



The Effectiveness of E-Comic as A Learning Tool on Short Story Writing Among Elementary School Students

Nourma Yunita^{1(*)}, Afakhrul Masub Bachtiar², Oktaviana Nurrohmah³
^{1,2,3}Universitas Muhammadiyah Gresik, Gresik, Indonesia

Abstract

Received : April 28, 2025
Revised : July 29, 2025
Accepted : August 2, 2025

The ability to write short stories is one of the important literacy skills that need to be developed from the elementary education level. However, in practice, many students face difficulties in expressing ideas coherently and creatively. This problem necessitates innovation in learning media that can stimulate imagination and motivate students to write. This research aims to test the effectiveness of using e-comics as a learning aid in improving elementary school students' short story writing skills. The research method used is a quasi-experimental design with a pretest-posttest control group. The sample consists of 50 fourth-grade students in Gresik City, selected purposively. The experimental group uses e-comics in writing lessons, while the control group uses conventional media. The results of the analysis show a comparison between the two means of the two paired samples assuming a normal distribution. Decision-making in the t-test focuses on the significance value (2-tailed). If the significance value (sig) is less than 0.05, in this case, H₀ is accepted and H₁ is rejected, indicating a relevant difference between the initial and final variables. This also shows a relevant effect of different treatments on each variable. Conversely, if sig (2-tailed) is greater than 0.05, where H₀ is accepted and H₁ is rejected, then there is no relevant difference between the baseline and final variables. There are analysis results from the pre and post-tests with a relevant value (2-tailed) of 0.00, which is less than 0.05, proving that there is a relevant difference between the two variables and that there is an impact from the application of E-Comics as a media for learning on the ability to write short stories. These findings indicate that e-comics can be an effective and enjoyable medium for developing creative writing skills in elementary school students.

Keywords: Short Story, E-Comic, Learning Media

(*) Corresponding Author: nourmayunita25@gmail.com

How to Cite: Yunita, N., Bachtiar, A. M., & Nurrohmah, O. (2025). The Effectiveness of E-Comic as A Learning Tool on Short Story Writing Among Elementary School Students. *JTP - Jurnal Teknologi Pendidikan*, 27(2), 432-444. <https://doi.org/10.21009/jtp.v27i2.54781>

INTRODUCTION

Education is a key factor in the progress of a nation (Nisa et al., 2023). The rapid development of technology requires the world of education to adapt and utilize technology effectively to improve the quality of learning (Fukuda, 2020). The term Writing can be interpreted as a storytelling skill that functions to tell something indirectly and can be done without the need to meet (Hendri et al., 2022). An educator is faced with the challenge of becoming an educator who has new ideas in the learning process (Kurnia & Yuanita, 2023). Through writing, students can express their thoughts. Writing can be interpreted as one of the steps to convey ideas, feelings, and imagination in written form. Writing

activities can also be carried out based on stages that form a complete system (Nafiah et al., 2019). Writing skills are very important to be taught to students at the elementary school level so that they can learn and master them (Putra & Rusnilawati, 2023). By developing writing skills, students are expected to understand the basics of writing procedures and science, and improve their skills to a higher level. Writing is different from other skills, because this ability becomes the foundation in character building and language mastery, as well as in composing and telling a story better (Nuroh and Prandika, 2023). Learners are encouraged to use the right vocabulary, follow correct spelling, and be able to complete and arrange sentences in the form of paragraphs according to the abilities possessed by learners (Herlandita & Nuroh, 2023).

In the learning process, media utilization is still less than optimal; educators tend to prefer teaching writing methods by illustrating on the blackboard media without using new tools that can increase students' enthusiasm to tell their ideas in writing. The difficulties faced by students vary, but the most common are the lack of use of standardized words or sentences, difficulties in determining story ideas, and compiling story narratives, which ultimately have an impact on their ability to express ideas in writing (Cahyani et al., 2021). In the realm of education, especially at the basic education level, teachers are expected to apply creative learning methods in order to stimulate students' fantasies, especially in short story writing activities. In this case, the educational process, especially writing, which includes creating narratives, stories, and composing paragraphs, is mostly delivered in theory with little practice (Luluk, 2023). This causes learners to be less accustomed to writing, so they have difficulty putting their ideas into the form of short story texts. In the current era of digital technology, technology is utilized in the world of education to support the learning process of students (Gavalton & McGarr, 2019). The use of learning tools as simple methods and problem solving can expand students' knowledge and increase their ability to write short stories.

E-Comic can serve as an effective learning tool to increase students' motivation in writing stories. This media is very interesting, easily understood, and well captured by students (Meidyawati, 2018). E-Comic has a unique appeal that makes it a useful learning tool in schools (Ramadhan & Rasuardie, 2021). The combination of stories with groups of images can make students understand the story and provide a positive experience in the learning process. With the addition of varied images, E-Comic plays an important role in supporting students' understanding and outlook during learning. Educators have a great responsibility in instilling various skills that benefit students. Such skills, such as the use of good language, pictures, and proper sentences, are essential for individuals to live life (Susanto, 2015). Sentences allow children to interpret their experiences in various situations as well as a cipher for thinking and communicating (Rodiah, 2023). A crucial choice of communication skill is the ability to convey thoughts clearly so that they can be understood by the interlocutor. The results of communication are in oral or written form. Examples of oral communication, for example, students can convey ideas well, then communication in written form, for example, students can write short stories, and works such as poetry, motivational sentences and other works. The results of

previous researchers show that students really need learning media equipped with images so that they can improve their ability to write, and educators need effective learning tools in providing learning content (Wulandari & Mudinillah, 2022).

Many studies have shown that addressing writing issues in fourth-grade students provides positive benefits through the use of engaging narratives and images in E-Comics. Positive Benefits of Using Narratives and Images in E-Comics: Increasing Learning Appeal and Motivation, Aiding Context and Storyline Understanding, Developing Imagination and Creativity, Strengthening Memory and Material Retention, Supporting Inclusive and Differentiated Learning. This can increase learners' imagination in crafting stories and make the learning process more enthusiastic (Afrida, 2020). E-Comic has been proven to be effective in increasing students' willingness to write at the basic education level, especially in raising their academic grades (Herlandita & Nuroh, 2023). In the process of writing stories, students need reading materials or objects that can help them develop ideas more creatively and innovatively (Ramadhani et al., 2022). Learning tools in the form of E-Comic are very suitable to be used as media that can increase the spirit of learning. The visual aspect of E-Comic, which is designed with attractive colors and images and relevant to the theme of daily life, gives a deep impression (Puriasih & Trisna, 2022).

The reality from previous research and field observations shows the ideal expectations for students' understanding in writing stories well, where it is in accordance with Fitriani et al.'s (2022) research that the use of comic media is effective for the short story writing skills of fifth-grade students at SDN No.49 Panjo'jo in Takalar District. The presence of E-Comic today greatly supports the student learning process. It is expected that E-Comic as a learning media can help students in writing stories better, thus encouraging their understanding of the material during the learning process (Syahmi et al., 2022). The high awareness and sensitivity to digitalization that is currently developing shows that media is needed to support the teaching and learning process. This is very important to do research, considering that there is still little research on the application of E-Comic media in basic education in today's rapidly developing technological era. Our author wishes to create new things in the world of education, especially the digital world. This research aims to test the effectiveness of using e-comics as a learning aid to improve the short story writing skills of elementary school students. It is hoped that E-Comic media adapted to the curriculum can be useful in improving students' ability to write stories, especially short stories.

METHODS

This research applies a type of pre-experimental design that is included in the quantitative research category. According to Sugiyono (2019), quantitative research methods are based on the philosophy of positivism and aim to study certain samples based on facts, exact science, and real and valid knowledge. Data collection is done through quantitative or statistical data analysis with the intention of testing predetermined hypotheses. In quantitative research, the

experimental method is used to identify the effect of the independent variable (treatment) on the dependent variable (the result of the treatment). The main purpose of this design is to observe whether there are changes in the subject after receiving certain treatments.

Table 1. Research Design

Group	Pretest	Treatment	Posttest
Eksperimen	Y ₁	X	Y ₂

Description:

Y₁ : Pretest

X : Treatment by using digital comic media

Y₂ : Posttest

The saturated sampling technique was carried out on 50 fourth grade students of SDN 05 Gresik. This research was conducted in the odd semester of the 2024/2025 school year for three days in Indonesian language subjects with the phase B independent curriculum. The material to be taught is simple short story writing. The initial step of this research involved observation to observe and collect information about the ability to write short stories of grade IV students as well as the learning media used. In addition, researchers also compiled research instruments which included teaching modules, pre-test and post-test questions, and E-Comic media that would be validated. The experimental method in quantitative research is used to identify the effect of the independent variable (treatment) on the dependent variable (the result of the treatment). The main purpose of this design is to evaluate whether there is an effect experienced by the subject after receiving certain treatment.

The procedure of this research includes the preparation of learning devices and the implementation of learning. Before the application of E-Comic media, an initial test (pre-test) was conducted and after the implementation of the media, a final test (post-test) was conducted. Data collection was carried out by measuring the variables observed during the pre-test and post-test. The data used in this study were the scores of the pre-test and post-test. Data analysis was conducted using a descriptive statistical approach, then analyzed to see the improvement of students' writing ability between pre-test and post-test. In addition, a normality test and paired t-test were conducted to determine the effect of digital comic media on students' story writing ability.

Table 2. Assessment instrument for story writing skills

Aspects scored	Maximum Score
Story idea content	30
Content organization	25
Structure and grammar	20
Diction and word choice	15
Spelling and punctuation	10
Total	100

Data were collected through writing tests conducted before and after the intervention. This test covered various aspects of writing skills, including the ability to develop ideas, organization of writing, vocabulary selection, as well as

the use of grammar. In addition, subjective assessments from teachers were also conducted to observe changes in the quality of students' writing.

Data analysis was conducted using appropriate statistical tests. Based on the type of data obtained, t-test or Mann-Whitney test was applied to evaluate the difference in writing skills between the experimental and control groups. In addition, qualitative analysis was conducted to identify differences in the quality of writing between the two groups.

RESULTS AND DISCUSSION

Research Results

The researcher has completed all stages, from observation to data collection. In this study, the results of story writing ability were obtained from the pretest and posttest of SDN 05 Gresik students, which were then analyzed using descriptive statistics. Furthermore, the data was tested with normality test and paired t test. The researcher presents the results of the study in the table below.

Table 3. Descriptive Statistics of story writing ability scores

	N	Minimum	Maximum	Mean	Std. Deviation
Pre Test	50	40	78	58.64	10.335
Post Test	50	68	95	80.59	7.926
Valid N(listwise)					

This data description aims to explain the data collection process during the study. Based on the table above, after determining the indicators of story writing ability, in the descriptive statistics table there are 50 students from class IV SDN 05 Gresik. It is known that the average value of the pre-test is 58.64, with the lowest value of 40 and the highest of 78. Meanwhile, in the post-test, the average reached 80.59, with the lowest value of 68 and the highest of 95. This shows a significant increase in scores between before and after the use of E-Comic media.

Tabel 4. Test of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	statistik	df	Sig.	statistik	df	Sig.
Pre Test	.136	50	.200*	.968	50	.656
Post Test	.128	50	.200*	.950	50	.312

The normality test for pre-test and post-test data was carried out on two classes consisting of 50 students, with the aim of determining whether the results of the story writing ability of grade 4 students of SDN 05 Gresik were normally distributed. The criteria for normality testing states that if the P value (significance value) ≥ 0.05 , then the data can be considered normal; conversely, if $P \leq 0.05$, the data is considered abnormal. Based on the table presented, the normality test was conducted using the Shapiro-Wilk test. The results of the normality test are shown in the Shapiro-Wilk table, where the significance value for the pre-test is 0.656 and for the post-test is 0.312. Referring to the decision

criteria, both values are greater than 0.05, so it can be concluded that the data is normally distributed.

Tabel 5. Uji Paired Sample Test

	Mean	Std descriptive	Std Error Mean	85% Consilance interval of the descriptive		t	4f	Sig.(2- tailed)
				Lower	Hiper			
				Paireds Pretest -post test	-22.95455			

The paired sample test aims to compare two averages from two paired samples with the assumption that the data is normally distributed. Decision making in the t-test focuses on the significance value (2-tailed). If the significance value (sig) is less than 0.05, where H0 is accepted and H1 is rejected, then there is a significant difference between the initial and final variables, which also indicates a significant effect of the difference in treatment on each variable. Conversely, if sig (2-tailed) is greater than 0.05, where H0 is accepted and H1 is rejected, then there is no significant difference between the initial and final variables, which also indicates that there is no significant effect of the difference in treatment on each variable.

In the table above, there are the results of the analysis of the pre-test and post-test of class 4B with a significance value (2-tailed) of 0.00, which is less than 0.05, proving that there is a significant difference between two variables and the impact of the application of E-Comics so that the Effect of the Application of E-Comics Affects: (1) Improvement of Writing Quality {a} Students find it easier to create a complete story with a structure (beginning–middle–end) due to the visual aid from comics. {b} Aspects such as plot, characters, conflict, and resolution become clearer and more creative. (2) Enhancing Imagination and Creativity {a} Attractive images in e-comics trigger unique story ideas from students. {b} Students are encouraged to create their own stories based on the models they see. (3) Increasing Learning Motivation {a} Digital and visual media like e-comics are preferred over regular text. {b} Making writing activities not a heavy task, but a fun creative process. (4) Facilitating Understanding of Narrative Text Structure {a} E-Comics present narratives in an easily understandable form, especially for students who struggle with long texts. (5) Reducing Anxiety in Writing {a} Many students are reluctant to write because they feel overwhelmed; with e-comics, the writing process becomes lighter as the visual framework is already available.

Discussion

The results of the study indicate that E-Comic media has a positive impact on the ability to write stories, especially simple narrative stories, in grade IV students at SDN 05 Gresik. The data in the descriptive statistics table shows that the average value before using digital comic media is very low, when compared to the value after the application of the media in writing activities. This is reinforced by the results of the paired sample t-test which shows a significance

of 0.00, which means that there is a significant influence from the use of digital comic media. The use of E-Comic has a very good impact on students' psychomotor abilities in expressing their ideas in writing. With interesting digital comic learning media, students find it easier to arrange words into sentences and organize them into a story. This finding is in line with previous research by Dewi Ambarwati et al. (2019) which states that the use of comic media can improve students' ability to write narrative stories. During story writing learning in grade IV, when E-Comic was displayed, all students showed high focus and enthusiasm. They really like media that is equipped with colorful images and eye-catching speech balloons. Comics remain a trend among the current generation, including in elementary schools, where both male and female students really like them. This time, comic media is presented in a digital format displayed via an LCD projector, adding to the enthusiasm and enthusiasm of students, especially because this is their first experience at SDN 05 Gresik. This is in line with the theory expressed by Suparman et al. (2020) which states that comics can increase interest in reading. With increased interest in reading, students will know more about various things and can express their thoughts in writing. Therefore, the existence of E-Comic media is very influential in facilitating the writing process for students.

The use of e-comics in the learning process has been shown to have a significant positive impact on students' writing skills at the elementary school level. Previous studies also support these results, showing that digital media can support the development of students' writing skills. A study conducted by Ramadhani (2022) revealed that the use of digital media, including e-comics, contributes to the development of students' reading skills. The study shows that digital media can provide visual and interactive stimuli that increase students' interest and motivation in writing. This finding is in line with the results of research by Rizal (2023), which shows that e-comics as an additional learning resource are effective in improving students' writing skills.

E-comics provide an engaging and interactive learning experience, which enriches the learning process. Motivation theory can explain why the use of e-comics in learning can improve students' writing skills. The Self-Determination Theory proposed by Deci and Ryan (2022) states that intrinsic motivation that arises from personal interests and desires can increase student engagement and learning outcomes. In the context of using e-comics, an engaging, interactive, and visual format can trigger students' interest and motivation in writing. When students feel involved and have control over the learning process, they tend to develop better writing skills.

A learning approach that integrates text and images can serve as a theoretical basis for the application of e-comics in developing students' writing skills. The Multiliteracies Theory proposed by Cope and Kalantzis (2023) highlights the importance of reading and writing activities in various multimodal contexts. E-comics combine text and images in a harmonious way, providing opportunities for students to interact with various communication elements in the narrative. By engaging in a reading and writing process that includes multimodal elements, students can hone their writing skills comprehensively. Therefore, the use of e-comics as an interesting and interactive learning resource can increase

students' interest, motivation, and writing skills at the elementary school level. Findings from previous studies also support that digital media has a positive impact on the development of students' writing skills. The application of e-comics is based on motivational theories, such as the Self-Determination theory, as well as learning approaches that focus on text and images, such as the Multiliteracies theory, which strengthens our understanding of the benefits of using e-comics in improving students' writing skills.

Previous studies have shown that e-comics have significant benefits in improving students' reading comprehension. By utilizing e-comics as a learning resource, students can hone their overall reading skills, including understanding of content and narrative structure (Dwiasih & Agung, 2021). In the context of online learning, e-comics offer an interesting alternative that can enrich students' reading experiences, which ultimately supports the development of their writing skills (Astuti et al., 2022; Nasrudin, 2021). Furthermore, the use of e-comics in the learning process also contributes to the development of students' visualization and visual comprehension skills.

E-comics combine image and text elements in storytelling, so that students can expand their visual comprehension and ability to convey ideas in various ways. Previous studies have also revealed the benefits of using e-comics in improving students' visualization skills. For example, a study conducted by Nurfitra et al. (2022) showed that e-comics can help students improve their visual comprehension and image interpretation, which in turn contributes to the development of their writing skills. This finding is in line with the results of research by Novita and Sundari (2020) which shows that the use of digital media can help students build better visual understanding and produce more creative writing. E-comics have the potential to expand students' imagination and creativity in writing. In e-comic format, students are faced with the challenge of conveying stories through interesting and captivating images. This can stimulate their imagination and help in the development of deeper details and descriptions in their writing. Several studies have shown that the use of e-comics can improve students' ability to create creative and imaginative stories (Novanti & Suprayogi, 2021; Praptiwi et al., 2021; Suri et al., 2021).

In this regard, it is important to note that visualization skills are not only related to writing skills, but also have a broader impact on students' learning and comprehension processes. Research shows that good visualization skills can affect overall text comprehension (Ferreira-Mello et al., 2019; Kherwa & Bansal, 2019; Mou et al., 2023). In the context of e-comics, visualization becomes an important element in understanding and interpreting the story presented. However, it should be noted that the use of e-comics as an additional learning resource should not replace direct learning by teachers. E-comics should be used as a supporting tool that complements the learning process, activates students, and encourages their participation in writing activities. Therefore, it is important for teachers and educators to use e-comics wisely and integrate them with effective learning strategies.

This study has several limitations that need to be considered. First, the focus of this study was only on elementary school students in the context of online learning. More research is needed to investigate the impact of e-comics at

different levels of education and in different learning contexts. Second, this study only assessed the short-term effects of e-comics on writing skills. Longitudinal research is needed to observe the long-term effects of e-comic use on the development of students' writing skills. To maximize the benefits of using e-comics in online learning, further research is needed to explore various aspects of their use. One aspect that can be studied is the impact of e-comics on students' writing creativity.

Research conducted by Ramadhani (2022) showed that the use of e-comics can encourage students to produce more creative and original writing. The results of the study indicate that e-comics provide visual and narrative stimuli that can inspire students' imaginations, allowing them to develop new ideas and innovative approaches to writing. In addition, it is important to investigate the effect of e-comic use on students' social interactions in the context of online learning. Research by Zamora et al. (2021) showed that e-comics can facilitate collaboration and discussion between students through online learning platforms. They found that students were more likely to share ideas, provide feedback, and interact online when using e-comics as a learning resource. Social interactions triggered by the use of e-comics can improve students' understanding and provide a more meaningful learning experience.

Furthermore, it is very important to pay attention to the development of students' digital literacy through the use of e-comics. Research conducted by Astuti et al. (2022) shows that e-comics can enrich students' digital literacy by introducing them to new formats and technologies in reading and writing. E-comics provide opportunities for students to interact with digital media, understand interactive features, and master important navigation skills in the digital era. In this case, e-comics function as a learning tool that can encourage the advancement of students' digital literacy. In addition, individual differences in response to the use of e-comics must also be considered.

Each student has unique preferences and learning styles, so it is important to adjust e-comic teaching strategies to the needs and characteristics of each student. Research by Amali et al. (2023) shows that the use of e-comics that are tailored to students' learning styles can increase their engagement and understanding in the learning process. By paying attention to individual differences, teachers can develop a more targeted and effective teaching approach.

CONCLUSION

Based on the results of the research and analysis conducted, it can be concluded that the application of E-Comic media in elementary education has a positive effect on the story writing skills of fourth grade students of SDN 05 Gresik. There is a significant difference between the pre- and post-test scores after the use of E-Comic media, which indicates an increase in students' writing skills. The results of the paired sample t-test showed a significance value of 0.00, which is smaller than 0.05, indicating that the use of E-Comic media has an effect on the story writing skills of fourth grade students of SDN 05 Gresik. Data

analysis supports the purpose of the study, namely to observe and evaluate the impact of E-Comic media on story writing skills at the elementary school level. E-Comic has proven effective in helping students channel their ideas in writing. With a clear, easy-to-understand, and simple flow, digital E-Comic is one of the choices in the learning process of writing short stories. In addition, students can directly see illustrations and speech bubbles, which makes it easier for them to express what they see into short stories.

The use of E-Comics aims to enable students to develop their ideas, concepts, grammar, and vocabulary during the process of learning to write short stories. To ensure this research can provide an even better impact, we recommend follow-up research on several themes, including the Expansion of Levels and Characteristics of Learners. Future research could be conducted at different levels, such as upper elementary students (grades V–VI) or early junior high school (grade VII) to see if the effectiveness of e-comics remains consistent in older ages or with different learning needs. Comparison with Other Learning Media It is suggested to compare e-comics with other media such as: Educational animated videos, Interactive digital stories, and Conventional picture books. The aim is to identify which media is most effective in enhancing creative writing skills And Studies on Students with Special Needs (ABK) Research involving inclusive students or students with learning disabilities is highly recommended to assess the extent to which e-comics can support differentiated learning. These recommendations aim to deepen, broaden, and apply research findings to a wider and more complex educational context, as well as to ensure the sustainability and relevance of digital innovation in literacy learning in elementary schools.

REFERENCES

- Adriyanto, A. R., Santosa, I., & Syarief, A. (2019). Memahami Perilaku Generasi Z Sebagai Dasar Pengembangan Materi Pembelajaran Daring. Seminar Nasional: Seni, Teknologi, Dan Masyarakat., 2, 165–173. <https://doi.org/10.33153/Semhas.V2i0.116>.
- Afiana, S., Prastowo, A., Sunan, U., & Yogyakarta, K. (2022). Penggunaan Media Pembelajaran E-Comic dalam Menumbuhkan Motivasi dan Antusiasme Belajar Peserta Didik Sekolah Dasar. *Didaktis: Jurnal Pendidikan dan Ilmu Pengetahuan*, 22(1), 41–56. <https://doi.org/10.30651/DIDAKTIS.V22I1.11089>
- Afrida, A. (2020). Pengaruh Media Komik Cerita Anak Terhadap Keterampilan Menulis Narasi Pada Siswa Kelas Iv Mi Al Wathoniyah 02 Brebes. Skripsi. Semarang: Universitas Islam Semarang. Negeri Walisongo
- Amali, L. M. K., Ntobuo, N. E., Uloli, R., Mohamad, Y., & Yunus, M. (2023). Development of Magnetic Digital Comics in Science Learning to Improve Student Learning Outcomes in Elementary Schools. *Jurnal Penelitian Pendidikan IPA*, 9(2), 548–555. <https://doi.org/10.29303/jppipa.v9i2.2915>
- Ambarwati, S. D., Mu'awwanah, U., & Farhurohman, O. (2019). Pengembangan Media Komik Untuk Meningkatkan Keterampilan Menulis Karangan Narasi. *Primary: Jurnal Keilmuan Dan Kependidikan Dasar*, 11(02), 2623–2685 <https://doi.org/10.32678/Primary.V11i02.2327>.

- Astuti, T., Hidayat, S., & Rusdiyani, I. (2022). The Development Of Contextual Learning-Based Comic Media To Improve Reading Interest In 3rd Grade Students of SD Negeri Karundang 2. *JPSd (Jurnal Pendidikan Sekolah Dasar)*, 8(1), 63–76. <https://doi.org/10.30870/JPSD.V8I1.12634>
- Cahyani, A., Dewi, N. K., & Setiawan, H. (2021). Analisis Kesalahan Berbahasa Tulis Pada Teks Narasi Siswa Kelas V SDN 13 Manggelewa Kabupaten Dompu. *Pedagogia: Jurnal Pendidikan Dasar*, 1(1), 41–49.
- Cope, B., & Kalantzis, M. (2015). The Things You Do to Know: An Introduction to the Pedagogy of Multiliteracies. *A Pedagogy of Multiliteracies*, 1–36. https://doi.org/10.1057/9781137539724_1
- Deci, E. L., & Ryan, R. M. (1980). Self-determination Theory: When Mind Mediates Behavior. *The Journal of Mind and Behavior*, 1(1), 33–43. <http://www.jstor.org/stable/43852807>
- Dwiasih, A. A. I., & Agung, A. A. G. (2021). The Development of Fabel E-Comic in Bahasa Indonesia Lesson for Grade II of Elementary School. *Proceedings of the 2nd International Conference on Technology and Educational Science (ICTES 2020)*, 499–508. <https://doi.org/10.2991/assehr.k.210407.284>
- Ferreira-Mello, R., André, M., Pinheiro, A., Costa, E., & Romero, C. (2019). Text mining in education. *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery*, 9(6), e1332. <https://doi.org/10.1002/WIDM.1332>
- Fukuda, K. (2020). Science, technology and innovation ecosystem transformation toward society 5.0. *International Journal of Production Economics*, 220. <https://doi.org/10.1016/j.ijpe.2019.07.033>
- Garini, A. W., Respati, R., & Prana, A. M. (2020). Penggunaan Media berupa Digital pada Masa Pandemi di Sekolah Dasar. *PEDADIDAKTIKA: Jurnal Ilmiah Pendidikan Guru Sekolah Dasar*, 7(4), 186–191. <https://doi.org/10.17509/PEDADIDAKTIKA.V7I4.26558>
- Gavaldon, G., & McGarr, O. (2019). Exploring pre service teachers' future intentions to use technology through the use of comics. *Teaching and Teacher Education*, 83, 99–109. <https://doi.org/10.1016/j.tate.2019.04.004>
- Hendri, M., Tahir, M., & Setiawan, H. (2022). Pengaruh Media Komik Cerita Anak Terhadap Kemampuan Menulis Teks Narasi Siswa Kelas V Sdn 1 Kediri Selatan Tahun Pelajaran 2020/2021. *Jurnal Ilmiah Mandala Education*, 8(1), 852–858. <https://doi.org/10.36312/jime.v8i1.2885>
- Herlandita, R., & Nuroh, E. Z. (2023). The effect of comic strip media on third-grade students' writing story essay. *Journal Of Teaching And Learning In Elementary Education*, 6(1), 8–18. <https://doi.org/10.33578/jtlee.v6i1.7949>
- Kalantzis, M., & Cope, W. (2023). Multiliteracies: Life of an Idea. *The International Journal of Literacies*, 30(2), 17–89. <https://doi.org/10.18848/2327-0136/CGP/v30i02/17-89>
- Kartika, G., Azhar, A., & Nasir, M. (2023). Development of E-Comic as a Physics Learning Media for Class X Students on Momentum and Impulse Materials. *Jurnal Penelitian Pendidikan IPA*, 9(1), 332–336. <https://doi.org/10.29303/JPPIPA.V9I1.2391>
- Kherwa, P., & Bansal, P. (2019). Topic Modeling: A Comprehensive Review. *EAI Endorsed Transactions on Scalable Information Systems*, “7”(24), 1–16. <https://doi.org/10.4108/EAI.13-7-2018.159623>
- Kurnia, F., & Yuanita. (2023). Pengembangan Media Pembelajaran Audio Visual Berbasis STEM Pada Tema Peduli Lingkungan Kelas IV Sekolah Dasar. *Cendekiawan*, 5(2), 116–126. <https://doi.org/10.35438/cendekiawan.v5.i2.300>

- Luluk, S. (2023). Peningkatan Kemampuan Menulis Cerita Fantasi Melalui Media Pembelajaran Komik Nonverbal Pada Mata Pelajaran Bahasa Indonesia. *Jurnal Pena Kita : Jurnal Agama Dan Keagamaan Kementerian Agama Tulungagung*.
- Meidyawati, S. (2018). Pengaruh Penggunaan Media Komik terhadap Hasil Membaca Pemahaman di Kelas V SD Negeri 2 Gunung Pereng Kota Tasikmalaya. *Pedagogika: Jurnal Ilmiah Pendidikan Guru Sekolah Dasar*, 5(2), 283–295. <https://doi.org/10.17509/Pedagogika.V5i2.7342>.
- Mou, C., Wang, X., Xie, L., Wu, Y., Zhang, J., Qi, Z., Shan, Y., & Qie, X. (2023). *T2I-Adapter: Learning Adapters to Dig out More Controllable Ability for Text-to-Image Diffusion Models*. <https://arxiv.org/abs/2302.08453v2>
- Nafiah, I., Susilohadi, G., & Sulistyawati, H. (2019). Improving Students' Writing Coherence Through Graphic Organizers. *English Education Journal*, 7(1). <https://doi.org/10.20961/eed.v7i1.35843>.
- Nasrudin, N. (2021). Peningkatan Keterampilan Membaca pada Siswa Kelas 2 SDN 02 Karangasem Talun Berbasis E-COMIC. *Action Research Journal*, 1(2), 194–199. <https://doi.org/10.51651/ARJ.V1I2.79>
- Nisa, F. C., Rostikawati, R. T., & Zen, D. S. (2023). Pengembangan Media Video Animasi Berbasis Powtoon Pada Subtema 3 Usaha Pelestarian Lingkungan Sebagai Sumber Pembelajaran Di Sekolah Dasar. *Jurnal Elementaria Edukasia*, 6(4), 2101–2116. <https://doi.org/10.31949/jee.v6i4.7406>
- Novanti, E. A., & Suprayogi, S. (2021). Webtoons Potentials to Enhance EFL Students Vocabulary. *Journal of Research on Language Education*, 2(2), 83–87. <https://doi.org/10.33365/JORLE.V2I2.1311>
- Novita, L., & Sundari, F. S. (2020). Peningkatan Hasil Belajar Siswa Menggunakan Media Game Ular Tangga Digital. *Jurnal Basicedu*, 4(3), 716–724. <https://doi.org/10.31004/BASICEDU.V4I3.428>
- Nurfita, A., Nuryaman, A. V., Cahyani, M. A., & Setiaji, B. (2022). E-Comic as an Alternative Learning Media for Analytical Mechanic Course During COVID-19 Pandemic. *Impulse: Journal of Research and Innovation in Physics Education*, 1(2), 89–95. <https://doi.org/10.14421/impulse.2021.12-04>
- Pedagogi: Jurnal Penelitian Pendidikan, 7(1), 57–64. <https://doi.org/10.25134/pedagogi.v7i1.2860>
- Prandika, D. D., & Nuroh, E. Z. (2023). Efektivitas Cerita Digital pada Kemampuan Menulis di Sekolah Dasar Negeri. *Cendekiawan*, 5(2), 169–183. <https://doi.org/10.35438/cendekiawan.v5i2.355>
- Praptiwi, U. S., Yulianto, A., & Ellianawati, E. (2021). The Effectiveness of Integrated Comic Electronic Media Islamic Values on Students' Creative Thinking Ability. *Jurnal Penelitian Pendidikan IPA*, 7(SpecialIssue), 345–350. <https://doi.org/10.29303/jppipa.v7iSpecialIssue.1033>
- Puriasih, K. N., & Trisna, G. A. P. S. (2022). Digital Comics Learning Media Based on Problem Based Learning in Science Subjects for Fourth Grade Elementary School. *Jurnal Mimbar PGSD Undiksha*, 10(2), 367–375. <https://doi.org/10.23887/jpgsd.v10i2.48575>
- Putra, T. C. S., & Rusnilawati. (2023). Model Project Based Learning Dengan Media Diorama Mengoptimalkan Keterampilan Berbicara Dan Menulis Karangan Narasi Siswa Kelas V. *Jurnal Elementaria Edukasia*, 6(4), 1635–1646. <https://doi.org/10.31949/jee.v6i4.7159>
- Ramadhan, B. S., & Rasuardie. (2021). Kajian Industri Komik Daring Indonesia: Studi Komik Tahilalats. *JSRW (Jurnal Senirupa Warna)*, 8(1), 2–18. <https://doi.org/10.36806/jsrw.v8i1.80>

- Ramadhani, A., Tambunan, M. A., Saragih, V. R., Sirait, J., Reynhat, M., & Sitanggang. (2022). Pengaruh Media Komik Digital untuk Meningkatkan Kemampuan Menulis Cerita Pendek. *Jurnal Indonesia, Bahasa Dan Sastra* 2(2). <https://doi.org/10.47709/jbsi.v2i2.1870>
- Ramadhani, Z., Nopita, D., & Elfiza, R. (2022). Designing E-comic for English Reading Material for Grade Eight in Tanjungpinang. *Journal of Language, Literature, and English Teaching (JULIET)*, 3(2), 85–93. <https://doi.org/10.31629/JULIET.V3I2.4862>
- Rizal, A. S. (2023). Inovasi Pembelajaran untuk Meningkatkan Hasil Belajar Siswa di Era Digital. *Attanwir: Jurnal Keislaman dan Pendidikan*, 14(1), 11–28. <https://doi.org/10.53915/JURNALKEISLAMANDANPENDIDIKAN.V14I1.329>
- Rodiah, S. (2023). Aplikasi Kinemaster Video Dongeng untuk Meningkatkan Kemampuan Menyimak Anak Belajar dari Rumah. *EDUKASIA: Jurnal Pendidikan Pembelajaran*, 4(20), 69–78.
- Ryan, R. M., & Deci, E. L. (2022). Self-Determination Theory. *Encyclopedia of Quality of Life and Well-Being Research*, 1–7. https://doi.org/10.1007/978-3-319-69909-7_2630-2
- Septiana, E. (2022). Development Of E-Comic Based Learning Media On Large And Unit Materials To Increase Student Learning Motivation. *FINGER: Jurnal Ilmiah Teknologi Pendidikan*, 1(1), 8–15. <https://doi.org/10.58723/FINGER.V1I1.18>
- Setyaningsih, A., Norida, C. S., & Tri, S. (2022). Pengembangan Media Pembelajaran E-Comic Peluang Usaha Produk Barang atau Jasa Untuk Meningkatkan Hasil Belajar Peserta Didik Sekolah Menengah Kejuruan. *Jurnal Pendidikan Ekonomi Undiksha*, 14(2), 260–273. <https://doi.org/10.>
- Sugiyono. (2019). *Metodelogi Dan Penelitian Kuantitatif Alfabet*, CV. dan Kualitatif Dan R&D.
- Suparman, I. W., Eliyanti, M., & Hermawati, E. (2020). Pengaruh Penyajian Materi Dalam Bentuk Media Komik Terhadap Minat Baca Dan Hasil Belajar.
- Suri, D. A., Astuti, I. A. D., Bhakti, Y. B., & Sumarni, R. A. (2021). E-Comics as an Interactive Learning Media on Static Fluid Concepts. *Proceedings of the 2nd Annual Conference on Social Science and Humanities (ANCOSH 2020)*, 358–361. <https://doi.org/10.2991/assehr.k.210413.083>
- Susanto, A. (2015). *Teori Belajar Dan Pembelajaran Disekolah Dasar*. Prenada Media.
- Syahmi, F. A., Ulfa, S., & Susilaningsih. (2022). Pengembangan Media Pembelajaran Komik Digital Berbasis Smartphone Untuk Siswa Sekolah Dasar. *Teknologi JKTP: Jurnal Kajian Pendidikan*, 5(1), 81–90. <https://doi.org/10.17977/um038v5i12022.p081>
- Wulandari, T., & Mudinillah, A. (2022). Efektivitas penggunaan aplikasi canva sebagai media pembelajaran IPA MI/SD. *Jurmia: Jurnal Riset Madrasah Ibtidaiyah*, 2(1), 102–118. <https://doi.org/https://doi.org/10.32665/jurmia.v2i1.245>
- Yusiana, U., & Prasetya, S. P. (2022). Pengembangan Media E-Comic terhadap Hasil Belajar Peserta Didik dalam Pembelajaran IPS. *Dialektika: Pendidikan IPS*, 1(1), 23–33. <https://ejournal.unesa.ac.id/index.php/PENIPS/index>
- Zamora, L. P., Bravo, S. S., & Padilla, A. G. (2021). Production of Comics in POWTOON as a Teaching-Learning Strategy in an Operations Research Course. *European Journal of Contemporary Education*, 10(1), 137–147. <https://doi.org/10.13187/ejced.2021.1.137>