

Project-based learning in basic photography learning: The effect on student learning outcome

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Abstract: This research aims to assess the impact of implementing the project based learning on enhancing student learning outcomes in photography sessions within the visual communication design program at Vocational High School. Additionally, the study intends to compare the effectiveness of this learning with conventional learning. The study used a quasi-experimental method using a non-equivalent control group. The study was carried out at Vocational High School Muhammadiyah 1 Kepanjen. The samples in this research were X-grade students in visual communication design. They were separated into two groups: the experimental group, consisting of 17 students, and the control group, also composed of 17 students. The data was gathered by assessing students' learning outcomes before and after using the learning strategies of each group. The research utilized a portfolio of photographic project outcomes as the instrument, which included specified evaluation criteria. The data analysis in the research included a normality test, homogeneity test, and independent samples t-test. The findings indicated a notable disparity in learning outcomes between the experimental and control groups. The study findings suggest project-based learning may enhance student learning outcomes in photography sessions.

Keywords: Learning outcomes, photography, project-based learning

Abstrak: Penelitian ini bertujuan untuk mengkaji dampak penerapan pembelajaran berbasis proyek terhadap peningkatan hasil belajar siswa pada sesi fotografi pada program desain komunikasi visual di SMK. Selain itu, penelitian ini bermaksud untuk membandingkan keefektifan pembelajaran ini dengan pembelajaran konvensional. Penelitian menggunakan metode eksperimen semu dengan menggunakan kelompok kontrol non-ekuivalen. Penelitian dilaksanakan di SMK Muhammadiyah 1 Kepanjen. Siswa kelas X pada mata pelajaran desain komunikasi visual adalah sampel dalam riset ini. Mereka dipisahkan menjadi dua kelompok: kelompok eksperimen yang terdiri dari 17 siswa, dan kelompok kontrol yang juga terdiri dari 17 siswa. Pengumpulan data dilakukan dengan menilai hasil belajar siswa sebelum dan sesudah menggunakan strategi pembelajaran masing-masing kelompok. Penelitian ini menggunakan portofolio hasil proyek fotografi sebagai instrumen, yang mencakup kriteria evaluasi tertentu. Analisis data dalam penelitian meliputi uji normalitas, homogenitas, dan uji t sampel independen. Temuan ini menunjukkan perbedaan yang mencolok dalam hasil belajar antara kelompok eksperimen dan kontrol. Temuan penelitian menunjukkan pembelajaran berbasis proyek dapat meningkatkan hasil belajar siswa dalam sesi fotografi.

Kata kunci: Hasil belajar, fotografi, pembelajaran berbasis proyek

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INTRODUCTION

In today's digital and social media era, visual communication is increasingly important to learn (Andhita, 2021; Manu, 2023). One of the most important visual communications to learn is photography (Harsanto, 2017). Photography is an art medium that is easy and can be used to convey messages (Atmaja, 2021; Wibowo, 2015). The digital age and social media open up opportunities for photographers to make relevant work, so it is important that photography is studied as a science (Yusa et al., 2023). Technological advances are fast and rapid, demanding many changes, especially in work. Photography as

a science is studied in vocational high schools formally. Vocational high schools' objective is to generate graduates who are prepared to enter the workforce, both as workers and as entrepreneurs (Alfan, 2014; Rahman & Perdana, 2019). With the opportunity to make relevant work, photography should be studied effectively.

Based on the portfolio results of the 2023/2024 academic year, visual communication design majors at Muhammadiyah 1 Kepanjen Vocational High School still have not produced photos in accordance with the basics of photography. The resulting photos still lack the application of basic photography theory, especially the concept of the exposure triangle which is a fundamental element in producing quality photos. The exposure triangle consists of three main components, namely aperture, shutter speed, and ISO (Gibson, 2014). Students struggle to understand how these three elements interact with each other to regulate the exposure of a photograph. The depth of field is influenced by the aperture, which also dictates the amount of light that enters the lens. Shutter speed controls the duration of light hitting the camera sensor, which affects the effect of motion in the photo. ISO regulates the sensor's sensitivity to light, which can increase the brightness of the image but can also add noise if not used properly. The application of the exposure triangle is very important as mistakes in adjusting any of the components can result in photos that are too dark, too bright, or not sharp.

Based on these problems, improvements need to be made so that students who graduate get good knowledge to face the world of work (Nasir et al., 2024). Improving the quality of learning is the main target for every educator in planning learning (Nasir et al., 2023; Susilo et al., 2023). The times also demand the way teachers teach, so teachers should use learning strategies that can improve the quality of learning (Suhandi & Robi'ah, 2022; Yomaki et al., 2023). In an effort to liberate learning, the independent curriculum tries to change a conventional teaching method that is centered on educators into learner-centered learning (Wibowo et al., 2024). In order to optimize learning outcomes, educators should modify their instructional strategies that are not as effective (Lelasari et al., 2021).

Direct learning is a teacher-centered teaching strategy as a learning resource and instructor (Dewi et al., 2021; Nurdiyanto et al., 2024). Direct learning uses one-way communication, resulting in the knowledge that students have being limited to what is given (Cahyo, 2019; Purnamasari et al., 2016). Direct learning is a derivative of behavioristic theory (Joyce & Calhoun, 2024). Conventional learning can be interpreted as an attitude, way of thinking, and action based on previous results (Bari & Hidayatullah, 2015). Conventional teacher-centered learning provides less effective results in previous learning, so it is necessary to learn with other strategies for effective learning outcomes.

Project-based learning (PjBL) can enhance students' psychomotor skills (Rianda & Sayekti, 2023), and students' performance (Zang et al., 2022). PjBL as a learning strategy can help students develop creativity (Anggelia et al., 2022). PjBL in visual communication design has been proven to enhance students' videography skills (Suryadi et al., 2018). The implementation of PjBL has successfully improved skills and helped students' creativity. Changes in teacher teaching in America using student-centered learning (Dole et al., 2016). PjBL is student-centered learning (Kokotsaki et al., 2016; Tsai et al., 2015; Vidic, 2023). In implementing PjBL, students are invited to collaborate (Hambali et al., 2020). The syntax in PjBL according to Nurohman in (Halimah & Marwati, 2022) first determines the basic question, second makes the project design, third prepares the scheduling, fourth monitors

the progress of the project, fifth assesses the results, and sixth evaluates the experience. Properly implemented syntax can increase student activeness in learning (Utami, 2022).

Based on the explanation, there is a need for a change in learning strategy. Student-centered learning has been explained to improve student skills (Maulani et al., 2021). PjBL is one of the student-centered strategies and has been proven to improve students' application skills, so researchers consider it very suitable if the Project-based learning strategy is used in the above problems. The purpose of this study was to determine the effect of PjBL on student learning outcomes in class X photography lessons majoring in visual communication design at vocational high school.

METHOD

This research is an experimental research. subjects who were given different treatments. The research was conducted at Vocational High School Muhammadiyah 1 Kepanjen. The experimental group, which consisted of 17 students, and the control group, which consisted of 17 students, were the samples in this study. The students were class X students who were majoring in visual communication design. Data was gathered by evaluating students' learning outcomes before and after implementing each group's learning strategy. The quasi-experimental method employed in the research was a non-equivalent control group design.

Data were obtained before and after each intervention. The assessment instrument is in the form of an ability test to produce photos appropriately. Specific ability tests are used to measure potential abilities in certain fields (Ropii & Fahrurrozi, 2017). The test results are in the form of photos that students have taken.

The research test instrument was validated before conducting research. Validation of test questions is done to determine its feasibility. There were 10 instruments that were validated to material experts and practitioner experts. The instrument was validated by material experts, namely learning technology lecturers and practitioner experts, namely visual communication design teachers. There was a value of 90% from the material expert and a value of 90% from the practitioner expert.

Data were collected and calculated with the aim of providing answers to research questions. Data analysis uses a data normality test, homogeneity, and independent t-test with the help of IBM SPSS 21 software. The assessment criteria in Table 1.

Table 1. Description of learning outcomes

Score	Assessment Criteria
86 – 100	Learners apply the exposure triangle with the help of tools appropriately.
71 – 85	Learners apply the exposure triangle correctly.
56 – 70	Learners do not apply the components of the exposure triangle correctly.
<55	Learners do not know the basic components of photography correctly.

RESULTS AND DISCUSSION

The application of learning in each group was carried out three times a meeting. The results of the data are obtained in Table 2.

Table 2. Description of learning outcomes of control and experimental group

	Control		Experimental	
	Pre-test	Post-test	Pre-test	Post-test
Mean	67.35	76.76	62.94	83.97
Min	55	65	50	70
Max	75	85	75	95
Std Dev	6.15	6.1	6.86	6.5

Based on Table 2, the mean in the control group increased by 9.41, the increase was calculated from the value obtained during the pre-test to the post-test. While in the experimental group the mean increased by 21.03. The control group and the experiment exhibited a 7.21-point discrepancy in post-test results. Additionally, an independent t-test was implemented to ascertain whether there was a significant difference between the learning outcomes of the two groups. The independent t-test necessitated the examination of the data's normality and homogeneity.

Table 3. Test of normality

Group	Data	Shapiro-Wilk		
		Statistic	df	Sig.
Conventional	Pre-test	0.911	17	0.103
	Post-test	0.906	17	0.086
Experimental	Pre-test	0.950	17	0.449
	Post-test	0.939	17	0.305

In accordance with Table 3. It is possible to infer that all data are normally distributed, as the Shapiro-Wilk normality test yielded a significance value greater than 0.05. The data homogeneity test was conducted subsequent to this.

Table 4. Test of homogeneity of variance

	Levene			
	Statistic	df1	df2	Sig.
Pre-test	0.236	1	32	0.630
Post-test	0.014	1	32	0.908

Based on Table 4, the normality test results obtained a significance value of more than 0.05 so it can be concluded that the data have the same variance. After doing the prerequisites, then testing the learning outcomes using the independent samples t-test.

Table 5. Independent samples t-test

	t	df	Sig. (2-tailed)	Mean Difference
Pre-test	1.974	32	0.057	4.412
Post-test	-3.2	32	0.003	-7.

Assessment criteria based on Table 5, the results of the independent t test on the pre-test obtained a Sig value. (2-tailed) 0.57 greater than 0.05 indicates that there is no significant difference between learning outcomes before treatment is carried out. The independent t-test on the post-test obtained a Sig value. (2-tailed) 0.03 is smaller than 0.05. These results indicate that there is a significant difference between learning outcomes using conventional strategies and PjBL.

PjBL in photography basics subject can improve learning outcomes better than conventional learning strategy. So we recommend project-based learning to continue to be used in learning in photography subjects. Based on the observations of researchers, students tend to have enthusiasm during the learning process when using PjBL, in line with research conducted by Nurhadiyah et al. (2021) which says that PjBL can foster student learning activities. In addition, when compared to conventional learning, project-based learning opens up space for students to freely access as much information as possible. Students have the freedom to express themselves. The application of PjBL invites students to work together. Although this research does not explain about improving the ability to work together. According to Lee et al. (2015) collaboration between students must occur in PjBL. So learning by using PjBL can improve collaboration skills (Hussein, 2021).

The learning results in the control group showed dark lighting and less consistent details in each photo produced compared to the experimental class. This shows that the PjBL encourages students to also be able to understand and apply basic concepts in photography, such as proper exposure and attention to detail. In addition, the implementation of PjBL also provides an opportunity for students to comprehend the concept of exposure triangle which is fundamental in photography. The exposure triangle consists of three main elements: shutter speed, aperture, and ISO, which work together to regulate the amount of light entering the camera and affect the final result of a photograph. With photography projects, students can experiment directly with these three elements, adjusting the aperture to control depth of field, adjusting the shutter speed to regulate motion clarity, and adjusting the ISO to adjust the sensor's sensitivity to light.

In the experimental class, students are given the opportunity to test various photography techniques first-hand through their projects. This allowed them to experience the real challenge of managing lighting and details in each photo they took. In contrast, in the control group, there were restrictions in the exploration of these concepts, which could affect the quality of the final results achieved. Students' cognitive capabilities are not stimulated by conventional learning (Pambudi et al., 2022). This condition renders them incapable of comprehending the educational material that their instructor imparts.

The success of students in applying the basics of photography to their portfolios cannot be separated from constructive and contextual learning. According to Wahyu (2016) PjBL is an innovative way of teaching that prioritizes contextual learning via complex activities. Collaboration in learning can provide meaningfulness in learning (Kartini, 2020; Sholeh et al., 2021). Learning becomes more meaningful with collaboration between

students. Meaningful learning improves long-term memory (Sternberg & Sternberg, 2015). Seeing the benefits of PjBL, it is certainly important to use it in order to prepare graduates who are ready to work.

CONCLUSION

Learning by using PjBL is proven in this study to improve the learning outcomes of students majoring in visual communication design on photography material at Muhammadiyah 1 Kepanjen Vocational High School. The results showed that there was a significant difference between the learning outcomes after treatment between the control group that applied conventional learning and the experimental group that applied PjBL. PjBL is better than conventional learning seen from the average post-test results. The researcher recommends that learning in photography subjects no longer uses a student-centered approach, one of our recommendations is PjBL. Teachers should re-plan learning so that the learning provided is in accordance with the relevance of the times and the needs of students. Teachers should be able to utilize learning resources and no longer focus only on delivering messages. The teacher is an accompaniment to the learning process.

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