AnalysisofIncreasingStudents'LearningInterestThroughtheImplementationoftheProject-BasedLearningModel

by Faisal Muchsin

Submission date: 14-Jul-2025 11:35AM (UTC+0700)
Submission ID: 2714672742
File name: Elferida_Sormin.pdf (299.76K)
Word count: 2959
Character count: 16701

Formatif: Jurnal Ilmiah Pendidikan MIPA, September 2024, 14 (2), 465-472
http://dx.doi.org/10.30998/formatif.v14i2.28555
p-ISSN: 2088-351X e-ISSN: 2502-5457
Accredited (S2) by Ministry of Research and Technology of Indonesia No. 148/M/KPT/2020
Available online at https://journal.lppmunindra.ac.id/index.php/Formatif/index

Analysis of Increasing Students' Learning Interest Through the Implementation of the Project-Based Learning Model

Elferida Sormin*), Nova Irawati Simatupang, Leony Sanga Lamsari Purba, Siti Fatimah Azzahra, Familia Novita Simanjuntak
Universitas Kristen Indonesia, Jakarta, Indonesia

Abstract

The purpose of this study is (1) to find out whether there is an increase in students' interest in learning chemistry through the application of project-based learning methods, (2) to find out how much increase in students' interest in learning chemistry through the application of project-based learning methods to the material nature of chemistry. This research design uses Pre-Experiment: Group Pretest-Posttest. The population of this study was all students of class x, with a total of 35 samples. The research instrument in the form of observation sheets and questionnaire instruments amounted to 25 statements using a Likert scale, and the number of answer choices was a choice from never to always. The test requires analysis using the data before showing that the data is normally and evenly distributed. Hypothesis testing was carried out using a parametric test, namely the One Samples T-test, at a significance level of 0.05 with the help of the SPSS for Windows Version 22 program. The results of this study obtained t_count (122,978) > t_table (1,690) and sig. 0.000 < 0.05. Based on data analysis and hypothesis testing, it is known that students' interest in learning chemistry increases through the application of project-based learning methods. Increasing students' interest in learning chemistry through applying project-based learning methods using gain testing with a score of 0.5 in the medium category.

Keywords: Learning Interest, Project-Based Learning, Increasing

(*) Corresponding Author: sorminelferida@gmail.com

How to Cite: Sormin, E. et al. (2024). Analysis of increasing students' learning interest through the implementation of the project-based learning model. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 14(2), 465-472. http://dx.doi.org/10.30998/formatif.v14i2.28555

INTRODUCTION

The course of a cation cannot be separated from the learning activities at school, at home, and in the community. Education can be successful if it produces educated people who are useful to the developing country. Therefore, the state continues to strive to improve the quality of education in Indonesia, one of which is by seeking to improve the quality of education, namely, curriculum renewal.

Based on the experience of the researchers and several students, they said that in choosing a major to enter IPA (Natural Sciences), it was necessary to think twice because usually, the placement of majors was determined based on junior high school grades, then followed by an exam to enter the department. This has the opportunity to change majors because they are not interested. This is why researchers are interested in seeing students' interest in learning chemistry. Thus, it is important to get students interested in learning chemistry.

One of them is to use appropriate learning methods to achieve learning success and avoid boring students towards learning. The material of the nature of chemistry is the initial learning material for students to study chemistry in class x odd semesters. This material is classified as conceptual; therefore, at this stage, it is necessary to apply effective, interesting learning that can motivate students to learn, especially in learning chemistry. With the hope

that students will be interested in learning chemistry through the application of project-based learning methods. So that students will not change majors because they are already interested in chemistry.

Project-based learning is one of the learning methods that can increase student interest in the learning process (Sucipto 2020). The learning method includes the presentation of the material and all the learning facilities. The learning method is also a reference to the conceptual method used as the first step in carrying out a learning activity. The learning model or strategy is a learning process carried out by teachers and students to achieve goals effectively and efficiently (Rusman, Supriyadi, and Sulhadi 2021). Project-based learning is one of the active learning methods in which students participate in improving critical thinking projects carried out through problems they find independently (Insyasiska, Zubaidah, and Susilo 2017). Furthermore, project-based learning is related to scientific, student, and practical processes, real-life (Amini, Irwandi, and Bahriah 2021; Collins et al. 2014).

Based on the information obtained, it can be concluded that project-based learning is an approach that involves students in projects and ultimately creates works or products. In this case, the project plan created or produced in this research is to make a real project of making window cleaners using materials we often encounter in everyday life. Students then ask about the tools and materials that will be needed to complete the project, how to make it, and others. This can trigger students' curiosity, so students try to find information to answer the questions (Apriliani and Panggayuh 2018). The following are the steps in applying the Project-based learning method including the following: (1) Determining the basic questions, (2) Designing project plans, (3) Preparing schedules, (4) Guiding students and project progress, (5) Testing results, (6) Evaluating experience.

Interest in fighting is important in every learning process because interest is one of the determining factors in achieving the success of teaching. One of the most important things in a psychological contract is how to express the psychological aspect. Various methods that can reveal psychological aspects include observation, tests, interviews, and documentation. Interest is a trait that is not permanent in a person (Amin, Andayani, and Sukib 2018). Interest is related to curiosity, learning, admiration, or having something. Interest can be interpreted as something like pleasure, and interest is not sudden but the result of learning from experience, commitment, and habits (Collins et al. 2014; Fadillah 2016).

Interest is inclination and spirit and a high desire for something(Budiwibowo 2016). Interest in learning is a fact that arises from the interaction of individuals with their environment (Renninger and Hidi 2019). Measurement of interest can be done with four indicators, namely 1) showing interest in learning, 2) attention, 3) knowledge, and 4) learning motivation (Nurhasanah and Sobandi 2016). Several parameters can be used to measure student interest in learning, including attention, pleasure, interest, and student involvement. Based on the background above, this study aims to determine the increase in learning interest of students who are taught using the Project Based Learning model.

METHODS

This study uses a quantitative description approach. This research was conducted in class organic chemistry I, chemistry education., FKIP UKI. As the population and sample in this study, in-class organic chemistry I, chemistry education., FKIP UKI. With a total of 23 samples. The technique of sampling is non-probability sampling using purposive sampling. The design in this study uses One-Group Pre Non-Test-Post Non-Test Design.

Table 1. Research Design

***One-Group Pre-Post* Non Test**		
O	*X*	*O*
Pre Non-Test	*Treatment*	*Post Non-Test.*

The techniques used in data collection are observations made by the researchers themselves, documentation and questionnaires. Observation instruments and questionnaires used include student interest in chemistry questionnaires. The questionnaire instrument was compiled with the following indicators: 1). Attention, 2). Pleasure, 3. Interest and involvement of students.

RESULTS & DISCUSSION

Results

The results of the analysis of the normality test based on the pre-non-test data showed that the data were normally distributed. This can be seen in Table 2.

Table 2. Data Normality Analysis Results

Tests of Normality

	Shapiro-Wilk		
	Statistic	Df	Sig.
Pre Non Test	,970	23	,438

a. Lilliefors Significance Correction

Based on the normality test table, the pre-non-test value with a sig value> 0.05 is 0.438. Thus, the data of students' pre-no-test scores can be said to be normally distributed.
Testing with analysis of data homogeneity using the number of pre-non-test and post-non-test scores of the experimental class. The test is applied using SPSS 22 for Windows with the Levene Test. The results of the homogeneity test of pre-non-test and post-non-test scores are shown in Table 3.

Table 3. Homogeneity Analysis Results

Test of Homogeneity of Variances

Pre-Pos Non-Tes Levene Statistic	df1	df2	Sig.
,868	1	48	,355

Based on the results of the homogeneity analysis of the pre-non-test and post-non-test data, it was found that the significance level was > 0.05, namely 0.355. it means that the data can be said to be homogeneous.
Hypothesis testing was carried out using student post-non-test score data with the help of SPSS 22 for Windows. Hypothesis testing was carried out through the One Samples T-test. From the results of the analysis of the One Samples T-test, a t count of 122,978 with df 23

was obtained, and a value of 1,69092 was obtained. So, it can be said that the value of the t-count is greater than the t-table; thus, Ha, which reads, "There is an increase in students' interest in learning chemistry using the project-based learning method," is accepted. This can be seen in Table 4.

Table 4. Results of Analysis of Hypothesis Testing One - Samples T-test

	One-Sample Test					
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Post Test	122,978	23	,000	77,629	76,35	78,91

Based on the results of data analysis, to find out the increase in students' interest in learning chemistry before and after giving treatment through the n-gain test, we can see Table 5. The n-gain test is carried out with the help of Microsoft Excel to see in detail the increase in the value of each sample.

Table 5. Pre/post Non-Test Score and Maximum Score

Total Pre-Non-Test Score	Total Non-Test Post Score	Maximum Value
1853	2717	3.5000

$$N\ Gain = \frac{Total\ Non\_Test\ Post\ Score - Total\ \text{Pre}\_Non\_Test\ Score}{NMaximum\ Value - total\ pre\ non\_Test\ Score}$$

$$\text{N} - \text{Gain} = \frac{2717-1853}{3.500-1853} = 0.5$$

Based on this theory, with the acquisition of N-gain from the calculation results, the n-gain value is 0.5, which means that it can be stated that the increase is in the medium category

Discussion

The Project-Based Learning (PjBL) model has been widely recognised for its effectiveness in enhancing students' learning interests and meeting key indicators of learning success. One of its significant impacts is the improvement of formative test results, which students complete independently at the end of the learning process. Moreover, the implementation of PjBL brings various other benefits that contribute to students' overall academic and personal development.

Through project-based learning, students are encouraged to think creatively and critically, as they must find innovative solutions to the challenges they encounter in their projects. This process not only fosters their problem-solving skills but also enhances their ability to collaborate with peers. Working on projects requires students to engage in teamwork, communicate effectively, and interact socially, which are essential skills for both academic success and future professional environments. Additionally, students develop organisational abilities as they must efficiently manage their tasks and responsibilities within their groups to ensure the successful completion of their projects.

The competitive spirit that emerges in a project-based learning setting also serves as a motivating factor for students to strive for excellence. By working in teams and aiming to present the best project outcomes, they push themselves to improve their performance and deepen their understanding of the subject matter. This approach makes learning more meaningful and memorable, leaving a lasting impact on both students and teachers. Unlike traditional learning methods, which often rely on passive absorption of information, PjBL actively engages students in hands-on experiences, making their learning journey more dynamic and interactive.

Furthermore, the application of PjBL in education contributes to the advancement of educational sciences and aligns with modern pedagogical demands, as outlined in the 2013 Curriculum. This model integrates the five key elements of the scientific approach: observing, questioning, experimenting, reasoning, and communicating. By incorporating these elements, PjBL ensures that students not only acquire theoretical knowledge but also develop practical skills that are essential for real-world applications.

In the context of project-based learning, students are given the opportunity to explore and discover concepts through investigative activities and presentations. According to Fitri et al. (2019), these activities provide meaningful learning experiences, making the learning process more relevant and beneficial, as students are directly involved in the construction of knowledge. Their active participation allows them to grasp complex concepts more effectively, leading to improved academic performance.

Apriliani and Panggayuh (2018) emphasise that PjBL encourages students to work collaboratively in groups, which facilitates problem-solving and the successful completion of assigned projects. This claim is further supported by Pratiwi et al. (2018), who found that PjBL significantly enhances students' teamwork skills and learning outcomes. Additionally, research conducted by Anggito, Pujiastuti, and Gularso (2021), as well as Beier et al. (2019), highlights that this learning model strengthens students' ability to tackle complex problems, improves their communication skills, and fosters a sense of synergy that reinforces their understanding of learning objectives.

With its multifaceted benefits, the Project-Based Learning model not only enhances the effectiveness of education but also prepares students for the challenges of the real world. By engaging in projects that require critical thinking, creativity, and collaboration, students acquire invaluable skills that will serve them well beyond the classroom.

CONCLUSION

Based on the research problem formulation, the results of data testing showed that there was an increase in students' interest in learning chemistry before treatment. Students' interest in learning chemistry was obtained in the low category, which means that students were less interested in learning chemistry. Currently, this means that there is an increase in students' interest in learning chemistry.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest in this research

ACKNOWLEDGEMENT

My thanks go to Universitas Kristen Indonesia, which has provided me with full support, both materially and morally, in conducting this research. In particular, the Chemistry Education Study Program, which is my home study program, is also the place for me to conduct this research.

REFERENCES

Amin, Elly Verawati, Yayuk Andayani, & Sukib, Sukib. (2018). Hubungan antara minat belajar dan kebiasaan belajar terhadap hasil belajar kimia siswa kelas XI IPA. *Chemistry Education Practice* 1(1), 13–19.

Amini, Jihan Nisa, Dedi Irwandi, & Evi Sapinatul Bahriah. (2021). The effectiveness of a problem-based learning model based on ethnoscience on students' critical thinking skills. *JCER (Journal of Chemistry Education Research)* 5(2), 77–87.

Anggito, Albi, Pratiwi Pujiastuti, & Dhiniaty Gularso. (2021). The effect of video project-based learning on students' critical thinking skills during the Covid-19 pandemic. *AL-ISHLAH: Jurnal Pendidikan* 13(3),1858–67. Doi: 10.35445/alishlah.v13i3.772.

Apriliani, Dini Nur, & Vertika Panggayuh. (2018). Pengaruh penggunaan model pembelajaran berbasis project based learning (PjBL) terhadap minat belajar dan hasil belajar siswa kelas X RPL Di SMK Negeri 1 Boyolangu. *JOEICT (Journal of Education and Information Communication Technology),* 2(1), 19–26.

Beier, Margaret E., Michelle H. Kim, Ann Saterbak, Veronica Leautaud, Sandra Bishnoi, & Jaqueline M. Gilberto. (2019). The effect of authentic project-based learning on attitudes and career aspirations in STEM." *Journal of Research in Science Teaching* 56(1), 3–23. doi: 10.1002/tea.21465.

Budiwibowo, Satrijo. (2016). The relationship between students ' learning interest and students' achievement on social science in SMP Negeri 14 Madiun." *Jurnal Studi Sosial* 1(1), 60–68.

Collins, Gary S., Joris A. De Groot, Susan Dutton, Omar Omar, Milensu Shanyinde, Abdelouahid Tajar, Merryn Voysey, Rose Wharton, Ly-Mee Yu, Karel G. Moons, & Douglas G. Altman. (2014). External validation of multivariable prediction models: A systematic review of methodological conduct and reporting." *BMC Medical Research Methodology* 14(1), 40. doi: 10.1186/1471-2288-14-40.

Fadillah, Ahmad. (2016). Analisis minat belajar dan bakat terhadap hasil belajar matematika siswa. *Mathline: Jurnal Matematika Dan Pendidikan Matematika* 1(2), 11–22.

Fitri, Wulandari, Fitri Wulandari, Linasari Dewi, Stkip Muhammadiyah, & Pringsewu Lampung. (2019). Increasing student learning concentration in writing using project-based learning." doi: 10.26638/js.813.203X.

Insyasiska, Dewi, Siti Zubaidah, &and Herawati Susilo. (2017). Pengaruh project based learning terhadap motivasi belajar, kreativitas, kemampuan berpikir kritis, dan kemampuan kognitif siswa pada pembelajaran biologi. *Jurnal Pendidikan Biologi Universitas Negeri Malang* 7(1), 118842.

Nurhasanah, Siti & Ahmad Sobandi. (2016). Minat belajar sebagai determinan hasil belajar siswa. *Jurnal Pendidikan Manajemen Perkantoran* 1(1), 128.

Renninger, Ann, & Suzanne Hidi. (2019). 11-Interest development and learning. *The Cambridge Handbook of Motivation and Learning. Cambridge Handbooks in Psychology* 265–90.

Rusman, Rusman, Supriyadi Supriyadi, &and Sulhadi Sulhadi. (2021). Integration of STEM-PjBL on alternative energy sources to improve entrepreneurial science thinking. *Physics Communication* 5(1), 1–6.

Sucipto, Sucipto. (2020). Penerapan model pembelajaran project-based learning untuk meningkatkan hasil belajar IPA dan keterampilan proses sains peserta didik kelas VIII SMP Negeri 5 Tebing Tinggi Tahun 2019." *Jurnal Handayani PGSD FIP UNIMED* 11(2), 46–54.

This page was intentionally left blank.

AnalysisofIncreasingStudents'LearningInterestThroughtheIm... BasedLearningModel

ORIGINALITY REPORT

19%	19%	15%	9%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Academic Library Consortium Student Paper	2%
2	ijsshr.in Internet Source	2%
3	repository.uhamka.ac.id Internet Source	2%
4	jptam.org Internet Source	1%
5	S. M. Fernanda Iragraha. "The 4th International Conference on Physical Education, Sport and Health (ISMINA) and Workshop: Enhancing Sport, Physical Activity, and Health Promotion for A Better Quality of Life", Open Science Framework, 2021 Publication	1%
6	www.edunesia.org Internet Source	1%
7	journal.um.ac.id Internet Source	1%
8	jurnal.fkip.untad.ac.id Internet Source	1%
9	Putri Handayani, Merdhenita Restuti, Miftakhul Jannah, Katrina Ramadhani, Ellianawati Subali, Wiwi Isnaeni. "MENGGALI	1%

POTENSI LOKAL KABUPATEN BANYUMAS UNTUK MENINGKATKAN KEMAMPUAN BERPIKIR KREATIF SISWA SD", Profesi Pendidikan Dasar, 2019
Publication

10	garuda.kemdikbud.go.id Internet Source	1 %
11	Suwarsih Madya, Willy A. Renandya, Masaki Oda, Didi Sukiyadi, Anita Triastuti, Ashadi ., Erna Andriyanti, Nur Hidayanto P.S.P. "English Linguistics, Literature, and Language Teaching in a Changing Era", Routledge, 2019 Publication	1 %
12	journal.stkipsubang.ac.id Internet Source	1 %
13	search.lausd.net Internet Source	1 %
14	jurnal.unimed.ac.id Internet Source	1 %
15	jurnal.untan.ac.id Internet Source	1 %
16	www.knepublishing.com Internet Source	1 %
17	Submitted to Universitas Mulawarman Student Paper	1 %
18	mathline.unwir.ac.id Internet Source	1 %
19	jurnalfkip.unram.ac.id Internet Source	1 %
20	www.coursehero.com Internet Source	1 %

Exclude quotes	On	Exclude matches	< 1%
Exclude bibliography	On		