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Submission date: 21-Dec-2022 11:45PM (UTC-0800)
Submission ID: 1985789480
File name: 5_6134371844641261302.pdf (414.69K)
Word count: 3248
Character count: 18371

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Abstract: *Writing experimental report text is a compulsory material for Indonesian language subject in ninth grade of junior high school. This study aims to 1) find out the implementation of project-based learning using digital comics, and 2) find out the improvement of students' writing in experimental report text in the project-based learning using digital comics. This study is a classroom action research with the subjects of ninth grade students totaling 50 males. This study uses a test question instrument. Data were collected using the test method and the data were validated by triangulation technique. The data analysis technique used is a comparative descriptive technique and a critical analysis technique. The conclusions of this study are 1) in implementing project-based learning assisted by digital comics, researchers apply learning syntax starting from (1) pre-project, (2) phases, and (3) post-project, and 2) the improvement of students' writing skill of experimental report texts in ninth grade classically starts from pre-action as much as 32%, cycle I as much as 58%, and cycle II as much as 88%.*

Keywords*:* project-based learning; digital comics; writing skill; experimental report text

Introduction

Writing skill is part of language skills that have a role in building and optimizing other important skills in humans. It makes writing skill to be a basis both in everyday life and in education (Kim, et al., 2021) because it has been clearly proven to have a positive impact and can further improve academic skills (Wollscheid, et al., 2016). Akyol in Sarıca & Usluel (2016) also explains writing skills as a description of communication skills that can explain experiences, express thoughts, convey feelings, and explain various other things through a series of symbols and language signs. The use of language symbols in writing skills cannot be separated from the form of language which includes words, sentences, and paragraphs (Andarini, 2021) as well as additional techniques consisting of techniques for expressing ideas, developing paragraphs, and bringing up coherence in writing (Hasanudin, et al., 2021).

There are various kinds of written texts in writing skill that can be developed scientifically, including descriptive text, procedure text, letters, news, advertisements, reviews, responses, and experimental report text (Kosasih & Wibowo, 2020). The experimental report text is part of the writing skill that is expected to be mastered by students (Wardani, 2021) because it can help to increase the level of knowledge and insight development (Mulyani & Sari'ah, 2020). Moreover, the experimental report text is also the

main material especially in Indonesian language subject at junior high school level (Hajarah, 2021). Therefore, it can be a benchmark for the success of writing skill at the junior high school level which is able to increase the students' knowledge and insight.

Based on the results of observations in private schools especially the ninth grade of junior high school, students in a boarding school have not yet completed the material for writing experimental report text. They have difficulties in writing the background section and making citations, but they are good at compiling the method section which includes tools, materials, and work procedures. Seeing the results of this observation, the researchers plan more innovative learning, so ninth grade students really have skill to write experimental report texts.

Innovative learning that can be applied is project-based learning (PBL). PBL is included in the method of teaching and learning process which offers diversity and togetherness as a problem-solving concept with a complex nature to optimize students' excellence and competence (Hasanudin, et al., 2022). Project-based learning can also be an alternative for traditional learning (Chen & Yang, 2019) and an interesting way to provide opportunities for students to be involved in solving real problems (Guo, et al., 2020). In other words, project-based learning is a learning method that becomes an alternative for the traditional teaching and learning process by adopting the concept of diversity and togetherness as an effort to provide opportunities for students to be involved in solving complex problems in real terms.

In its implementation, project-based learning is still not perfect enough and has several gaps. Sitorus & Harahap (2019) explain the disadvantages of it include the high cost, the need for a lot of equipment, and students cannot understand the whole topic. Furthermore, Sunismi, et al. (2022) mention that the shortcomings of project-based learning are need a lot of time in solving problems, the possibility of students being inactive, and the ability to collect information from students who are relatively weak which can be overcome by creating a fun teaching and learning process.

A fun teaching and learning process can be held by utilizing the presence of interesting learning media ranging from pictures to digital comics (Purnama, et al., 2015). Digital comics can be described as printed comics with the concept of frames and word balloons available in electronic form or often known as digital form (Utomo & Ahsanah, 2020). The use of digital comics in learning is believed to have the potential to improve various types of literacy skills and minimize students' problems in analysis because it is included in the type of interesting text (Kirchoff, 2017). A research by Riwanto & Wulandari (2019) reveals that the use of digital comics in the teaching and learning process can be utilized as an alternative to increase the effectiveness of learning acceptance, and students' enthusiasm will be higher because they can read and see comic characters.

Based on the advantages of digital comics learning media which can complement the shortcomings of project-based learning methods, the researcher wants to apply project-based learning assisted by digital comics in order to improve the writing skill of experimental report texts for junior high school students.

Method

This study is a classroom action research with the subjects of ninth grade students totaling 50 males. This study uses a test question instrument. The test questions are used to measure the improvement in the writing skill of experimental report text. The data in this study is collected using the test method. The test questions are first consulted by the validators. The steps of collecting data which uses test method are started from 1) compiling the grid, 2) making questions, 3) validating the questions, 4) distributing validated questions, 5) testing the test questions, 6) correcting the answers, and 7) analyze students' answers.

The data is validated using triangulation technique. According to Denzin in Hasanudin, Fitrianingsih, & Saddhono (2019), data triangulation has four types namely data triangulation, researcher triangulation, method triangulation, and theory triangulation. The triangulation used in this study is theory and data triangulations. In theory triangulation, results of study will be matched with theories. Data triangulation is carried out by comparing the data from pretest, test in cycle 1, and test in cycle 2.

In the last step, the researchers conduct data analysis. The data analysis technique used is comparative descriptive technique and critical analysis technique. Comparative descriptive technique is used to analyse quantitative data by comparing the results between cycles (Suwandi, 2011).

Results and Discussion

In the results and discussion section, it will be explained about 1) the form of project-based learning using digital comics, and 2) the improvement of writing skill in experimental report texts on project-based learning using digital comics. These two results will be described as follows.

The form of project-based learning using digital comics

Project-based learning using digital comics is used to improve writing skill of experimental report texts on the ninth grade. It modifies the syntaxs that are ever carried out by Umar (2016) namely (a) Pre-project; (b) Phase 1: Identifying Problems; (c) Phase 2: Designing and Project Implementation Schedule; (d) Phase 3: Conducting Research; (e) Phase 4: Develop a Product Draft/Prototype; (f) Phase 5: Measure, Assess, and Improve Projects; (g) Phase 6: Finalization and Publication; (h) Post-project. These steps are then adopted by adding digital comic media, so the learning syntax can be seen in the following table:

Table 2. Syntax of project-based learning using digital comics

Project-based learning (Umar, 2016)	**Project based learning using digital comics***
Pre-project	In this step, the researchers prepare a digital comic to help students to understand the project that will be made. Digital comics created are related to the experimental report text material. The researchers create digital comics about making colour discs. In addition, the researchers also confirm to prepare a report on the results of a systematic experiment in making colour discs.

Project-based learning (Umar, 2016)	Project based learning using digital comics*
Phase 1: Identifying Problems	In this step, students make observations in the sun outside the open space. Based on observations in sunlight, students identify and formulate problems.
Phase 2: Designing and Project implementation Schedule	By observing the digital comics, students can design colour disc designs to answer the problem formulation. In this step, students also make a schedule for the implementation of the design and the division of their respective tasks.
Phase 3: Conducting Research	At this stage, students collect data about the rays produced by the sun and analyse and can read material on digital comics. Based on this data, students can begin to plan products to prove that light actually appears in the sun.
Phase 4: Develop a Product Draft/Prototype	In this step, students begin to design product drafts/prototypes that can be seen on digital comics. Drafting is not out of the formulation of the problem created.
Phase 5: Measure, Assess, and Improve Projects	In this step, students assess and see the product that has been made, whether there is anything that needs to be improved by paying attention to the steps in the digital comic, after reviewing the product made, the creator (student who makes) also needs to show the product to their peers to review it.
Phase 6: Finalization and Publication	In this step, students can do a final check on the shortage of products that have been made. After that, students can present the products made in front of the class.
Post-project	In this step, the teacher provides an assessment, reinforcement and suggestions for the product made. In addition, students also collect reports on experiments that have been made

*Developed by researchers

The digital comics used to assist project-based learning can be seen in the following figure.

Figure 1. Digital comic about making color discs

The improvement of writing skill in experimental report texts on project-based learning using digital comics

The improvement of writing skill on experimental report text of ninth grade students in project-based learning using digital comics can be measured starting from pre-action learning, cycle I, and cycle II.

In the pre-action, there are still many ninth grade students who get score under the passing grade. Based on the scores obtained by the students, it can be determined that the presentation of the students' completeness in writing experimental report text in the pre-action is 16 students (a score above the passing grade) or 32%.

Seeing the condition of the class, the researchers examine the results of writing tests. To improve the writing skill of experimental report texts in the ninth grader students, the researchers design the learning by implementing project-based learning using digital comics. Learning outcomes by applying this method and media collaboration can be seen in cycles I and II.

In cycle I, after the researchers implement project-based learning using digital comics, the ninth grade students' scores on writing test are improved. This increase can be seen from the students' completeness in writing test, there are 29 students who have completed (the score is above the passing grade) or as much as 58%. However, this increase is not considered as classical (class) completeness in writing test of experimental report text because there are still many students whose scores are under the passing grade. Based on the data on the scores of writing skill, the researchers evaluate the existing learning deficiencies to design the learning in cycle II.

In cycle II, after researchers evaluate the shortcomings of project-based learning using digital comics in cycle I, researchers implement project-based learning using better digital comics. After the end of class, the ninth grade students' scores for writing experimental report texts improved better than cycle I. This increase can be seen from the students' mastery in writing experimental report texts, there are 44 students who complete (the scores are above the passing grade) or 88%. The form of writing improvement at the ninth grader students' experimental report writing skill in each activity can be illustrated in the following diagram.

Figure 2. Percentage diagram of success in writing experimental report text

Mayasari, Hasanudin, and Fitrianingsih (2020) state that skill and competence have to be possessed by a person because of science and technology development. Especially in writing skill which has an important role to hone thinking intelligence and support the results of the learning process (Atmojo, et al., 2021). Research by Baidowi, et al. (2015) explains that to develop writing skill significantly, the self-study process can use a project-based learning model. Followed by Trisnadewi, et al. (2020) who say that writing skill can also be improved using digital comics as learning media. This supports the results of this study which proves that the use of project-based methods coupled with the role of digital comics can improve writing skills.

Conclusion

The conclusions of this study are, 1) to implement project-based learning using digital comics, researchers apply learning syntax starting from (1) pre-project, (2) phases, and (3) post-project, and 2) the improvement of writing skill of experimental report texts in the ninth grade students is classically started from pre-action as much as 32%, cycle I as much as 58%, and cycle II as much as 88%. Although class completeness has not yet reached 100%, project-based learning using digital comics can improve the writing skill of experimental report texts in the ninth grade students.

Acknowledgment

The researchers would like to thank LPPM IKIP PGRI Bojonegoro which has fully fund for the publication of this study.

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