school students in Batang Baruhar Jae Village in the Disruption Era.

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