Improving elementary school students' creativity and writing skills through digital comics

Nurul ISTIQ'FAROH, *Graduate School of Yogyakarta State University,* Indonesia, *nurul.istiqfaroh2016@student.uny.ac.id* ORCID: 0000-0003-3774-7485
Suhardi, *Graduate School of Yogyakarta State University,* Indonesia, *suhardi@uny.ac.id*
Ali MUSTADI, *Graduate School of Yogyakarta State University, Indonesia, ali_mustadi@uny.ac.id*

Abstract. Creativity is an important component in 21st century learning. Students with high creativity are easy to improve their ideas and vice versa. The active learning through media is one solution for students' low ability in improving ideas. This study was conducted to develop students' creativity and writing skills through digital comics. This study was a quasi-experimental through a pre-test–post-test design. Participants were 56 fifth-grade students consisting of 27 students as an experimental group and 29 students as a control group. The study was conducted at two Indonesian public elementary schools in the first semester during the academic year 2019/2020. Rubric for Creativity (RCr) and Rubric for Writing Skills (RWS) were used as pre- and post-tests. The independent samples *t*-test and paired samples *t*-test were applied at the significance level of 0.05. The results showed that digital comics significantly improve the creativity and writing skills of the experimental group compared to the control group. Thus, it can be concluded that digital comics are effective in improving the creativity and writing skills of elementary school students.

Keywords: Creativity, digital comics, elementary school students, writing skills

INTRODUCTION

In 21st century learning, students need to be taught core competencies (i.e., critical thinking, creativity, communication, and collaboration) to help them master content and solve problems in their real life. Of the four essential competencies, creativity is the most important skill in the twenty-first century. Supportively, previous studies confirmed that creativity is one of the keys to successful teaching and learning (Egan, Maguire, Christophers, & Rooney, 2017; Tan, Lee, Ponnusamy, Koh, & Tan, 2016). Theoretically, creativity is related to how students receive, choose and interpret information accurately as a result of emotional, cognitive, and motivational activities (Chan, 1995; Simmons & Ren, 2009). Creativity is a construction that needs to be developed and taught in the classroom to create personal goal orientation (Simmons & Ren, 2009), academic achievement (Ai, 1999), divergent thinking (Bentley, 1966), and self-efficacy (Haase, Hoff, Hanel, & Innes-Ker, 2018).

Gardner (1993) reports that children are born with creative potential, but need the teacher to assist them in expressing their imagination (Cheung, 2010). Unfortunately, Romero, Sayer, and Irigoyen (2014) report that activities and content in lessons are sometimes incompatible with fifth-grade student's age levels, socio-cultural backgrounds, and their daily life experiences. Furthermore, Altiparmak and Özdoğan (2010) reveal that the traditional teaching model is an approach that is most often used in elementary schools. In order to reduce these problems, there are different ways to reveal the creative potential of students. For example, Hui, Chow, Chan, Chui, and Sam (2015) state that art and play can increase students' creativity. In addition, Román, Vallejo, and Aguayo (2018) evaluate the effects of class aerobic games on elementary school students' creativity. They report that students in the experimental group get a significant increase in creativity. More specifically, Cheung (2010) reveals that student creativity can be promoted using creative movement activity. They find that these activities provide many opportunities for students to think creatively.

The students' creativity has been establishing as a goal in primary education but the results need to be improved to a satisfactory level (Hyndman & Mahony, 2018; Schoevers et al., 2019). In an empirical study, Kim (2011) surveyed kindergarten through twelfth-grade students and adults in the United States. They report a significant decrease in creative thinking scores for kindergarten children to third grade even though their IQ scores increase. In fact, the student remains static in terms of declaring ideas (fluency) between grades four and five, and then continues to decline (Kim, 2011). The reason for this problem, Bernadi (2017) reveals that students' low creativity due to infrequent learning activity to train their creative thinking. In practice, students are only given simple questions and assigned to look for the right answers. Thus, students must be trained to develop creativity optimally (Delen & Rich, 2013). In this context, the teacher has a vital role to encourage students to improve their creativity early on.

In addition to the unsatisfactory score on student creativity, Bing (2013) agrees that teachers still have difficulty in developing students' narrative writing skills. In line, Teo (2006) shows that students face several problems during narrative writing such as grammatical errors and generating ideas on content. In fact, writing is one of the learning activities that require creativity (Wilson, 2015). This is because writing skills involve all cognitive and physical components (Wooley, 2014). Thus, writing skills are important to be developed, both in school and life (Axelsson, Lundqvist, & Sandberg, 2019).

The previous research (e.g., Al Otaiba, Kosanovich, & Torgesen, 2012; Snow & Juel, 2007) report that teaching strategies influence children's reading and writing skills. Recently, Grenner et al. (2018) investigate the effect of observational learning methods on 55 5th-grade Swedish students aged 10–12 years. In this program, students watch short film clips with peers and are instructed to write texts. The results show that students' writing skills improved significantly after an intervention with observational learning. In quantitative studies, Hwang, Chen, Shadiev, Huang, and Chen (2014) give sixth-grade students (12 or 13 years old) a writing task using mobile devices through familiar situational contexts. At the end of the instruction, students think that the designed activities are fun and students tend to maintain their interest in the learning scenario. This means that writing skills can be controlled using appropriate media and teaching methods to support student learning achievement.

The use of educational media in teaching is urgently needed to foster 21st century skills (Boyle et al., 2014; Qian& Clark, 2016). Buchory, Rahmawati, and Wardani (2017) state that instructional media plays a role in clarifying information. One of them is digital comics (Issa, 2017). Several studies on the use of instructional media in catalyzing student learning have been documented. For example, Negrete (2013) develops science-based comics on sustainable development and natural resources in Mexico, where comics are a suitable tool to be applied to illiterate people. In addition, Sugiman and Suryatin (2019) claim that the use of comics in mathematics learning can improve problem-solving abilities and self-efficacy.

Digital comics, as an effective educational material, are expected to improve students' successful learning. Although comics have been used at various levels of education (Pantaleo, 2013, Tilley & Weiner, 2017), studies on the use of comics to enhance the creativity and writing skills of elementary school students in Indonesian Language subjects are rarely explored. Thus, this study aims to develop and investigate the effect of digital comics in improving fifth-grade students' creativity and writing skills. The research questions are:
a) Are there significant differences on students' creativity and writing skills between experimental and control groups?
b) Is there a significant improvement on students' creativity and writing skills between experimental and control groups after the treatment?

METHODS

Research Design

This study used a nonequivalent comparison-group design (see Table 1). This design was one of the strongest quasi-experimental design using pre-test and post-test (Johnson & Christensen,

2014). Then, we compared both groups before and after treatment. The dependent variable was creativity and writing skills.

Table 1. *Nonequivalent comparison-group design*

Groups	Pre-test	Treatment	Post-test
Experimental	RCr_1, RWS_1	Digital comic embedded within a picture and picture learning strategy	RCr_2, RWS_2
Control	RCr_1, RWS_1	Chalk and talk teaching strategy	RCr_2, RWS_2

Participants

Participants were 56 fifth-grade students (aged 11-12 years) from two public elementary schools in Surabaya, Indonesia. There were 27 students (15 males and 12 females) in Gayungan Elementary School as an experimental group and 29 students (14 males and 15 females) in Babat Jerawat Elementary School as a control group. Students in the experimental group were taught using digital comics embedded within a picture and picture learning strategy, and the control group was taught by the conventional method. In this study, all students had similar educational backgrounds and socio-economic status. They come from low- to moderate-income families. In addition, both schools were drawn from rural areas. Due to each school only has a single class at each level, all students in both groups were taught by 2 different female teachers (aged 38-40 years) who had similar teaching experiences (more than 10 years). The teachers hold a bachelor's degree from a local university. Furthermore, all teachers were trained to apply different methods before treatment.

Instruments

Rubric for Creativity (RCr)
The RCr was used to evaluate students' creativity in narrative writing, which refers to the scoring rubric adopted from Cropley (1997) as presented in Table 2.

Table 2. *Creativity evaluation grid*

Indicator	Sub-Indicator	Description	Maximum Score
Fluency	The number of words used.	The length of the story that students can make	5
Flexibility	The flexibility in sentence structure and content or ideas.	The results of the story have a variety of simple or combined sentences. The students are able to develop the theme of the story and contain imagination that does not occur in the real world.	5
Authenticity	The extent to which develops the originality of the story.	The story has new themes, an unexpected ending, and a new character created by the students themselves.	5
Detail	The ability of students to decorate stories so that they look interesting.	There involves an interesting story, feeling that expresses feelings in the portrayal of characters.	5
Total Score			20

After feedback given by 2 experts, the rubric was tested on 30 fifth-grade students at Airlangga Elementary School. The trial results were analyzed through Product Moment correlation calculations. The results of the Rubric validity test were categorized as valid if $r_{calculated} \geq 0.361$. Table 3 shows that all indicators in the rubric were categorized as valid. In addition, the RCr reliability coefficient was found at 0.76.

Table 3. *Validity of creativity instruments*

Sub-scales	$r_{calculated}$	r_{table} 5% (n=30)	p	Criteria
Fluency	0.926	0.361	0.001	Valid
Flexibility	0.660	0.361	0.001	Valid
Authenticity	0.830	0.361	0.001	Valid
Detail	0.599	0.361	0.001	Valid

Rubric for Writing Skills (RWS)

The RWS was used to evaluate students' writing skills based on narrative and linguistic aspects. The assessment refers to the following narrative assessment grid. The indicators of narrative writing skills were adopted from Thompkins and Hoskisson (1995) as presented in Table 4.

Table 4. *Writing skills assessment grid*

Scales	Sub-scales	Maximal Score
Narrative Elements	Theme	5
	Figure	5
	Background	5
	Conflict	5
	Plot	5
Linguistic Aspects	Content	5
	Organization	5
	Grammar structure	5
	Style: Structure and diction choice	5
	Spelling and punctuation	5
	Total Score	50

In the pilot study, RWS was tested for 30 students. The validity of the rubric can be seen in Table 5. The RWS reliability coefficient is 0.79.

Table 5. *Validity of RWS*

Sub-scales	$r_{calculated}$	r_{table} 5% (n=30)	p	Criteria
Theme	0.716	0.361	0.001	Valid
Figure	0.609	0.361	0.001	Valid
Background	0.454	0.361	0.012	Valid
Conflict	0.758	0.361	0.001	Valid
Plot	0.494	0.361	0.005	Valid
Content	0.452	0.361	0.012	Valid
Organization	0.588	0.361	0.001	Valid
Grammar structure	0.716	0.361	0.001	Valid
Style: Structure and Diction Choice	0.609	0.361	0.001	Valid
Spelling and Punctuation	0.454	0.361	0.012	Valid

Procedures

This research was conducted from May to July 2019 in the academic year 2019/2020. After obtaining legal permission from the Surabaya Education Office and school principals, we met fifth-grade teachers from both elementary schools. Before conducting research, consent forms then were given to students and their parents. In addition, students participated voluntarily in this study, so they could withdraw at any time.

At the beginning of the intervention, RCr and RWS were administered to the experimental and control groups as pre-tests. Both groups were then taught for 5 meetings (2 x 35 minutes for each session) after the pre-test. The experimental group was taught using digital comics

embedded within the picture and picture learning strategy. In this strategy, the teacher used picture media to explain a topic and facilitate students to actively learn. Then, students are encouraged to sort pictures into a logical sequence. First, the teacher told about learning objectives, apperception, and brainstorming through questions and answers. Second, the teacher presented problems around the topic "Indonesian Diversity". Then students were divided into small groups (2-3 students). Third, the teacher introduced Indonesian food, customs, and religion using digital comics presented randomly. Fourth, students discussed and sorted pictures determined by the teacher. In the fifth stage, students wrote stories and analyzed its elements. Sixth, the teacher gave the opportunity for students to read the stories in front of the class. Finally, the teacher asked students to do questions on the worksheets and the teachers submitted conclusions after that.

The control group was taught using the Chalk and Talk strategy through questions and answers as well as lectures. The teacher began to teach Indonesian diversity. Students were divided into small groups (2-3 students) and given a text on "Indonesian Diversity". Furthermore, students and teachers did questions and answers about the types of typical Indonesian food. After reading, students were assigned to write narratives in accordance with the theme and then delivered in front of the class. Finally, the learning activity ended with questions and answers and assignments.

Data Analysis

Kolmogorov-Smirnov was used to test the normality of pre- and post-test data ($p > 0.05$), The paired samples t-test was used to analyze the writing and creativity level. The increase in the pre- to post-test score was checked using n-gain formula (Hake, 1999); High, $g \geq 0.7$; moderate, $0.7 > g \geq 0.3$; and low $g < 0.3$. In addition, an independent samples t-test was used to investigate whether there were differences in creativity and writing skills between the experimental and control groups. t-Tests were performed using the SPSS version 20 program at the significance level of 0.05.

RESULTS

The Digital Comics Development

This flipbook-shaped digital comic was developed based on the fifth-grade curriculum of elementary schools about the diversity of Indonesia; consisting of the Indonesian special food, religious tolerance, and customs. The players were selected through naming, characters, and plotting. There were several names of characters in digital comics based on the unique names of the archipelago such as Fitri, Kadek, and Paijo. The digital comic display was visualized in Figure 1.

FIGURE 1. *Digital comic display "Indonesian Diversity"*

The story was visualized through the characters. In digital comics, there was a series of colorful pictures and text dialogue using the Kvisoft Flipbook Maker application. The panel tool

such as opening digital books based on activities and accompanied by music effects were part of the application.

Student Creativity

To answer the first research question, "Is there a significant difference on students' creativity and writing skills between experimental and control group?", the paired samples *t*-tests were employed. The results are presented in Table 6.

Table 6. *Pre- and post-test scores on creativity*

Groups	Mean		Gain	Criteria
	Pre-test	Post-test		
Control	51.89	60.34	0.16	Low
Experimental	51.67	77.22	0.49	Moderate

Table 6 shows that the control group's creativity pre-test scores were slightly higher than the experimental group. Both groups increased after the treatment. The results showed that the experimental group was higher than the control group, increasing 25.55 with a gain of 0.49. It can be concluded that the creativity score of the experimental group was higher than the control group after treatment. To find out whether there was a difference on students' creativity between the experimental and control groups, an independent *t*-test was conducted (see Table 7).

Table 7. *Independent t-test results on creativity scores*

	Groups	Mean	SD	*df*	*p*
Pre-test	Control	51.90	10.725	54	0.934
	Experimental	51.67	9.806		
Post-test	Control	60.34	10.768	54	0.001
	Experimental	77.22	8.743		

The score of the experimental group (M = 51.48; SD = 9,431) and the control group (M = 51.45; SD = 9,284) had an equal writing score. Based on Table 7, the *p*-value on the pretest score was greater than 0.05. This means that there is no significant difference in creativity scores between students taught using digital comics and traditional teaching before treatment (p = 0.934). After treatment using digital comics, there is a significant difference in creativity scores between experimental and control groups (p = 0.001). Students in the experimental group (M = 77.22; SD = 8,743) are higher than the control group (M = 60.34; SD = 10.768) in terms of creativity scores.

Student Writing Skills

To answer the second research question, "Is there a significant increase on students' creativity and writing skills between experimental and control group before and after treatment", the paired samples *t*-test was used.

Table 8. *Pre- and post-test scores on writing skills*

Groups	Mean		Gain	Criteria
	Pre-test	Post-test		
Control	51.45	62.62	0.21	Low
Experimental	51.48	80.11	0.55	Moderate

Table 8 shows that there is no significant difference in narrative writing skills between experimental and control groups at pre-test. Students in the experimental group (M = 51.48; SD = 9,431) and control group (M = 51.45; SD = 9,284) had similar writing scores. After instruction, there was an increase on students' writing scores in both groups. The score of the experimental group was 28.63 (gain = 0.55), and 11.17 for the control group (gain = 0.21). It can be concluded that students' writing skills in the experimental group are higher than the control group.

Further, an independent samples *t*-test was used to find out whether there was a significant difference in narrative writing skills between the control and the experimental groups (see Table 9).

Table 9. *Independent t-test results for writing skills*

	Groups	Mean	SD	*df*	*p*
Pre-test	Control	51.45	9.284	54	0.989
	Experimental	51.48	9.431		
Post-test	Control	62.62	8.592	54	0.001
	Experimental	80.11	7.439		

Table 9 shows that there is no difference in narrative writing skills between students taught using digital comics and conventional methods before treatment (*p* = 0.989). After the intervention, there is a significant difference in narrative writing scores between experimental and control groups (*p* = 0.001). The experimental group (*M* = 80.11; *SD* = 7,439) is higher than control group (*M* = 62.62; *SD* = 8,592) in terms of writing skills scores.

DISCUSSION

The impact of digital comics on elementary school students' creativity and writing skills has been investigated. Based on the findings, the use of digital comics is able to motivate students and improve their creativity and writing skills. In this case, students taught using digital comics have better post-tests scores than students taught using the conventional method. This may be caused comics provide opportunities for students to solve contextual problems. As a result, these problem-solving activities encourage students' critical thinking, elicit creative thinking, promote writing skills (Saputro, Irwanto, Atun, & Wilujeng, 2019; Irwanto, Saputro, Rohaeti, & Prodjosantoso, 2019), and develop 21st century skills at the same time.

In previous studies, comics provide several advantages in fostering student learning; for instance, comics have a visual appeal, efficiency, and message strength as revealed by Fay (2009). Further, Wiegerová and Navrátilová (2017) state that comics convey real situations that provoke, suggest solutions and motivate children to think critically about the situation. In fact, Daulay (2017) reports that the majority of elementary school students like to read comics. The tendency of students to love picture and color books because these teaching materials are often visualized in an interesting way, so that they remember messages in comics easily. This is the reason why the mean post-test scores of the experimental group students are higher than their counterparts.

Specifically, students' creativity scores can be seen from their fluency, flexibility, authenticity, and detail in writing the texts. This means that students are able to convey and develop various ideas using digital comic media. This is consistent with the argument of Fink (2010) that creativity does not have to create something new and as never before, but students can channel ideas by making to support the learning process. The pictures within the comics become an attraction for students. In a previous study, Arizpe and Styles (2003) also emphasize that students aged 6-12 years prefer images in books rather than reading texts. A similar opinion was expressed by Nicholas (2007). Thus, digital comics are effective to improve creativity and create a pleasant learning atmosphere.

Based on paired samples *t*-test, students in the experimental group get higher creativity scores than their control group because they are free to compose stories in digital comics and to express their creativity. In a similar vein, the specific features of comics are claimed to increase students' interest (Lin, Lin, Lee, & Yore, 2015), and in turn, foster their creativity and writing skills. Based on previous empirical studies, Astuti and Mustadi (2014) also show that the use of animation has a significant effect on students' writing skills. Students pay more attention to the picture. They can record information better, so that prewriting activities, drafting, revising, editing and publication can be carried out effectively. This reasoning is supported by O'Neil (2011) that picture illustrations can be used as a means that can bring students more able to develop stories through text. The students can freely interpret the meaning of each picture

through digital comics. Therefore, these reasons might answer why digital comics are able to increase students' creativity and their writing skills in the current study.

After using digital comics, students' narrative writing skills also improve significantly. It can be proved from the existing of various elements such as themes, characters, place settings, time settings, and the plot that have existed in the stories. The improved students' skills in this study may be due to the students are given the opportunity to actively discuss in small groups, share ideas and arguments with their peers, and read the passages of the story repeatedly. In other words, comics offer a useful mechanism for preparing lessons in interesting ways. In a similar manner, McCloud (2006) argues that comics are innovative learning media to encourage students to promote writing skills. Cheesman's (2006) research also states that students tend to be more interested in engaging in learning. As a result, this provides a positive stimulant for students to describe a concept in narrative writing. Thus, comics have facilitated students in developing writing skills and promoting their creative ideas.

The findings in the current study are in line with previous evidence. Senokossoff (2013) and Heilmann, Miller, and Nockerts (2010) claim that picture storybooks are believed to be effective visual aids in developing narrative writing skills. In addition, Joshua et al. (2007) reveal that thirty-five percent of first- and second-grade students show better using the picture and the oral writing prompt. This is because there is a story structure in a story-based book that stimulates students to think and express ideas through writing. Thus, students can know some elements that make up a story and improve their writing skills as well.

CONCLUSION and RECOMMENDATION

The current study shows that fifth-grade students in the experimental group are more dominant in acquiring creativity and writing skills. There was an improvement in the mean score of pre-test to post-test between students in both groups in favor of experimental group students. Statistically, the scores of creativity and writing skills in experimental group students are higher than conventional group students after using digital comics. It can be concluded that digital comics are effective in enhancing elementary school students' creativity and writing skills.

Nowadays, comics are often seen as important tools for conveying scientific information in interesting ways (Roesky & Kennepohl, 2008) and giving a deep impression to the readers. Through comics, students' reading activities become more understandable and enjoyable as stated by Liu (2004). Interestingly, this innovative learning media successfully encourages students to be actively involved in learning. In turn, students are motivated to develop ideas through writing and promote their creativity. Responding to these benefits, we recommend that digital comics should be integrated into the elementary school curriculum. Thus, teachers need to use digital comics to catalyze student learning. It aims to prepare students to understand the unknown world in the future using technology.

Although this study is effective in improving student learning, several limitations are found. First, digital comics can only be applied in schools with technological facilities such as laptops or computers. Further research can utilize smartphones under the guidance of teachers. Second, this study involves a limited sample. It is recommended to recruit broader samples in the future to obtain comprehensive findings. Third, it is necessary to explore the effect of digital comics on students' cognitive and attitude. In addition, future research can investigate the long-term impact of comics on other subjects and grade levels.

REFERENCES

Ai, X. (1999). Creativity and academic achievement: An investigation of gender differences. *Creativity Research Journal, 12*(4), 329–337.

Al Otaiba, S., Kosanovich, M. L., & Torgesen, J. K. (2012). Assessment and instruction for phonemic awareness and word recognition skills. In A. G. Kamhi, & H. W. Catts (Eds.), *Language and reading disabilities* (3rd Ed., pp. 112–145). Boston: Pearson/A & B.

Altiparmak, K., & Özdoğan, E. (2010). A study on the teaching of the concept of negative numbers. *International Journal of Mathematical Education in Science and Technology, 41*(1), 31–47.

Arizpe, E., & Styles, M. (2003). *Children reading pictures: Interpreting visual texts.* London: Routledge.

Axelsson, A., Lundqvist, J., & Sandberg, G. (2019). Influential factors on children's reading and writing development: The perspective of parents in a Swedish context. *Early Child Development and Care,* 1–13. doi:10.1080/03004430.2019.1590348

Bentley, J. C. (1966). Creativity and academic achievement. *The Journal of Educational Research, 59*(6), 269–272.

Bernadi, R. (2017). Enhancing the creativity of grade IV elementary students through integrated thematic learning with the open-ended approach. *Jurnal Prima Edukasia, 5*(1), 91-101.

Bing, J. P. K. (2013). Enhancing narrative writing skills through action-adventurevideo games**.** *Journal of Education and Practice, 4*(15), 36-40.

Buchory, M. S., Rahmawati, S., & Wardani, S. (2017). The development of a learning media for visualizing the pancasila values based on information and communication technology. *Cakrawala Pendidikan, 36*(3), 502-521.

Boyle, E. A., Macarthur, E. W., Connolly, T.M., Hainey, T., Manea, M., Kärki, A., &Van Rosmalen, P. (2014). A narrative literature review of games, animations and simulations to teach research methods and statistics. *Computers and Education, 74*, 1-14.

Chan, L. O. (1995). *Fostering children's creativity.* Hong Kong: Greenfield Enterprise.

Cheesman, K. (2006). Using comics in the science classroom. *Journal of College Science Teaching, 35*(4), 16-17.

Cheung, R. H. P. (2010). Designing movement activities to develop children's creativity in early childhood education. *Early Child Development and Care, 180*(3), 377-385.

Cropley, A. J. (1997). *More ways than one: Fostering creativity.* Greenwich: Ablex Publishing Corporation.

Daulay, M.I. (2017). Developing social sciences-history's comics-based learning media for the fifth grade of primary school in Pekanbaru City. *International Journal of Research in Counseling and Education, 1*(1), 15-21.

Delen, E., & Kaya, F. (2013). Creativity in the primary classroom. *European Journal of Teacher Education, 36*(2), 233-235.

Egan, A., Maguire, R., Christopers, L., & Rooney, B. (2017). Developing creativity in higher education for 21st century learnes: Aprotocol for a scoping review. *International Journal of Education Research, 82,* 21-27.

Fay, D. (2009). Student storytelling through squential art.*English Teaching Forum Journal, 45*(3), 122-129.

Fink, A., Grabner, R. H., Gebauer, D., Reishofer, G., Koschutning, K., & Ebner, F. (2010). Enhancing creativity by means of cognitive stimulation: Evidence from an fMRI study. *Neurolmage, 52*(4), 1687-1695.

Gardner, H. (1993). *Creating minds: An anatomy of creativity.* New York: Basic Books.

Grenner, E., Åkerlund, V., Asker-Árnason, L., van de Weijer, J., Johansson, V., & Sahlén, B. (2018). Improving narrative writing skills through observational learning: A study of Swedish 5th-grade students. *Educational Review,* 1–20. doi:10.1080/00131911.2018.1536035

Haase, J., Hoff, E. V., Hanel, P. H. P., & Innes-Ker, Å. (2018). A meta-analysis of the relation between creative self-efficacy and different creativity measurements. *Creativity Research Journal, 30*(1), 1–16.

Hake, R. R. (1999). *Analyzing change/gain scores.*Retrieved from http://www.physics.indiana.edu/nsdi/AnalyzingChange-Gain.pdf

Heilmarn, J., Miller, J. F., & Nockerts, A. (2010). Sensitivity of narrative organization measures using narrative retells produced by young school-age children. *Language Testing, 27*(4), 603-626.

Hui, A. N. N., Chow, B. W. Y., Chan, A. Y. T., Chui, B. H. T., & Sam, C. T. (2015). Creativity in Hong Kong classrooms: transition from a seriously formal pedagogy to informally playful learning. *International Journal of Primary, Elementary and Early Years Education, 43*(4), 393–403.

Hwang, W.-Y., Chen, H. S. L., Shadiev, R., Huang, R. Y.-M., & Chen, C.-Y. (2012). Improving English as a foreign language writing in elementary schools using mobile devices in familiar situational contexts. *Computer Assisted Language Learning, 27*(5), 359–378.

Hyndman, B., & Mahony, L. (2018). Developing creativity through outdoor physical activities: a qualitative exploration of contrasting school equipment provisions. *Journal of Adventure Education and Outdoor Learning, 18*(3), 242–256.

Irwanto, Saputro, A. D., Rohaeti, E., & Prodjosantoso, A. K. (2019). Using inquiry-based laboratory instruction to foster critical thinking and science process skills among preservice elementary teachers. *Eurasian Journal of Educational Research, 80*(2019), 151–170.

Issa, S. (2017). Comics in the English classroom: A guide to teaching comics across English studies. *Journal of Graphic Novels and Comics*, 1–19. doi:10.1080/21504857.2017.1355822

Johnson, R. B., & Christensen, L. (2014*). Educational Research: Quantitative, Qualitative, and Mixed Approaches (5th ed.).* California: Sage Publication, Inc.

Joshua, M., Andrade, W. E., Garber-Budzyn, S., Greene, V., Hassan, E., Jones, N. M., … Valentine, S. (2007). The effects of pictures and prompts on the writing of students in primary grades: Action research by graduate students at California State University, Northridge. *Action in Teacher Education, 29*(2), 80–93.

Kim, K. H. (2011). The creativity crisis: The decrease in creative thinking scores on the torrance tests of creative thinking. *Creativity Research Journal, 23*(4), 285-295

Lin, S.-F., Lin, H., Lee, L., & Yore, D. L. (2015). Are science comics a good medium for science communication? The case for public learning of nanotechnology. *International Journal of Science Education, Part B: Communication and Public Engagement, 5*(3), 276–294.

Liu, J. (2004). Effects of comic strips on L2 learners' reading comprehension. *TESOL Quarterly, 38*(2), 225–243.

McCloud, S. (2006). *Making Comics.* Northampton MA: Kitchen Sink Press Inc.

Mustadi, A., &Astuti, Y., (2014). Effects of the use of animation film media on the narrative text writing skill of grade v students of ess. *Jurnal Prima Edukasia, 2*(2), 250-262.

Negrete, A. (2013). Constructing a comic to communicate scientific information about sustainable development and natural resources in Mexico. *Procedia - Social and Behavioral Sciences, 103*, 200-209.

Nicholas, J. L. (2007). *An exploration of the impact of picture book illustrations on the comprehension skills and vocabulary development of emergent readers.* (Unpublished doctoral dissertation). Lousiana State University, Lousiana.

O'Neil, K. E. (2011). Reading pictures: Developing visual literacy for greater comprehension. *Reading Teacher, 65*(3), 214-223.

Pantaleo, S. (2013). Paneling "matters" in elementary students' graphic narratives. *Literacy Research and Instruction, 52*(2), 150–171.

Qian, M., & Clark. K. R. (2016). Geme-based learning and 21st century skills: A review of recent research. *Computers in Human Behavior*, 63, 50-58.

Roesky, H. W., & Kennepohl, D. (2008). Drawing attention with chemistry cartoons. *Journal of Chemical Education, 85*(10), 1355–1360.

Román, P. Á. L., Vallejo, A. P., & Aguayo, B. B. (2018). Acute aerobic exercise enhances students' creativity. *Creativity Research Journal, 30*(3), 310–315.

Romero, J. L. R., Sayer, P., & Irigoyen, E. N. P. (2014). English language teaching in public primary schools in Mexico: The practices and challenges of implementing a national language education program. *International Journal of Qualitative Studies in Education, 27*(8), 1020–1043.

Saputro, A. D., Irwanto, Atun, S., & Wilujeng, I. (2019). The impact of problem solving instruction on academic achievement and science process skills among prospective elementary teachers. *Elementary Education Online, 18*(2), 496–507.

Schoevers, E. M., Leseman, P. P. M., Slot, E. M., Bakker, A., Keijzer, R., & Kroesbergen, E. H. (2019). Promoting pupils' creative thinking in primary school mathematics: A case study. *Thinking Skills and Creativity, 31*, 323–334.

Senokossoff, G. W. (2013). Picture books are for little kids, aren't they? Using picture books with adoleseent readers to enhance literacy instruction picture books are for little kids, aren't they? Using picture books with adolescent readers to enhance it. *Reading Horizons, 52*(3), 210-232.

Simmons, A. L., & Ren, R. (2009). The influence of goal orientation and risk on creativity. *Creativity Research Journal, 2*1(4), 400–408.

Snow, C. E., & Juel, C. (2007). Teaching children to read: What do we know about how to do it? In M. J. Snowling, & C. Hulme (Eds.), *The science of reading. A handbook* (pp. 501–520). Oxford: Blackwell Publishing.

Sugiman, S., & Suryatin, S. (2019). Comic book for improving the elementary school students' mathematical problem solving skills and self-confidence. *Jurnal Prima Edukasia, 7*(1), 58-72

Tan, L., Lee, S., Ponnusamy, L., Koh, E., & Tan, K. (2016). Fonstering creativity in the classroom for high ability students: Context does matter. *Education Sciences, 6*(4), 1-8.

Thompkins, G. E., & Hoskisson, K. (1995). *Language Art: Content and teaching strategies*. United State of America: Precentice-Hall, Inc.

Tilley, C. L., & Weiner, R. G. (2017). Teaching and learning with comics. In F. Bramlett, R. T. Cook, & A. Meskin (Eds.), *The Routledge companion to comics* (pp. 358–366). New York: Routledge.

Teo, A. K. (2006). Using a peer assisted writing activity to promote ESL/EFL students' narrative writing skills. *The Internet TESL Journal, 12*(8). Retrieved from http://iteslj.org/techniques/teo-peerassistedwriting.html

Wiegerová, A.,& Navrátilová, H. (2017). Let's not be scared of comics (researching possibilities of using conceptual comics in teaching nature study in kindergarden). *Prodecia-Social and Behavioral Sciences, 237,* 1576-1581.

Wilson, A. (2015). *Creativity in primary education (3rdEd.).* London: SAGE Publications Ltd.

Wooley, G. (2014). *Developing literacy in the primary classroom.* London: SAGE Publications Ltd.