Jurnal Penelitian dan Pengembangan Pendidikan
Volume 6, Number 2, Tahun 2022, pp. 266-274
P-ISSN: 1979-7109 E-ISSN: 2615-4498
Open Access: https://doi.org/10.23887/jppp.v6i2.50636

Learning Media Innovation: Lift the Flap Book Digital in Increasing Interest in Learning Science for Third-Grade Elementary School Students

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ARTICLE INFO

Article history:
Received March 09, 2022
Revised March 12, 2022
Accepted July 04, 2022
Available online July 25, 2022

Kata Kunci:
Pandemic Covid-19, Online Learning, Digital Media

Keywords:
Pandemi Covid-19, Pembelajaran Online, Media Digital

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ABSTRAK

Pandemi COVID-19 di Indonesia berdampak pada semua sektor, termasuk sektor pendidikan. Pandemi ini berdampak pada perubahan penggunaan sistem pembelajaran tatap muka menjadi pembelajaran online atau jarak jauh. Dalam sistem pembelajaran jarak jauh ini, guru dituntut untuk menyampaikan materi pembelajaran dengan baik dan menyenangkan kepada siswa. Penelitian ini bertujuan untuk mengembangkan media digital lift the flap book untuk meningkatkan minat belajar siswa di masa pandemi. Jenis penelitian ini yaitu pengembangan dengan menggunakan metode ADDIE. Populasi penelitian ini berjumla 24 siswa. Metode yang digunakan dalam pengumpulan data adalah observasi, wawancara dan angket. Instrumen yang digunakan dalam pengumpulan data adalah lembar angket. Teknik analisis data yang digunakan dalam menganalisis data penelitian yaitu analisis deskriptif kualitatif dan kuantitatif. Hasil analisis yaitu media digital Lift The Flap Book mendapatkan kualifikasi yang sangat baik dari para ahli sehingga layak digunakan dalam pembelajaran. Disimpulkan bahwa media sangat cocok untuk meningkatkan minat belajar siswa kelas tiga sekolah dasar selama masa pandemi.

ABSTRACT

The The COVID-19 pandemic in Indonesia impacts all sectors, including the education sector. This pandemic has changed the use of face-to-face learning systems to online or distance learning. In this distance learning system, teachers are required to deliver learning materials well and pleasantly to students. This study aims to develop lift the flap book digital media to increase student interest in learning during the pandemic. This type of research is developed using the ADDIE method. The population of this study amounted to 24 students. The method used in data collection is observation, interviews, and questionnaires. The instrument used in data collection is a questionnaire sheet. The data analysis technique used to analyze the research data is descriptive qualitative and quantitative. The result of the analysis is that Lift The Flap Book's digital media received very good qualifications from experts to be suitable for use in learning. It was concluded that the media was very suitable for increasing the learning interest of third-grade elementary school students during the pandemic.

1. INTRODUCTION

The Corona Virus Disease outbreak, also known as Covid-19, has shocked several countries globally, especially in Indonesia. This covid-19 virus first occurred in Wuhan, China, in December 2019 and came to Indonesia in early 2020, precisely in March. The outbreak of the covid-19 virus has closed various existing institutions, including educational institutions, to interact directly (Haryati et al., 2021; Wahyuni et al., 2021). The closure of this educational institution resulted in a change in the learning system that started face-to-face to now turn into online (Purnamasari et al., 2020; Ridha et al., 2021; Sintema, 2020). This change in the learning system to online requires teachers to take a creative approach in a short period (Muthuprasad et al., 2021; Rasmitadila et al., 2020). So that teachers begin to use existing and new technologies to support student learning online, namely using platforms such as *WhatsApp* groups, Zoom, Google Meet, Microsoft Teams, and various other online (Jones et al., 2021; Kalogerou, 2020; Setiawan & Aden, 2020).

Learning done at home online changes student habits that cause bored on Android not to meet with peers that interest in learning decreases (Fikri et al., 2021; Sutarto et al., 2020). However, interest in

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learning is significant during the learning process. The teacher in learning media can cause a student's interest in the learning process. The learning media used by the teacher is not only integrated but can also increase students' interest in learning to be able to learn more about the themes or topics discussed in the media (Kristanto et al., 2021; Sukendar et al., 2018; Suryawan et al., 2021). If students have a high interest in learning, it will produce significant learning achievements (Awe & Benge, 2017; Fauziah et al., 2017; Ricardo & Meilani, 2017). On the other hand, low interest in the learning process means that learning outcomes and motivation decrease (Fauziah et al., 2017; Nurrita, 2018; Waluya et al., 2019).

Based on the results of a survey conducted by *the Program for International Student Assessment (PISA)* in 2012, which was reported, pop-up in the field of science, Indonesia students were ranked 64th out of 65 countries with an average score of 382, while Malaysian students received an average score of 382. an average of 420, Thailand received an average score of 444, and Singapore obtained an average score of 551. This survey report shows that the quality of learning in Indonesia is still low, especially in science education (Nugrahanto & Zuchdi, 2019; Nusantara et al., 2021). This survey is also in line with The Program for International Student Assessment (PISA) in 2018, showing that students in Indonesia scored lower than the OECD average results in reading, science, and mathematics when compared to the OECD average. Some students in Indonesia only perform at the highest proficiency level at Level 5 or 6 in at least one subject. The picture above shows that the value of science in Indonesia only reaches 396, below the OECD average, which is a score of 489 (OECD, 2019).

Based on a preliminary study conducted by researchers, there is a decrease in interest in learning science in the material characteristics of classifying animals and plants in class III Ciracas 10 Elementary School. The results showed that the learning materials in books are challenging to understand, learning media are less effective, and many students are less active in participating in learning online so that students interested in learning to participate in science learning decreases. This study is shown, no more than 60% of students already have a high interest in learning. This state can be seen from the student learning outcomes of 24 students who have scored 85 to 100 only six students, four students who get 75 points, five students who earn 65 points, and the rest get 50 marks as many as nine students. So, as a solution, the researchers used the innovative Lift the flap book digital learning media in increasing interest in learning science for third-grade elementary school students.

Research on interest in learning that has been carried out previously, such as developing an Interactive Multimedia Learning to increase student interest in learning, teachers use a variety of learning activities (Heru & Yuliani, 2020; Knoop-van Campen et al., 2020; Pranoto, 2021). Increasing students' interest in reading in English using narrative texts while creating student interest in learning and reading can be done with comic media (Kristiyanto & Rahayu, 2020; Phoon et al., 2020; Rachman, 2018). Developing snake and ladder game media to increase student interest in learning and social science learning outcomes in elementary schools (Syawaluddin et al., 2020). Understanding Student Interest in School Science Using learning episodes shows that when assessing the interest of a learning episode, students focus more on the form of the activity than on the topic of content and learning (Swarat et al., 2012). Interest in learning taught by high-quality teachers using ICT-based learning media is higher than the average student interest in learning that is not guided by high-quality teachers, with an average difference of 4,096 (Yusrizal et al., 2019).

Class teachers use E-Learning media, namely Quipper School to attract students' interest in learning English, so they are interested in improving English skills as a daily language during this era of globalization. Electronic modules developed using 3D Pageflip Professional software can be transferred such as books, pictures, audio, animation, and videos are needed to facilitate teachers in providing learning materials related to the culture of the students' environment (Asrial et al., 2020; Handayani et al., 2021; Wulandari et al., 2021). AR-based interactive learning media and pop-up books can increase the learning independence of autonomous students, namely by using mobile phones (Elmunsyah et al., 2019; Ruiz et al., 2014). Technological devices such as Android tablets and smartphones with camera functions run AR Technology as the primary device (Auliya & Munasiah, 2020; Elmunsyah et al., 2019). This study describes the various kinds of media used to increase interest in learning. Still, in this study, no one has innovated a way to increase student interest in learning in elementary schools by using digital lift the flap book media. This study aims to develop lift the flap book digital media to increase student interest in learning during the pandemic.

2. METHOD

The research method used is design-based research. The model used in the digital lift the flap book design is a development model from ADDIE. The ADDIE model consists of five stages: analysis, design, development, implementation, and Evaluation. First, the analysis stage analyzes student learning needs,

determines media objectives, and determines the content or material to be delivered in class III, selecting the appropriate media for learning. Second, the design stage compiles a flowchart to describe the content in the digital media lift the flap book, choosing the right images and colors for students. Third, the development stage is the stage to realize a product. At this stage, the researchers developed learning media carried out according to the design. Fourth, the implementation stage is the application of media that has been created and developed. Fifth, the evaluation stage is measuring the achievement of development goals.

The ADDIE development model in this study only uses two stages, namely the analyze stage and the design stage. At the analysis stage, the researcher determines the fundamental problems in learning. The situation felt by students is the low interest in the learning process because of difficulties in understanding the material. Therefore, students need Android tablet media that can help run active and effective learning activities. This stage was carried out by interviewing class teachers and distributing questionnaires to third-grade students in Ciracas 10 Elementary School. Furthermore, at the design stage, researchers designed media that functioned to increase student interest in learning during a pandemic in science lessons, in the form of a digital lift the flap book by making media flow in the form of flowcharts.

This research was conducted with 24 third-grade students at Ciracas 10 elementary school-aged analysis stage of 8-9 years. The methods used in collecting data are observation, interviews and questionnaires. The instrument used in collecting data is a questionnaire sheet. The technique used is a student learning interest questionnaire during a pandemic. The score rating for the validation of digital lift the flap book media is in table 1. Table 1 rating the media lift the flap book validation score. This digital form determines whether the media created by the researcher is suitable to be used as an increase in interest in learning science for third-grade elementary school students on animal growth materials. The data analysis technique used is descriptive qualitative and quantitative analysis.

Table 1. Rating The Validation Score of Digital Lift the Flap Book Media

Value Answer	Scale / Criteria
81-100	Very Eligible
61-80	Eligible
41-60	Fairly
21-40	Not Eligible
0-20	Very Inappropriate

3. RESULT AND DISCUSSION

Result

The analysis was conducted by interviewing the classroom teacher by asking several questions related to the learning process, the level of interest in learning, the use of learning media, the availability of instructional media, and students' character in everyday life. At this stage, learning media will be determined that need to be developed to help increase students' interest in learning science. In addition, a needs analysis was also carried out by filling out questionnaires by students given by researchers to determine interest in learning science during the pandemic. Based on data analysis, the results of the statement indicator answers regarding student learning interest during the pandemic. The first positive statement is about me taking science lessons with pleasure, 20.8% of students answered strongly agree, and 75.0% of students also agreed. The second statement, which is negative, is that the teacher is not pleasant in teaching in the classroom, causing me to be a lazy student to take science lessons, 37.5% of students answered strongly disagree, and 8.3% of students answered agree. The third statement is that I am passionate about learning science because the teacher teaches with fun media by getting 12.5% of students answering strongly agree, and 58.3% of students giving agreeable answers. The fourth statement is about trying to pay attention to the teacher while explaining the material by obtaining 8.3% of students answered strongly agree, and 20.8% of students gave agreeable answers while58.3% of students gave disagreed answers. This result proves that students strongly agree if the teacher teaches using fun learning media. Still, students' interest in learning science is also low because they ignore the material being explained by the teacher.

The fifth statement is about me taking notes when the teacher explains the material. This result showed that obtaining 33.3% of students giving answers strongly agreeing to note the material, 54.2% of students providing agreeable answers, while 4.2% of students giving answers strongly disagreeing with the teacher explaining the material students take notes. The sixth statement is about not having fun alone when the teacher explains learning material with fun learning media. By getting 16.7% of students answered strongly agree, 54.2% of students gave agreeable answers. In comparison, 12.5% of students gave strongly

disagreed answers if students prefer to be cool alone when explaining the material with fun learning media. The seventh statement is about an assignment/homework. Ask the teacher if I have difficulty understanding science learning material by obtaining 16.7% of students giving strongly agree answers, but 62.5% of students providing disagreeable answers and 12.5% of students giving strongly disagreeing answers. This statement also proves that students' interest in learning science is low because many students do not actively ask questions or participate in online learning. The eighth statement is about I enjoy trying to do science questions by getting 20.8% of students giving answers strongly agree and 66.7% of students giving answers agreeing to try to do science questions. Still, 12.5% of students do not decide to try to do science questions themselves because they have better do other fun activities if they are bored with online learning.

The ninth statement, which is about the task given by the teacher, made me more interested in learning science by getting 16.7% of students answered strongly agree, 70.8% of students gave agreed answers. In comparison, 4.2% of students answered strongly disagreed that they were interested in science learning if only given assignments. The tenth statement is about me doing the assignment/homework given by the teacher correctly by getting 25.0% of students answered strongly agree and 75.0% of students answered agree. The Eleventh Statement is about studying at night before learning the next day by obtaining 20.8% of students answered strongly agree, and 66.7% of students gave answers agreeing to study at night. In contrast to 8.3% of students responded that they did not agree, and 4.2% of students answered that they did not agree if they had to study at night. The twelfth statement is about more fun playing than repeating learning with learning media by getting 45.8% of students giving answers strongly disagree. However, 16.7% of students giving answers agreeing that playing is more fun than repeating learning. Even more so if it's learning science that they don't like.

The statement in the questionnaire on students' interest in learning science during this pandemic proved that there were two statements that grade III elementary school students had low interest in learning science, namely the fourth statement. This result showed that 58.3% of students answered that they disagreed if they had to pay attention to the teacher while explaining the material, and the seventh statement was 62.5%. Students answered disagree if students were led to actively ask the teacher if they had difficulty understanding the material. Therefore, researchers provide a solution to increase interest in learning science for grade III elementary school students with digital lift the flap book media. Media Lift The Flap Book Digital, which was developed in this research known as Lift The Flap Book Perwan (Animal Growth) Digital, is designed through a flowchart with three parts: introduction, content, and closing. The introduction section of the Media Lift, The Flap Book Digital, contains pages, namely a cover, foreword, and instructions for use. The second part has orientation, learning materials, and evaluation. The closing section includes a glossary, bibliography, and profile. The results of the development of the Digital Flap Book media are presented in Figure 1. Media validation related to the media aspect of Lift The Flap Book Digital is carried out through the validation of media, language, and material experts. The validation results in the Table 2.

Figure 1. The Flap Book Digital

Table 2. The results of the validation of media experts, linguists, and material experts.

Validator	The average percentage of validation results (%)	Scale/Criteria
Material Expert Validation	80%	Eligible
Media Expert Validation	80%	Eligible
Linguist Validation	100%	Very Eligible
The Average Overall Score	**87%**	**Very Eligible**

Based on the results of the digital media validation assessment questionnaire Lift The Flap Book in table 2 by material experts, an average percentage of 80% of the criteria for this media is considered

feasible. The validation assessment by media experts also gets an average percentage of 80% with criteria that are classified as feasible. In addition, validation assessments by linguists regarding language use get an average percentage of 100% with classified standards as very feasible. It can be concluded that the overall results of the digital lift the flap book learning media get 87% which indicates this media is very suitable for use by third-grade homework students in Ciracas 10 elementary school.

Discussion

The low interest in student learning during the pandemic caused teachers to complain about student participation in the online learning process (Fikri et al., 2021; Primasari & , Zulela, 2019). It is difficult for teachers to judge whether their students study seriously because of online learning. Some students are engrossed in themselves, such as intentionally posting recorded videos (Moorhouse, 2020). If a group discussion is conducted, some students will become silent readers, and their answers will be slightly shorter. This research is also supported that 1 out of 58 students know online learning very well (Suryaman et al., 2020). Twenty-three out of 58 students understand, and the rest answered that they understood little what was conveyed. In addition, students find it difficult to understand the learning materials provided by the teacher even though they have used various media platforms. This state is the cause of students' low interest in learning science.

One way to overcome the problem of students' low interest in learning science is done with the help of learning media. The use of media in learning is a must in this digital era because elementary school students are members of the Alpha generation who are naturally familiar with the technology (Abdullah et al., 2021; Riyanto & Gunarhadi, 2017; Saputri et al., 2021). Instructional media is a teaching aid or material that can be used by a teacher in conveying the topic of learning material to students to make it easier for students to understand the material that has been given. Instructional media also has a significant influence on the quality of education (Admadja et al., 2016; Ahmadi & Maharani, 2019; Nopriyanti & Sudira, 2015). There are criteria that need to be considered in choosing learning media, namely firstly, attractive, which means that the media used by a teacher must be appealing to students. It can motivate or interest students to learn; third, learning media must be relevant/appropriate according to students' age and learning materials. In addition, instructional media are classified as Audio Media, Visual Media, Audio-Visual Media, Multimedia, and a Media Reality (Hyun-Jeong Lee, 2015; Nomleni & Manu, 2018).

Instructional media to improve the learning experience and attract elementary school students' interest is by integrating books, computers, and robots (Chen et al., 2011; Simanjuntak & Budi, 2018). Based on the results of the validation, the instructional media "Lift The Flap Book Perwan (Animal Growth) Digital" by material experts, media experts, and linguists shows that this media has an average criterion of being very suitable for learning for third-grade elementary school that students. This state can be seen in the aspect of the suitability of the media with students' cognitive development, which is measured in the media validity test. Validation of media includes the suitability of the media with essential competencies and indicators, the accuracy of the objectives of science learning, the material presented in this media is by during this the truth of science and instructional media materials used. Safe for elementary school students that only require a computer or mobile phone to download instructional media (Helsa et al., 2021; Huang et al., 2020; Istiq'faroh et al., 2020). This media gets an average rating classified as decent because the material content listed is by the curriculum and is easily understood by students.

This result is by the language validation test, which is getting an average assessment classified as very feasible because the language used in this media is easy for students to understand. The researcher uses everyday Indonesian, which does not cause multiple interpretations so that students easily understand the content of the material presented (Marpanaji, et al., 2018). The sentence structure used is related and appropriate. The design aspect in using storylines and picture illustrations gives a good effect for elementary school students who can provide moral values and are mutually sustainable not to be separated and support each other to express messages to readers. The learning media "Lift The Flap Book Perwan (Animal Growth) Digital gets an average rating of quite decent. The paper size used by the lift the flap book is A5 by the size of a picture storybook in gen storybook is in line with researchers who state that subject matter presented in the form of illustrated stories will be easier to digest. This assessment is quite feasible because the illustration images used are by the learning material, the size of the image illustrations is appropriate, not too big and not too small, The attractive color combination with the characteristics of elementary school students can attract student's attention when reading animal growth material (Cahyani & Jayanta, 2021; Huang et al., 2020).

The instructional media "Lift The Flap Book Perwan (Animal Growth) Digital" can be concluded based on the overall results of the average media validation test. The result explained that this media is very suitable for third-grade elementary school students because it has advantages. These advantages of media, including learning media including three dimensions, illustration presentation interesting pictures and

storylines by the learning materials so that they are easy to understand, giving surprise writing behind piles of images that can be opened or closed, the language used is Indonesian every day. Thievery day can only be downloaded once on a computer or mobile phone that can be used any time without the need for internet. This media already includes the suitability of characteristics in third-grade elementary school students who are still in the concrete operational stage at 7-11 years. When students are still at this stage, it is impossible to think abstractly or imagine something abstract. In other words, students think based on concrete or real experiences. Therefore, students need concrete instructional media in pictures and stories that students can realize in everyday life

4. CONCLUSION

Based on the results of data analysis, it was found that Lift The Flap Book's digital media received very good qualifications from experts. It was concluded that Lift The Flap Book's digital media was suitable for use in learning. Lift The Flap Book's digital media can increase the learning interest of third-grade elementary school students during the pandemic.

5. ACKNOWLEDGMENTS

We would like to thank the teachers and 3rd-grade students at Ciracas 10 Elementary School, Jakarta, Indonesia for being willing to become resource persons and respondents for the data needed in the research of this article. We also thank the Elementary School Teacher Education Study Program, State University of Jakarta, which has opened the Scientific Publication course, so that this research can be realized. As for further research, the development of the media Lift The Flap Book digital can be carried out to improve critical thinking.

6. REFERENCES

Abdullah, A., Achmad, A., & Sahibu, S. (2021). Media Pembelajaran Interaktif Mata Kuliah Pemograman Web Berbasis Android. *Inspiration: Jurnal Teknologi Informasi dan Komunikasi*, *11*(1), 45. https://doi.org/10.35585/inspir.v11i1.2626.

Admadja, Perwira, I., & Marpanji., E. (2016). Pengembangan Multimedia Pembelajaran Praktik Individu Instrumen Pokok Dasar Siswa SMK di Bidang Keahlian Karawitan. *Jurnal Pendidikan Vokasi*, *6*(2). https://doi.org/10.21831/jpv.v6i2.8107.

Ahmadi, F., & Maharani, S. P. (2019). E-learning based on "Joomla!" to improve the learning results of social studies content in primary school. *International Journal of Innovation, Creativity and Change*, *5*(5), 394–405.

Asrial, Syahrial, Maison, Kurniawan, D. A., & Piyana, S. O. (2020). Ethnoconstructivism E-Module to Improve Perception, Interest, and Motivation of Students in Class V Elementary School. *JPI (Jurnal Pendidikan Indonesia)*, *9*(1), 30–41. https://doi.org/10.23887/jpi-undiksha.v9i1.19222.

Auliya, R. N., & Munasiah. (2020). Augmented Reality Affects Students' Attitude and Conceptual Understanding in Learning 3D Geometry. *Jurnal Penelitian Pendidikan*, *9*(2), 203–212. https://doi.org/10.23887/jpi-undiksha.v9i2.17480.

Awe, E. Y., & Benge, K. (2017). Hubungan Antara Minat Dan Motivasi Belajar Dengan Hasil Belajar Ipa Pada Siswa Sd. *Journal of Education Technology*, *1*(4), 231. https://doi.org/10.23887/jet.v1i4.12859.

Cahyani, N. L. aParamita, & Jayanta, I. N. L. (2021). Digital Literacy-Based Learning Video on the Topic of Natural Resources and Technology for Grade IV Elementary School. *Jurnal Ilmiah Sekolah Dasar*, *5*(3), 538. https://doi.org/10.23887/jisd.v5i3.37918.

Chen, N. S., Quadir, B., & Teng, D. C. (2011). A novel approach of learning English with robot for elementary school students. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, *6872 LNCS*, 309–316. https://doi.org/10.1007/978-3-642-23456-9_58.

Elmunsyah, H., Hidayat, W. N., & Asfani, K. (2019). Interactive learning media innovation: Utilization of augmented reality and pop-up book to improve user's learning autonomy. *Journal of Physics: Conference Series*, *1193*(1). https://doi.org/10.1088/1742-6596/1193/1/012031.

Fauziah, A., Rosnaningsih, A., & Azhar, S. (2017). Hubungan Antara Motivasi Belajar Dengan Minat Belajar Siswa Kelas IV SDN Poris Gaga 05 Kota Tangerang. *JURNAL JPSD*, *Vol. 4 No*, 47–53. https://doi.org/10.26555/jpsd.v4i1.a9594.

Fikri, M., Ananda, M. Z., & Faizah, N. (2021). Kendala Dalam Pembelajaran Jarak Jauh di Masa Pandemi Covid-19 : Sebuah Kajian Kritis. *Jurnal Education and development*, *9*(1), 145–148.

https://doi.org/10.37081/ed.v9i1.2290.
Handayani, D., Elvinawati, Isnaeni, & Alperi, M. (2021). Development Of Guided Discovery Based Electronic Module For Chemical Lessons In Redox Reaction Materials. *International Journal of Interactive Mobile Technologies*, *15*(7), 94–106. https://doi.org/10.3991/ijim.v15i07.21559.
Haryati, S., Haryati, S., Sukarno, S., & Purwanto, S. (2021). Implementation of online education during the global Covid-19 pandemic: Prospects and challenges. *Cakrawala Pendidikan*, *40*(3), 604–612. https://doi.org/10.21831/cp.v40i3.42646.
Helsa, Y., Ariani, Y., & Kenedi, A. (2021). Digital Class Model in Mathematics Learning in Elementary School Using Social Learning Network Schoology. *Atlantis Press*, *382*(Icet 2019), 2016–2019. https://doi.org/10.4108/eai.4-11-2020.2304599.
Heru, H., & Yuliani, R. E. (2020). Pelatihan Pengembangan Bahan Ajar Multimedia Pembelajaran Interaktif Berbasis Pendekatan Saintifik Menggunakan Metode Blended Learning bagi Guru SMP/MTs Muhammadiyah Palembang. *Jurnal Pengabdian Pada Masyarakat*, *5*(1), 35–44. https://doi.org/10.30653/002.202051.279.
Huang, S.-Y., Kuo, Y.-H., & Chen, H.-C. (2020). Applying Digital Escape Rooms Infused with Science Teaching in Elementary School: Learning Performance, Learning Motivation, and Problem-Solving Ability. *Journal Pre-proof*, *1*(1), 1–46. https://doi.org/10.1016/j.tsc.2020.100681.
Hyun-Jeong Lee. (2015). *Theoretical Categorization of Meanings of Interaction in Interactive Media*. 170–178.
Istiq'faroh, N., Suhardi, & Mustadi, A. (2020). Improving Elementary School Students' Creativity and Writing Skills Through Digital Comics. *Elementary Education Online*, *19*(2), 426–435. https://doi.org/10.17051/ilkonline.2020.689661.
Jones, E., Spielberg, D., Duryea, T., Sisley, S., Hair, A., & Thammasitboon, S. (2021). Zooming in on Opportunity: Transitioning to a Virtual Resident Scholarship Day During COVID-19. *MedEdPublish*, *10*(1), 1–9. https://doi.org/10.15694/mep.2021.000073.1.
Kalogerou, V. (2020). *Face-to-Face vs. Online Language Courses*. 228–244. https://doi.org/10.4018/978-1-7998-4658-1.ch012.
Knoop-van Campen, C. A. N., Segers, E., & Verhoeven, L. (2020). Effects of audio support on multimedia learning processes and outcomes in students with dyslexia. *Computers and Education*, *150*(February), 103858. https://doi.org/10.1016/j.compedu.2020.103858.
Kristanto, A., Sulistiowati, ., & Pradana, H. D. (2021). Brain-Based Online Learning Design in The Disruptive Era for Students in University. *Journal of Educational and Social Research*, *11*(6), 277. https://doi.org/10.36941/jesr-2021-0147.
Kristiyanto, D., & Rahayu, T. S. (2020). Development Of Comic Media On Learning Theme 7 Sub- Theme 4 In Third Grade Elementary Schools. *International Journal of Elementary Education*, *4*(4), 530–536. https://doi.org/10.23887/ijee.v4i4.30206.
Marpanaji, E., Mahali, M. I., & Putra, R. A. S. (2018). Survey on How to Select and Develop Learning Media Conducted by Teacher Professional Education Participants. *Journal of Physics: Conference Series*, *1140*(1). https://doi.org/10.1088/1742-6596/1140/1/012014.
Moorhouse, B. L. (2020). Adaptations to a Face-to-face Initial Teacher Education Course 'Forced' Online Due to the COVID-19 Pandemic. *Journal of Education for Teaching*, *46*(4), 609–611. https://doi.org/10.1080/ 02607476.2020.1755205.
Muthuprasad, T., Aiswarya, S., Aditya, K. S., & Jha, G. K. (2021). Students' perception and preference for online education in India during COVID -19 pandemic. *Social Sciences & Humanities Open*, *3*(1). https://doi.org/10.1016/j.ssaho.2020.100101.
Nomleni, F. T., & Manu, T. S. N. (2018). Pengembangan Media Audio Visual dan Alat Peraga dalam Meningkatkan Pemahaman Konsep dan Pemecahan Masalah. *Scholaria: Jurnal Pendidikan dan Kebudayaan*, *8*(3), 219–230. https://doi.org/10.24246/j.js.2018.v8.i3.p219-230.
Nopriyanti, N., & Sudira, P. (2015). Pengembangan multimedia pembelajaran interaktif kompetensi dasar pemasangan sistem penerangan dan wiring kelistrikan di SMK. *Jurnal Pendidikan Vokasi*, *5*(2). https://doi.org/10.21831/jpv.v5i2.6416.
Nugrahanto, S., & Zuchdi, D. (2019). Indonesia PISA Result and Impact on The Reading Learning Program in Indonesia. *International Conference on Interdisciplinary Language, Literature and Education (ICILLE 2018)*, *297*(0), 373–377. https://doi.org/10.2991/icille-18.2019.77.
Nurrita, T. (2018). Pengembangan Media Pembelajaran Untuk Meningkatkan Hasil Belajar Siswa. *MISYKAT: Jurnal Ilmu-ilmu Al-Quran, Hadist, Syari'ah dan Tarbiyah*, *3*(1), 171. https://doi.org/10.33511/misykat.v3n1.171.
Nusantara, D. S., Zulkardi, & Putri, R. I. I. (2021). Designing pisa-like mathematics task using a COVID-19 context (Pisacomat). *Journal on Mathematics Education*, *12*(2), 349–364.

https://doi.org/10.22342/JME.12.2.13181.349-364.
OECD. (2019). Programme for international student assessment (PISA) results from PISA 2018. *Oecd*, 1–10.
Phoon, H., Roslan, R., Shahrill, M., & Said, H. M. (2020). The Role of Comics in Elementary School Science Education. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, *10*(148), 67–76. https://doi.org/10.30998/formatif.v10i2.6257.
Pranoto, P. (2021). Pemanfaatan Multimedia dalam Meningkatkan Efektivitas Pembelajaran IPA tentang Sruktur Tanah. *Journal of Classroom Action Research*, *3*(1). https://doi.org/10.29303/jcar.v3i1.649.
Primasari, I. F. N. D., & , Zulela, F. (2019). Model Mathematics Realistic Education (RME) Pada Materi Pecahan di Sekolah Dasar. *Jurnal Basicedu*, *1*(1), 1–9. https://doi.org/10.31004/basicedu.v5i4.1115.
Purnamasari, N., Siswanto, S., & Malik, S. (2020). E-module as an emergency-innovated learning source during the Covid-19 outbreak. *Psychology, Evaluation, and Technology in Educational Research*, *3*(1), 1–8. https://doi.org/10.33292/petier.v3i1.53.
Rachman, D. (2018). Students' Interest in Learning English and Reading Understanding Ability Using Story Texts. *JELE (Journal of English Language and Education)*, *4*(1), 37. https://doi.org/10.26486/jele.v4i1.428.
Rasmitadila, Aliyyah, R. R., Rachmadtullah, R., Samsudin, A., Syaodih, E., Nurtanto, M., & Tambunan, A. R. S. (2020). The Perceptions of Primary School Teachers of Online Learning during the COVID-19 Pandemic Period : A Case Study in Indonesia. *Journal of Ethnic and Cultural Studies*, *7*(2), 90–109. https://doi.org/10.29333/ejecs/388.
Ricardo, & Meilani, R. I. (2017). Impak Minat dan Motivasi Belajar Terhadap Hasil Belajar Siswa. *Jurnal Pendidikan Manajemen Perkantoran*, *2*(2), 79. https://doi.org/10.17509/jpm.v2i2.8108.
Ridha, M., Firman, & Desyandri. (2021). Efektifitas Penggunaan Media Video pada Pembelajaran Tematik Terpadu di Sekolah Dasar Saat Pandemi Covid-19. *Jurnal Pendidikan Tambusai*, *5*(1), 154–162. https://doi.org/10.31004/jptam.v5i1.925.
Riyanto, W. D., & Gunarhadi, G. (2017). The Effectiveness of Interactive Multimedia in Mathematic Learning: Utilizing Power Points for Students with Learning Disability. *IJPTE : International Journal of Pedagogy and Teacher Education*, *1*(1), 55–63. https://doi.org/10.20961/ijpte.v1i1.8400.
Ruiz, C. R., Le, S. N., Yu., J., & Low, K.-L. (2014). Multi-Style Paper Pop-Up Designs from 3D Models. *Journal Eurograpihics*, *33*(2), 487–496. https://doi.org/10.1111/cgf.12320.
Saputri, K. Y., Santoso, S., & Hindrayani, A. (2021). The Development of ARCS-Based Economic E-Book Media for Senior High School. *Dinamika Pendidikan*, *16*(1), 83–93. https://doi.org/10.15294/dp.v16i1.29810.
Setiawan, T. H., & Aden. (2020). Efektifitas Penerapan Blended Learning Dalam Upaya Meningkatkan Kemampuan Akademik Mahasiswa Melalui Jejaring Schoology Di Masa Pandemi Covid-19. *Jurnal Pembelajaran Matematika Inovatif (JPMI)*, *3*(5), 493–506. https://doi.org/10.22460/jpmi.v3i5.493-506.
Simanjuntak, B. R., & Budi, E. (2018). The Development of Web-based Instructional Media for Teaching Wave Physics on Android Mobile. *Jurnal Penelitian & Pengembangan Pendidikan Fisika*, *4*(1), 1–10. https://doi.org/10.21009/1.04101.
Sintema, E. J. (2020). Effect of COVID-19 on the performance of grade 12 students: Implications for STEM education. *Eurasia Journal of Mathematics, Science and Technology Education*, *16*(7), 1–6. https://doi.org/10.29333/EJMSTE/7893.
Sukendar, S., Endroyo, B., & Sudarman, S. (2018). Interest Students to be Productive Teachers Reviewed from Learning Achievement of Building Practices, Learning Achievement of Learning Practices and Learning Motivation. *Journal of Vocational and Career Education*, *3*(1), 10–16. https://doi.org/10.15294/jvce.v3i1.14006.
Suryaman, M., Cahyono, Y., Muliansyah, D., Bustani, O., Suryani, P., Fahlevi, M., Pramono, R., Purwanto, A., Purba, J. T., Munthe, A. P., Juliana, & Harimurti, S. M. (2020). COVID-19 pandemic and home online learning system: Does it affect the quality of pharmacy school learning? *Systematic Reviews in Pharmacy*, *11*(8), 524–530. https://doi.org/10.31838/srp.2020.8.74.
Suryawan, I. P. P., Pratiwi, K. A. M., & Suharta, I. G. P. (2021). Development of Flipped Classroom Learning Combined with Google Classroom and Video Conference to Improve Students' Learning Independent and Mathematics Learning Outcomes. *Journal of Education Technology*, *5*(3), 375. https://doi.org/10.23887/jet.v5i3.34466.
Sutarto, S., Sari, D. P., & Fathurrochman, I. (2020). Teacher strategies in online learning to increase students' interest in learning during COVID-19 pandemic. *Jurnal Konseling dan Pendidikan*, *8*(3), 129. https://doi.org/10.29210/147800.
Swarat, S., Ortony, A., & Revelle, W. (2012). Activity matters: Understanding student interest in school

science. *Journal of Research in Science Teaching*, *49*(4), 515–537. https://doi.org/10.1002/tea.21010.

Syawaluddin, A., Afriani Rachman, S., & Khaerunnisa. (2020). Developing Snake Ladder Game Learning Media to Increase Students' Interest and Learning Outcomes on Social Studies in Elementary School. *Simulation and Gaming*, *51*(4), 432–442. https://doi.org/10.1177/1046878120921902.

Wahyuni, E. N., Aziz, R., Wargadinata, W., & Efiyanti, A. Y. (2021). Investigation of primary school teacher readiness in online learning during the Covid-19 pandemic. *Madrasah: Jurnal Pendidikan Dan Pembelajaran Dasar*, *13*(2), 97–113. https://doi.org/10.18860/mad.v13i2.11343.

Waluya, E. B., Hakim, L., & Sakti, N. C. (2019). Pengaruh Minat dan Motivasi Terhadap Hasil Belajar Insert Ekonomi Syariah dengan Intervening Kecerdasan Spiritual Pada Mata Pelajaran Ekonomi di Madrasah Aliyah Kota Malang. *Jurnal Penelitian*, *13*(2). https://doi.org/10.21043/jp.v13i2.6001.

Wulandari, F., Yogica, R., Darussyamsu, R., Padang, N., & Info, A. (2021). *Analisis Manfaat Penggunaan E-Modul Jauh Di Masa Pandemi Covid-19*. *15*(2), 139–144. https://doi.org/10.30595/jkp.v15i2.10809.

Yusrizal, Y., Hajar, I., & Tanjung, S. (2019). Analysis of Elementary School Teachers' Ability in Using ICT Media and Its Impact on the Interest to Learn of Students in Banda Aceh. *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal*, *2*(3), 37–49. https://doi.org/10.33258/birle.v2i3.352.