

Does Guided Inquiry Affect Self-Regulated Learning?

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Abstrak: Education currently requires students to manage their learning independently. This will support student achievement because students can set learning goals, monitor, set learning strategies, and even evaluate their learning. The application of the guided inquiry learning model is believed to be able to develop student self-regulated learning. This study aims to determine the effect of guided inquiry on student self-regulated learning. This research is a quasi-experimental study with a nonequivalent pretest–posttest control group design. The subjects of this study were 20 students in class X IPA A as an experimental class and class X IPA B with a total of 23 students as a control class. Self-regulated learning was measured using a questionnaire adapted from Marchis & Balogh. Prerequisite tests for normality, homogeneity, and prerequisite tests on the slope of the regression line between the covariates and the dependent variable are carried out before testing the hypothesis, followed by the Quade's Rank test. The study's results revealed that guided inquiry did not affect students' Self-regulated learning. Other factors or variables outside the research, such as learning motivation, learning regulation, discipline, self-confidence, and student learning styles, are thought to influence Self-regulated learning. In addition, the relatively short time of conducting guided inquiry is also believed to cause the lack of influence on student self-regulated learning.

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INTRODUCTION

Factors that affect academic achievement always receive significant attention, and self-regulated learning is no exception (Laksana & Hadijah, 2019). This relates to students' skills in setting goals and strategic planning before learning (preparatory phase), monitoring understanding and managing strategies during learning (performance phase), and reflecting after learning (assessment phase) (Zimmerman, 2000). Self-regulated learning is an attitude of students who have the characteristics of learning initiative, diagnosing learning needs, setting learning goals, monitoring, managing, and controlling performance or learning, viewing difficulties as challenges, being relevant, selecting and implementing learning strategies, evaluating learning processes and outcomes, and self-concept (self-concept) (Sugandi, 2013). Other sources state that independent learning is one factor in determining student success in learning. Students must be accustomed to being independent to

succeed in life. If a student has good learning independence, then the student has chosen the right path as the responsibility of a learner (Rahmawati, 2016). Students with self-regulated learning tend to be calm when facing a work problem or study assignment because they have high self-confidence, so the opinions of others do not influence them. Students with self-regulated learning will be confident in solving problems (Prayuda, 2014), able to think critically, creatively and innovatively and not be influenced by the opinions of others (Delyana, 2021).

The survey results at the MA Miftahul Ulum Bettet Pamekasan school conducted on December 6, 2021, showed that students were less enthusiastic about participating in biology lessons in class. This is evidenced by the condition of student activity, only 40% as measured by the number of students who ask and answer questions from the teacher. In addition, students cannot associate the experience with the studied biology material. Students are also less aware and easily give up when they get the opportunity to solve biology problems. This is shown by being passive or doing other activities, such as talking to classmates. This indicates that students do not yet have their learning initiatives, so self-regulated learning still needs to be developed. The December 13, 2021 also provides an overview of learning conditions, which tend to be the same as the first survey's results, namely low student learning activity, lack of enthusiasm for learning, and lack of enthusiasm in learning biology.

The problems above clarify that student self-regulated learning is an important aspect that needs to be empowered in learning. Empowerment of a skill will be better if it applies specific learning models, one of which is guided inquiry (Komariyah & Syam, 2022). Guided inquiry is a learning activity involving students' abilities to seek and investigate something systematically, critically, logically, and analytically, so students can confidently formulate their own findings (Sumarmi, 2012). Guided inquiry is a learning model that involves investigative activities between objects and events by motivating students to investigate existing problems (Suarsana, 2017). In guided inquiry, the material presented by the teacher is not just given and accepted by students. Still, students are cultivated in such a way as to gain various experiences to find their concepts planned by the teacher (Ambarwati et al., 2016).

Previous research revealed that learning that applies the inquiry process positively affects student learning independence (Sanjayanti et al., 2015). Other studies also reveal the influence of the guided inquiry model on student independence (Suarsana et al., 2017). This is because the guided inquiry model allows students to be more active in answering material questions (Prahenti et al., 2020). Other research also reveals that the guided inquiry learning model in biology learning can increase learning independence which is higher than the direct learning model (Suarsana et al., 2019). Several previous studies have reported the effect of guided inquiry on student learning independence, but research in Islamic boarding schools has not been disclosed. Therefore, the implementation of guided inquiry in Islamic boarding schools needs to be conducted to obtain a comprehensive picture of the effect of guided inquiry on student self-regulated learning.

RESEARCH METHOD

Population, Sample and Type of Research

This study was quasi-experimental (Gopalan et al., 2020) with a nonequivalent pretest–posttest control group design (Campbell & Stanley, 2015). The population of this study were all students of class X MA Miftahul Ulum Bettet Pamekasan, even semester of the 2021/2022 academic year. The sample used was students of class X IPA A with 20 students as the experimental class and students from class X IPA B with 23 students as the control class. Determination of the sample in this study using simple random sampling (Kadilar & Cingi, 2007).

Data Collection and Analysis Techniques

This study aims to obtain an overview of the effect of guided inquiry on student self-regulated learning in biology. Self-regulated learning is measured using a questionnaire completed by students at the beginning and end of learning. The self-regulated learning questionnaire was adopted by Marchis & Balogh (2010). The learning tools used in this study are in the form of syllabus, lesson plans (RPP), and guided inquiry-based student worksheets (LKS). Prerequisite tests include normality, homogeneity, and the slope test of the regression line between the covariates and the dependent variable. After that, a hypothesis test was carried out using ANCOVA (Leppink, 2018). If the prerequisite test results are not met, then a non-parametric analysis through the Quade's Rank test is carried out (Wu et al., 2017). All statistical tests were conducted with SPSS 28.0 for Windows software (Field, 2005).

RESULTS AND DISCUSSION

The description of student self-regulated learning is shown in Table 1.

Table 1. Descriptive Statistics of Self-Regulated Learning Data

Group Class	Mean	Std. Deviation	N
Inquiry	70.7000	6.70506	20
Conventional	66.0500	7.29437	20
Total	68.3750	7.30538	40

Table 1 shows that the average student learning independence in the control class was 66.05, while in the experimental class, it was 70.70. These results must be confirmed through hypothesis testing, which is first tested with the following prerequisites.

Normality and Homogeneity Test

The normality and homogeneity tests use a significance level of 0.05. The normality test uses the Kolmogorov-Smirnov test, while the normality test uses the Levene test. A summary of the normality and homogeneity tests is shown in Table 2.

Table 2. Normality and homogeneity test results

Residual for YLS	Kolmogorov-Smirnov ^a			Levene test			
	Statistic	df	Sig.	F	df1	df2	Sig.
	.093	40	.200*	.106	1	38	.746

Table 2 shows the Sig values for the normality and homogeneity tests. > 0.05 (.200 and .746). This indicates that student learning independence data distribution is normally distributed and has a homogeneous variance.

Test the slope of the Regression Line Between Covariates and Dependent Variables.

Using a scatter plot, test the regression line assumptions between the covariates and the dependent variable in both classes. The test results are presented in Figure 1. Figure 1 shows the two

lines have unequal directions (not parallel). These results confirm that the assumption test of the slope of the regression line between the covariates and the dependent variable in the two class groups is not fulfilled. Because the results of this test were not fulfilled, the hypothesis test using ANACOVA could not be carried out and was replaced by using the Quade's Rank test.

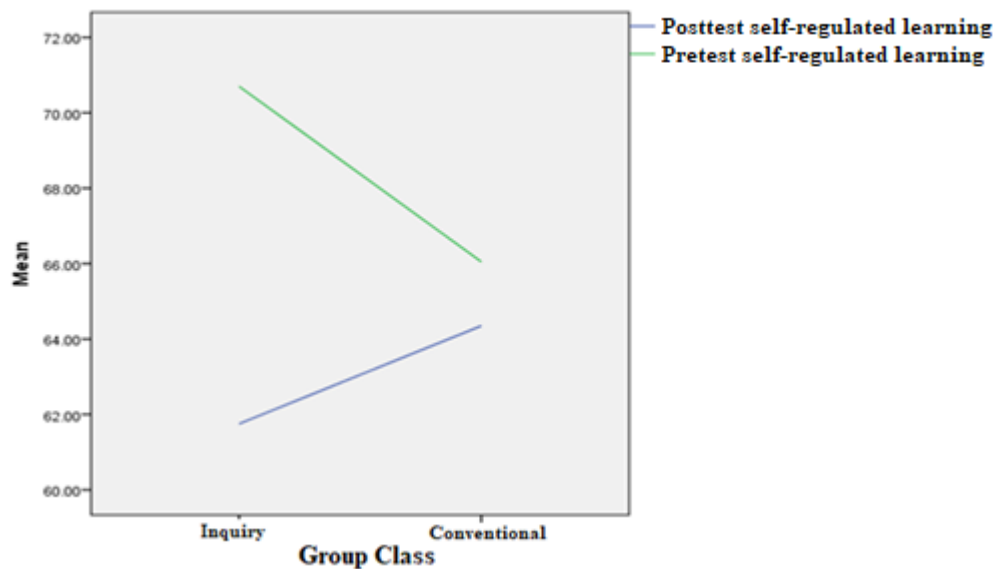


Figure 1. Regression Lines Between Covariates and Dependent Variables

Hypothesis testing

Because the regression slope test between the covariates and the dependent variable in both classes was not fulfilled, the hypothesis test used was the Quade's Rank test. The results of hypothesis testing are shown in Table 3.

Table 3. Results of the Student Self-Regulated Learning Hypothesis Test

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	405.192	1	405.192	3.283	.078
Within Groups	4690.047	38	123.422		
Total	5095.239	39			

Table 3 shows that the F value is 3.28 with a significance value of 0.078, greater than 0.05 ($p > 0.05$). These results indicate no effect of guided inquiry on self-regulated learning.

The hypothesis test results showed no effect of guided inquiry on the self-regulated learning of class X IPA MA Miftahul Ulum Bettet Pamekasan. Research relevant to this study's results has not been found. Still, several researchers have reported related factors or other variables outside of research that influence self-regulated learning. In addition, the implementation of the guided inquiry model is also studied in this discussion. Several studies report that other factors influence student self-regulated learning. Motivation is an intrinsic factor influencing self-regulated learning (Mustofa et al., 2019). Self-regulation and discipline have also been researched and reported as variables that affect student self-regulated learning (Purwaningsih & Herwin, 2020). In addition, the variable student learning styles (Hermawati et al., 2020) and self-confidence (Nursaptini et al., 2020) are also reported to be intrinsic variables that influence self-regulated learning. In addition, extrinsic factors are also thought to influence student self-regulated learning. One of these extrinsic factors is the application of

the learning model, even though the results of previous studies indicate that the learning model has a positive or negative influence in predicting self-regulated learning (Lim & Yeo, 2021).

In addition to the intrinsic and extrinsic variables described above, the implementation of guided inquiry can determine whether there is or is not an effect on self-regulated learning. Learning with guided inquiry takes longer to complete the syntax because students need additional time to plan and conduct experiments (Ural, 2016). Other researchers even researched the effect of guided inquiry on self-regulated learning within 14 weeks (weekly sessions of three times 40 minutes over 14 weeks), with stages corresponding to a gradual increase in student independence (Eylem & Niymet, 2021).

Other researchers explain that the inquiry process takes a lot of time, and the teacher must be involved in all learning processes (Kennedy et al., 2021). In addition, Rinehart (2020) also states that studying phenomena to generate hypotheses takes time. For students starting in inquiry, achieving their research will take a lot of time and a gradual adaptation process (Eylem & Niymet, 2021). This is reinforced by Wolters & Brady (2021), which state that time management is essential in empowering skills, including independent learning. Time management is a self-regulation process in which students actively manage when and for how long they are involved in learning activities deemed necessary to achieve their own academic goals. The explanation above indicates that guided inquiry requires a relatively long time and gradual habituation to students. Meanwhile, this study's time for carrying out the inquiry was relatively shorter than previous research. This is thought to be one of the causes of the absence of the influence of the guided inquiry learning model on student self-regulated learning.

CONCLUSION

This study reveals that guided inquiry does not influence students' self-regulated learning. The results of this study indicate that there are other factors outside the research variables, namely intrinsic factors, that have more influence on students' self-regulated learning. These intrinsic factors include learning motivation, learning regulation, discipline, self-confidence, and student learning styles. In addition, the relatively short time of conducting guided inquiry is also thought to cause a lack of influence on students' self-regulated learning. The next researcher should consider the factors of student readiness, especially learning habits and styles. In addition, researchers who become research teachers should have experience implementing guided inquiry in biology learning.

REFERENCES

- Ambarwati, D., Nyeneng, I. D. P., & Suana, W. (2016). Pengembangan LKS model inkuiri terbimbing berbasis pendekatan kontekstual materi gaya dan penerapannya. *Jurnal FKIP UNILA*, 1(1), 47–58.
- Campbell, D. T., & Stanley, J. C. (2015). *Experimental and quasi-experimental designs for research*. Ravenio Books.
- Feyzioglu Yildiz Eylem & Demarici Niymet. (2021). The Effects of Inquiry- Based Learning on Students' Learner Autonomy and Conceptions of Learning. *The Effects of Inquiry-Based Learning on Students' Learner Autonomy and Conceptions of Learning*, 18(3), 401–420.
- Field, A. (2005). Discovering statistics using SPSS for Windows: Advanced techniques for beginners (Introducing Statistical Methods series). In *SagePublications, Thousand Oaks, CA, USA*.
- Gopalan, M., Rosinger, K., & Ahn, J. Bin. (2020). Use of Quasi-Experimental Research Designs in Education Research: Growth, Promise, and Challenges. *Review of Research in Education*, 44(1). <https://doi.org/10.3102/0091732X20903302>

- Hermawati, I., Andayani, L., & Endah. (2020). Kompetensi Pedagogik Guru, Model Discovery Learning, dan Gaya Belajar terhadap Kemandirian Belajar. *Jurnal Penelitian Dan Pendidikan IPS*, 14(1), 22–30. <https://doi.org/10.21067/jppi.v14i1.4761>
- Kennedy, B. L., Dana, N. F., Kennedy, B. L., Fichtman, N., Taking, D., Kennedy, B. L., & Fichtman, N. (2021). Taking Teacher Inquiry into Higher Education : A Dialogue in Four Parts Taking Teacher Inquiry into Higher Education : A Dialogue in Four Parts. *College Teaching*, 0(0), 1–8. <https://doi.org/10.1080/87567555.2021.1907528>
- Leppink, J. (2018). Analysis of Covariance (ANCOVA) vs. Moderated Regression (MODREG): Why the Interaction Matters. *Health Professions Education*, 4(3). <https://doi.org/10.1016/j.hpe.2018.04.001>
- Lim, S. L., & Yeo, K. J. (2021). A systematic review of the relationship between motivational constructs and self-regulated learning. *International Journal of Evaluation and Research in Education*, 10(1), 330–335. <https://doi.org/10.11591/IJERE.V10I1.21006>
- Marchis, I., & Balogh, T. (2010). Secondary school pupils' self-regulated learning skills. *Acta Didactica Napocensia*, 3(3), 147–152.
- Mustofa, R. F., Nabiila, A., & Suharsono, S. (2019). Correlation of Learning Motivation with Self Regulated Learning at SMA Negeri 1 Tasikmalaya City. *International Journal for Educational and Vocational Studies*, 1(6), 647–650. <https://doi.org/10.29103/ijevs.v1i6.1750>
- Nursaptini, N., Syazali, M., Sobri, M., Sutisna, D., & Widodo, A. (2020). Profil Kemandirian Belajar Mahasiswa dan Analisis Faktor yang Mempengaruhinya: Komunikasi Orang Tua dan Kepercayaan Diri. *Jurnal Pendidikan Edutama*, 7(1), 85. <https://doi.org/10.30734/jpe.v7i1.711>
- Prahenti, D. S., Rusijono, R., & Mariono, A. (2020). Pengaruh inkuiri terbimbing terhadap kemampuan mengidentifikasi sumber energi di sekitar manusia dan kemandirian belajar IPA. *Jurnal Inovasi Teknologi Pendidikan*, 7(1), 78–92. <https://doi.org/10.21831/jitp.v7i1.34108>
- Prayuda, R. (2014). Pengaruh Kemandirian Belajar Terhadap Hasil Belajar Siswa Pada Mata Pelajaran Ekonomi Di SMA. *FKIP Untan*, 3(8), 1–73.
- Purwaningsih, A. Y., & Herwin, H. (2020). Pengaruh regulasi diri dan kedisiplinan terhadap kemandirian belajar siswa di sekolah dasar. *Jurnal Penelitian Ilmu Pendidikan*, 13(1), 22–30. <https://doi.org/10.21831/jpipfip.v13i1.29662>
- Rahmawati, R. (2016). Faktor-Faktor Yang Mempengaruhi Motivasi Pada Mata Pelajaran Ekonomi. *Skripsi UNY*.
- Rinehart, K. E. (2020). *Abductive Analysis in Qualitative Inquiry*. <https://doi.org/10.1177/1077800420935912>
- Sanjayanti, A., Sulistiono, & Budiretnani, D. A. (2015). Tingkat Kemandirian Belajar Siswa SMAN 1 Kediri Kelas XI MIA-5 pada Model PBL Materi Sistem Reproduksi Manusia. *Seminar Nasional XII Pendidikan Biologi FKIP UNS*, 361–363.
- Suarsana, I. N., Suharsono, N., & Warpala, i W. S. (2019). Pengaruh Model Pembelajaran Inkuiri Terbimbing Berbasis. *Jurnal Pendidikan Dan Pembelajaran IPA Indonesia*, 9(1), 34–42.
- Sugandi, A. I. (2013). Pengaruh Pembelajaran Berbasis Masalah Dengan Setting Kooperatif Jigsaw Terhadap Kemandirian Belajar Siswa Sma. *Infinity Journal*, 2(2), 144. <https://doi.org/10.22460/infinity.v2i2.31>
- Sumarmi. (2012). *Model-Model Pembelajaran Geografi*. AdityaMedia Publishing.
- Ural, E., & Correspondence:Evrin. (2016). The Effect of Guided-Inquiry Laboratory Experiments on Science Education Students' Chemistry Laboratory Attitudes , Anxiety and Achievement. *The Effect of Guided-Inquiry Laboratory Experiments on Science Education Students' Chemistry Laboratory Attitudes , Anxiety and Achievement*, 4(4), 217–227. <https://doi.org/10.11114/jets.v4i4.1395>
- Wolters, C. A., & Brady, A. C. (2021). College Students' Time Management: a Self-Regulated

- Learning Perspective. *Educational Psychology Review*, 33(4), 1319–1351.
<https://doi.org/10.1007/s10648-020-09519-z>
- Wu, X., Geng, Z., & Zhao, Q. (2017). Non-Parametric Statistics. In *Handbook Of Medical Statistics*.
https://doi.org/10.1142/9789813148963_0005
- Zimmerman, B. J. (2000). Chapter 2: Attending self-regulation A social cognitive perspective.
Handbook of Self-Regulation, 13–39.