Educenter : Jurnal Ilmiah Pendidikan
Vol 1 No 11 November 2022
ISSN: 2827-8542 (Print) ISSN: 2827-7988 (Electronic)
Open Access: https://jurnal.arkainstitute.co.id/index.php/educenter/index

Learning Media Development of Electronic Comic Based in Grade IV IPAS Major to Increase Students' Interest in Learning

Albert Ferdy Octavianto[1], Suhandi Astuti[2]
[1,2] Satya Wacana Christian University
292018079@student.uksw.edu

Article Info

Article history:
Received 4 November 2022
Revised 10 November 2022
Accepted 25 November 2022

Keyword:
Learning Media; Electronic Comics; Interest in Learning

ABSTRACT

The development of electronic comic media aims to increase students' interest in learning science material in class IV. This R&D research was carried out using the ASSURE model. Based on the results of the validation test by material experts, a score of 66 was obtained, which, when presented, was 88%. Then, based on the results of validation by media experts, a score of 92 was obtained, which, when presented, was 92%. Meanwhile, the validation of learning experts obtained a score of 115, which, when presented, became 92%, where the score indicated a very good category and was feasible to use. Based on the results of the analysis of the different tests using the independent sample test technique, the calculated t value is 8.749 with sig. (2-tailed) 0.000, sig. 0.183, and a df of 74. Probability value 0.05, then H0 is rejected and Ha is accepted, so it can be said that the posttest results are higher than the pretest. Based on the results of the student-teacher questionnaire, respondents obtained results of 94% and 97%. From the data obtained, it can be said that comic media is effective in increasing students' interest in learning.

INTRODUCTION

Natural and Social Sciences (IPAS) is a science that examines living and inanimate things in the universe and their interactions, and examines human life as individuals as well as social beings who interact with the social environment (Kepmendikbud No. 33 of 2022). In learning science, there are two main elements, namely understanding science and social sciences and processing skills in simple everyday life according to the stages of mental development and the stages of learning. Each of these elements corresponds to eight scopes of content, which include: living things; substances and their properties; its energies and changes; and the institutions of social and cultural systems; production, distribution, and consumption, or the fulfillment of needs in society.According to BSNP (Kepmendikbud No. 371 of 2021), science subjects are subjects aimed at building basic abilities to study science (science), both natural sciences and social sciences.

According to Balitbangbuk No. 028 of 2021, science education has a role in realizing the Pancasila Student Profile as an ideal picture of the profile of Indonesian students. Science Science helps students grow their curiosity about the phenomena that occur around them.This curiosity can trigger students to understand how the universe works and interacts with human life on earth. This understanding can be used to identify various problems and find solutions to achieve sustainable development goals. The basic principles of scientific methodology in science learning will train scientific attitudes (high curiosity, critical thinking skills, analysis, and the ability to draw the right conclusions) that give birth to wisdom in students. This knowledge includes natural knowledge and social knowledge. Science education has an important role in realizing Pancasila students as Indonesia's profileAs a country that is rich in culture and local wisdom, it is hoped that through IPAS, students will explore the wealth of local wisdom related to IPAS, including using it to solve problems. According to Balitbangbuk No. 028 of 2021, the main goal of learning natural sciences at the elementary level is not how much material content students can absorb, but how much competence students have in applying the knowledge they have.Given that students still see everything as a whole and integrated whole,

science and social studies learning are combined into one subject, namely natural sciences.This is also done with consideration in the stages of thinking "concrete" or "simple," "holistic," "comprehensive," and not in "detail."

To improve the quality of students' interest in learning, a creative process is needed in learning, namely, important efforts to optimally utilize the cognitive and affective potential of students so that new and intelligent ideas are more readily accommodated. The creative process also includes determining how to provide each student with multiple perspectives and a broad perspective on a given fact.Furthermore, the creative process implies that each student is capable of observing details that become a reference in general opinion, solving problems for himself as well as the community in society.For this reason, it is necessary to have a learning design that can make students more creative in their learning.

Broadly speaking, learning media are an important component in the learning process, according to Ahmadi and Rahmaibu (2016). Learning media is also a communication tool that can streamline teaching and learning activities. The use of appropriate media is expected to attract the attention of students and make it easier for educators to deliver learning material, as presented by Yuliana Sohibun (2017). In this regard, it can be seen that learning media are media that are used as a bridge in order to achieve the expected learning objectives. The use of appropriate learning media can improve learning outcomes and help achieve learning objectives. In meeting the level of student needs, an educator is expected to be able to develop creative, innovative, and contextual media. A teacher and students are two subjects who interact in the process of teaching and learning to determine quality or quality in achieving learning goals.

Comics are a one-of-a-kind teaching medium that combines text and images in a creative way to capture the attention of people of all ages, particularly children.Comic media serves as a messenger for learning messages that are packaged as attractively as possible so that students are more interested in learning (Wahyu, N.B., & Haryanto, 2016). The advantages of comics are that they can motivate students during the teaching and learning process; comics consist of pictures, which are media that can improve the quality of learning; comics are permanent; comics can arouse interest in reading and direct students to disciplined reading, especially those who don't like reading (Abaryani & GamalielS.A.A, 2017;.

Comics are a type of cartoon that depicts characters and plays sequential stories in order to entertain readers.One of the interesting and innovative printed teaching materials that can attract students' attention is comic media. In Hidayah's research (2017), she states comic media is "a cartoon form that reveals characters and implements a story in a sequence that is closely related to the image and is designed to provide entertainment to the reader." The advantage of using comics is that they are time-efficient because they are media comics that students can use repeatedly for independent study and make it easier for them to understand the material presented in the text. Research conducted by Witanta, Vivian Alfinia, Baiduri Baiduri, and Siti Inganah (2019) states that comic-based learning media can increase student interest and learning outcomes.

Based on several opinions, it can be concluded that comics are an arrangement of images that contain stories containing cartoon characteristics that are designed to be as attractive as possible with the aim of attracting the attention of the reader. Comics have a unique quality in that they can help develop the visual imagination of their readers. Based on students' interest in comics, comic media can be used as a learning medium that is used to facilitate students in learning and will have an impact on student learning success. According to problems in science learning that occur at SDN Getasan based on the results of interviews that have been conducted by researchers with class teachers, students' interest in learning and reading is low due to the condition of COVID 19, which requires students to study online, as indicated by the fact that only 60% of students complete KKM and 40% of students have not met the KKM score. The KKM score set for the IPAS subject is 70. This is due to a variety of factors, one of which is the teacher, who has not been utilizing existing media optimally, as evidenced by the teacher only using innovative learning media on occasion.

Another factor causing low interest in student learning in science is the lack of use of innovative learning media, so that the class situation is impressed in the form of formality, where students are only marked with school attributes without paying attention to the actual learning process, so that the educational goals to be achieved cannot be obtained maximally, especially in science learning with change material in the form of objects and ethnic and cultural differences.The teacher is also less aware

of his role as a facilitator and motivator for students when it comes to using learning media or visual aids to help students understand more about the material being studied.This learning is carried out as a strategy that is considered appropriate to make it easier for students to understand the lesson and also learn diverse insights of thinking from all students, so that they can learn various concepts and how to relate them to real life, which ultimately leads to increasing student interest in learning itself. Teachers are needed as directors and mentors to support student learning in this effort.The objectives of this research are to (1) find out the steps for developing electronic comic-based learning media for fourth grade students to increase student learning interest and (2) find out how high the validity level of electronic comic learning media is to increase student learning interest when applied to learning in class IV. This research is expected to be useful for developing innovative learning media through electronic comics that will be optimally utilized in learning by teachers and students.

Based on the findings of researchers, students are less active during learning because the way the teacher teaches does not support social interaction between students. There is a need to improve the quality of learning so that students are more enthusiastic and can master the material better. Therefore, the author wants to develop an electronic comic learning product as a science learning medium in which this electronic comic learning media takes the form of pictures and stories with clear characterizations, pictures and stories that children really like and are expected to increase student learning interest.

RESEARCH METHODS

This study employs the research and development (R&D) method, also known as research and development in Indonesian.R&D research is also interpreted as a research method used to produce certain products and test the effectiveness of these products. To produce certain products, research is used that starts with a needs analysis, then develops them and tests their effectiveness so that they are useful for the wider community (Sugiyono, 2014: 297).

The product to be produced in this study is learning media in the form of fourth-grade electronic comics, which can assist teachers in the process of increasing student interest in learning. In accordance with the research title chosen by the author, namely, "The Development of Electronic Comic-Based Learning Media Material on Ethnic and Cultural Diversity in Class IV IPS Content to Increase Students' Language Interest," So the authors grouped the variables used in this study into independent variables (X) and dependent variables (Y).In this study, the subjects used were fourth grade students at SD Negeri Getasan, with a total of 38 students. The characteristics of class IV are actively participating in learning, preferring to learn using media, and being happy to play, but students' low interest in learning is just lectures and questions and answers.

This study uses a development model using the ASSURE learning design model. The ASSURE model has six stages, which include analyze, state object, select, utilize, require, and evaluate. The Assure Model is a model developed by educational technology academic Robert Heinich et al. in 1980. The data collection methods used in this study were interviews, validity, and effectiveness. The instruments used in measuring media validity can be seen on the validation sheets of media experts, material experts, and learning experts. The instrument used in measuring the effectiveness of the media is seen in the ability to solve problems after and before using the media by using tests in the form of essay questions. In addition to tests, student and teacher response sheets are used to assess the effectiveness of the media.

In analyzing the results of the questionnaire and observation data, it was carried out using qualitative and descriptive data analysis techniques. Data analysis techniques were performed using descriptive statistics. The effectiveness of a medium is shown by the results of the pretest and posttest on students' interest in learning. for the minimum completeness criteria (KKM), which is applied to the science subject in class IV of SD Negeri Getasan. If students' academic performance improves after using comic media, then electronic comic media is being used effectively. The responses of students after learning show support for the effectiveness of electronic comic media. The results are obtained from student responses, and then the results are analyzed according to the responses given by students.

RESULTS AND DISCUSSION

Research and development of learning media in the form of electronic comics uses the ASSURE model with stages carried out by researchers, namely: analyze the learner (analyzing student characteristics), state the objectives (formulating learning objectives), select the method (choosing

methods, media, and teaching materials), utilize the media and materials, require learner participation (involving students in learning activities), and evaluate and revise the results (evaluation and revision).

The first step taken by researchers is to analyze the characteristics of students. Based on interviews conducted with fourth grade teachers at SD Negeri Getasan, it was stated that students were sometimes bored with learning using books, but the teacher made variations using music, inviting students out. However, the teacher's use of technology in the classroom has been limited to using power point or video.Therefore, the researchers developed learning media according to the characteristics of students by developing electronic comic learning media in the IPAS module.The design of learning media is carried out by researchers by setting titles, preparing source and reference books, designing learning activities, and compiling media. The design of learning activities is carried out by researchers by compiling modules, which include writing down identities, learning topics (TP), learning objectives, activity steps, learning resources, and assessments. Media is designed based on TP B Chapter 2 changes in the form of objects and TP B Chapter 6 on Indonesian cultural diversity. The initial preparation of the media was a comic script draft, which was followed by sketching the characters; after that, it was continued with the process of making line art for the characters; and the last was the finishing process with the background and the coloring process. In this process, it is designed using the MediBangPaintPro application.

This advancement is the result of validation tests conducted by media experts, content experts, and learning design experts. Based on the results of validation by material experts, a percentage of 88% was obtained with a very valid and feasible category to use. Then, based on the results of validation by media experts, a score of 92% was obtained with a very feasible category to use. Meanwhile, the validation of learning experts obtained a percentage score of 92% with a category suitable for use in learning. The suitability of media for use in learning corresponds to the function of learning media as a learning aid. This opinion is in line with the opinion of Mawardi (2018: 26), which states that learning media are anything that can be used as a means of channeling messages and information onto learning materials so that they become learning activities. The assessment criteria used can be seen in Table 1 below.

Table 1 Criteria for evaluating the validity test according to Sugiyono 2014

Score	Achievement Percentage	Category	Conversion
5	80 % - 100 %	Very Worth it	
4	60 % - 79 %	Worthy	Worthy
3	40 % - 59 %	Decent Enough	
2	20 % - 39 %	Less Eligible	Not
1	0 % - 19 %	Very Inadequate	Worthy

The final step of this research is a limited trial. This limited trial includes the distribution of electronic comic products, pretest and posttest tests, and student and teacher respondent questionnaire tests. The pretest was used to obtain students' initial academic abilities from 38 respondents by obtaining 2,615 scores with a percentage of 68%. With a vulnerable frequency of pretest scores, there are 26 students with scores between 60 and 65 with a percentage of 68%, 8 students between 70 and 75 with a percentage of 22%, and 4 students with scores ranging from 80 to 85 with a percentage of 10%. Furthermore, the posttest was used to obtain the final academic abilities of students from 38 respondents by obtaining 2,570 scores with a percentage of 71.4%. With a vulnerable posttest score frequency, there are 15 students with scores between 70 and 75 and a percentage of 40%; 18 students between 80 and 85 and a percentage of 47%; and 5 students ranging in scores from 90 to 95 and a percentage of 13%. Pretest–posttest comparison data can be seen in Figure 1 of the following distributive graph:

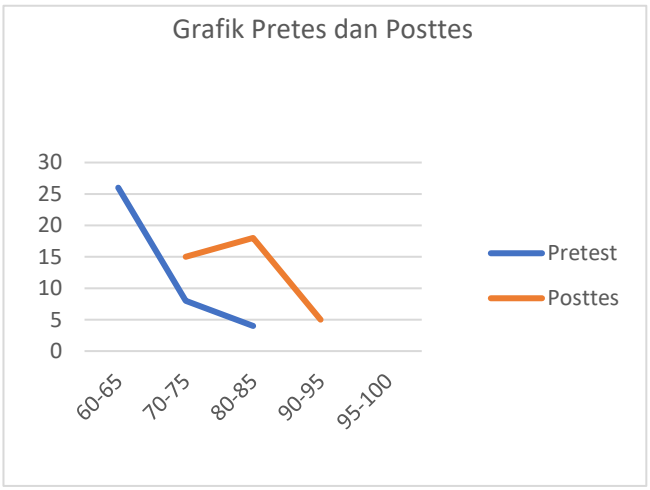

Figure 1 Graph of Frequency Distribution of Pretest and Posttest Scores

With the graph above, it can be concluded that increasing students' academic scores indicates that the development of electronic comic media can trigger student learning interest, as evidenced by the graph of the frequency distribution of pretest and posttest scores. with a comparison of the minimum pretest score with a range of 60–65 and a range of posttest scores of 70–75. with a pretest percentage of 68% and a posttest score of 73.4%, with a percentage ratio of 5.4%.

For the different test results in this study, it describes the data analysis technique used, namely the prerequisite test (normality and homogeneity test) and hypothesis testing. The normality test and homogeneity test are used to determine the normal distribution of a dataset and the level of dataset equivalence. Tests for data normality and homogeneity were analyzed using the SPSS 26 for Windows application. The results of the normality and homogeneity tests can be seen in the following table:

Table 2 Normality Test

One-Sample Kolmogorov-Smirnov Test

N		38
Normal Parameters[a,b]	Mean	,0000000
	Std. Deviation	5,05680949
Most Extreme Differences	Absolute	,137
	Positive	,137
	Negative	-,133
Test Statistic		,137
Asymp. Sig. (2-tailed)		,069[c]

Based on table 2, it can be seen that the significance value of the pretest and posttest results on Kormogolov Smirnov has a tail of 0.69. So it can be concluded that the data population is the result of the pretest and is normally distributed because it is > 0.05. The homogeneity test of the variants aims to determine whether the variants of the two groups are homogeneous or not. A data set can be said to be homogeneous if the significance or probability value is > 0.05 (Syofian Siregar 2013: 170). Analysis of the homogeneity test of variance can be done using SPSS 26.0 software. The results of the homogeneity test of the data used are as follows:

Table 3. Pretest and Posttest Homogeneity

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Data *Pretest* dan *Posttest*	Based on Mean	1,804	1	74	,183
	Based on Median	,542	1	74	,464
	Based on Median and with adjusted df	,542	1	73,513	,464
	Based on trimmed mean	1,132	1	74	,291

Based on table 3, it can be seen that the results of the test of homogeneity of variance pretest-posttest value for based on mean show a significance of 0.183, for based on median, a significance of 0.464, and for based on trimmed mean, a significance of 0.291. It can be concluded that the pretest-posttest value data population shows a significance number of > 0.05, meaning that the posttest value data population has a homogeneous variant.

Based on the results of the normality and homogeneity tests of the pretest and posttest data, it is clear that the pretest and posttest groups have significance > 0.05, indicating that the data is normally distributed, and thus the prerequisite test has been met, and the pretest and posttest data can be used as a reference for the T test. to test the hypothesis to see if the average value Below are presented the results of the T-test (mean difference test) pretest and posttest at Getasan Public Elementary School.

Table 5 T test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig.(2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Results	Equal variances assumed	1,804	,183	-8,749	74	,000	-12,895	1,474	-15,831	-9,958
	Equal variances not assumed			-8,749	73,111	,000	-12,895	1,474	-15,832	-9,958

Different test analyses The calculated t value is 8.749 with sig. (2-tailed) 0.000 and sig. 0.183 and a df of 74, as shown in table 32 above.If the probability value is 0.05, then H0 is rejected and Ha is accepted; additionally, posttest academic results are higher than pretest academic results.

The results of the hypothesis from the t test (different test) on the Pretest-Posttest value before implementing electronic comic media and after implementing electronic comic media can be used as a reference for testing the hypothesis. The hypothesis that has been formulated is as follows:

H0: In the application of learning that does not use electronic comic media, the academic results of the Science Science class IV students at SD Negeri Getasan are not significantly higher.

Ha: When learning media electronic comic media were used, the science academic results of Class IV SD Negeri Getasan improved significantly.

The results obtained from the acquisition of a t-count for the T test (different test) performed on the Pretest-Posttest value are a t-count of 8.749 with a sig. (1-tailed) of 0.0183.Because the significance shows a value of 0.05, then H0 is rejected and Ha is accepted, it can be concluded that in the application of electronic comic media, the results of science and learning science for fourth grade students at SD Negeri Getasan are significantly higher.

To measure effectiveness, a student respondent questionnaire was used to obtain data on how high students' learning interest was in using electronic comic media, resulting in a 94% score. Furthermore, the teacher respondent's questionnaire was used to measure the effectiveness of comic learning media to increase student learning interest by obtaining a percentage score of 97%. With the data obtained, it can be said that comic media can be one way to increase student interest in learning. For effective assessment criteria, see the following table:

Table 6 Criteria for evaluating effectiveness according to Sugiyono (2014)

Success Percentage	Effectiveness
81 < p < 100	Very high
66 < p < 80	Tall
56 < p <65	Enough
41 < p < 55	Low
0 < p < 40	Very low

The results of the research were almost the same as this research, carried out by Sugiarto, Ikhwatul Mujahadah, Alman, and Mukhlas Triono, with the title "Development of Comic Learning Media to Improve Results and Interest in Learning Mathematics for Grade III Students at SD Muhammadiyah Malawili (2021). The results of the assessment of the media aspect were that 46 and 38 material aspects met very good criteria. The percentage of overall learning outcomes increased by 56.25%, from a total of 31.25% before using Mathematical Comics media to 87.5% after using those media. Interest in learning received an average interpretation of 33.56 from all total respondents, which was classified as very good.

Indah Dwi Aulia's research (2019) with the title "Development of Environment-Based Electronic Comic Media on Functional Materials" The results obtained in this study were feasible, with a percentage of 78% from media experts, 71.6% from material experts, 80% from linguists, and for eligibility, 83.5% from biology educators and 90.2% from students. As a result, this comic medium has been declared very feasible to use because it is convenient for students to use with Android.

Based on the success of the research conducted in accordance with the framework in Chapter II, The development of electronic comic media has been studied in order to increase the learning interest of fourth grade elementary school students. The study was conducted by distributing electronic comic media containing natural science and social science (IPAS) content on the topic of learning (TP) cultural diversity and changes in the form of objects. It is hoped that the development of ecomic media will be used by teachers as an alternative delivery method of science and learning material, allowing students to practice independent learning and increasing student interest in learning.

CONCLUSION

The purpose of research and development of electronic comic learning media is to increase students' interest in learning class IV in natural sciences and social sciences (IPAS) subjects. The created electronic comic medium has gone through the development process and has been tested by experts to determine its viability.So the conclusion from the results of the research that has been done is that the development of electronic comic media in order to increase interest in learning in science material for class IV students can be carried out using the ASSURE model with the steps carried out by the researcher, namely: analyze the learner, state the objectives, select the method, utilize the media, and require learner participation. The final step of the limited trial is to find out the feasibility and effectiveness of increasing student interest in learning. Electronic comic media can be used in the classroom to increase students' learning interest in class IV.Based on the results of the validation test by material experts, a score of 66 was obtained, which, when presented, was 88% in the "very good" category and feasible to use. Then, based on the validation results by media experts, a score of 92 was obtained, which, when presented, was 92% in the "very good" category and feasible to use. Whereas

for the validation of learning experts, a score of 115 is obtained, which, when presented, becomes 92% in the very good category and is suitable for use in learning. T test using the Independent Sample Test technique yields a calculated t value of 8.749 with sig. (2-tailed) 0.000 and sig. 0.183 and a df of 74.Probability value 0.05, then H0 is rejected and Ha is accepted, so it can be said that the posttest results are higher than the pretest.To find out whether it is effective or not, it is measured using the data of student and teacher respondents. Based on the results of the student respondent's questionnaire, the results obtained were 94%. Furthermore, the teacher-respondent questionnaire obtained 97% of the results. From the data obtained, it can be said that comic media is effective in increasing student interest in learning. This data is also supported by a comparison of academic scores, as seen from the pretest results of 66% and the posttest results of 73.4%; thus, it appears that there is an increase in test results of 7.4 %.

REFERENCES

Ambaryani, & Gamaliel, S.A. (2017). Pengembangan Media Komik untuk Efektifitas dan Meningkatkan Hasil Belajar Kognitif Materi Perubahan Lingkungan Fisik. Jurnal Pendidikan Surya Edukasi (JPSE), 3(1), 19-28.

Aulia, Indah dwi. (2019). Pengembangan Media Komik Elektronik Berbasis Alam Sekitar pada Materi Fungi (Doctoral dissertation, UIN Raden Intan Lampung).

Budiarti, W.N., & Haryanto. (2016). Pengembangan Media Komik untuk Meningkatkan Motivasi Belajar dan Keterampilan Membaca Pemahaman Siswa Kelas IV. Jurnal Prima Edukasia, 4(2), 233-242.

Daryanto. 2016 . *Media Pembelajaran Edisi ke-2*. Yogyakarta: Penerbit Gava Media.

Hidayah, N. (2017). Pengembangan media pembelajaran berbasis komik pada mata pelajaran ilmu pengetahuan sosial kelas IV MI Nurul Hidayah Roworejo Negerikaton Pesawaran. *Terampil: Jurnal Pendidikan dan Pembelajaran Dasar*, *4*(1), 34-46.

Keputusan Menteri Pendidikan, Kebudayaan, Riset, Dan Teknologi Republik Indonesia Nomor 371/M/2021 Tentang Program Sekolah Penggerak Menteri Pendidikan, Kebudayaan, Riset, Dan Teknologi,

Keputusan Kepala Badan Penelitian Dan Pengembangan Dan Perbukuan Nomor 028/H/Ku/2021 Tentang Capaian Pembelajaran Paud, Sd, Smp, Sma, Sdlb, Smplb, Dan Smalb Pada Program Sekolah Penggerak

Keputusan Kepala Badan Standar, Kurikulum, Dan Asesmen Pendidikan Kementerian Pendidikan, Kebudayaan, Riset, Dan Teknologi Nomor 033/H/KR/2022

Mawardi. (2014). *Model Desain Pembelajaran Konsep Dasar Pendidikan Kewarganagaraan Berbasis Belajar Mandiri Menggunakan Modular Object Oriented Dynamic Learning Environment (Moodle)* . Surakarta: Program S-3 Ilmu Pendidikan UNS (Disertasi :Tidak Publikasikan).

Mujahadah, I., Alman, A., & Triono, M. (2021). Pengembangan Media Pembelajaran Komik untuk Meningkatkan Hasil dan Minat Belajar Matematika Peserta Didik Kelas III SD Muhammadiyah Malawili. *Jurnal Papeda: Jurnal Publikasi Pendidikan Dasar, 3*(1), 8-15.

Murfiah, U. 2017. Pembelajaran Terpadu. Bandung: Refika Aditama.

Rahmaibu, Ahmadi, "Pengembangan Media Pembelajaran Menggunakan Adobe Flash Untuk Meningkatkan Hasil Belajar PKN, Jurnal Kreatif, Vol 16 No 3, (2016), h.1-10

Ratumanan, T. G. dan Imas Rosmiati. 2019. Perencanaan Pembelajaran. Depok: PT Raja Grafindo Persada.

Sugiyono. (2014). Metode penelitian kuantitatif kualitatif dan R&D. Alfabeta Sohibun & Filza Yuliana Ade, "Pengembangan Media Pembelajaran Virtual Class Berbantuan Google Drive" Tadris: Jurnal Keguruan dan Ilmu Tarbiyah, Vol 2 No 2, (2017), h.12

Sukamdinata, N. S. (2017). *Metode Penelitian Pendidikan.* Bandung: PT.Remaja Rosdakarya.

Suryani, Nunuk., Achmad Setiawan,. &Aditin Putria. 2018. Media Pembelajaran Inovatif dan Pengembangannya. Bandung: PT Remaja Rosdakarya.

Syofian Siregar. 2013. Metode Penelitian Kuantitatif. Cetakan Ke-1. Jakarta: Kencana

Witanta, Vivian Alfinia, Baiduri Baiduri, and Siti Inganah. "Pengembangan Komik Sebagai Media Pembelajaran Mmatematika Materi Perbandingan Kelas VII SMP." *Lentera Sriwijaya: Jurnal Ilmiah Pendidikan Matematika* 1.1 (2019): 1-12.