

Effects of learning readiness, learning interest, and learning styles on student learning outcomes at SMA Negeri 1 Wonosari, Gorontalo, Indonesia

Nuryam Gazi *, Syarwani Canon and Hedy Vanni Alam

Postgraduate Program, Universitas Negeri Gorontalo.

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Abstract

This research aims to investigate the effect of learning readiness, learning interest, and learning styles on student learning outcomes at SMA Negeri 1 Wonosari, Wonosari, Boalemo, Gorontalo Province. Primary data were collected by distributing questionnaires to 80 respondents, and secondary ones were student learning outcomes or scores. The data analysis technique was double linear regression. This research indicated that the partial t-test on the effect of learning readiness on learning outcomes engendered a t-count of 4.111 at a significance level of $0.000 < 0.05$ and a t-table of 1.665. Thus, t-count > t-table. The partial t-test on the effect of learning interest on learning outcomes generated a t-count of 3.550 at a significance level of $0.001 < 0.05$ and a t-table of 1.665 and, thereby, t-count > t-table. The partial t-test on the effect of learning styles on learning outcomes resulted in a t-count of 2.944 at a significance level of $0.004 < 0.05$ and a table of 1.665, therefore, t-count > t-table. The simultaneous F-test on the effect of learning readiness, learning interest, and learning styles on learning outcomes engendered a F-count of 219.12 at a significance level of $0.000 < 0.05$ and a F-table of 3.12, hence F-count > F-table. To conclude, (1) learning readiness affected learning outcomes, (2) learning interest affected learning outcomes, and (3) learning styles affected learning outcomes, and (4) readiness, learning interest, and learning styles affected student learning outcomes at SMA Negeri 1 Wonosari simultaneously.

Keywords: Learning Outcome; Learning Readiness; Learning Interest; Learning Style

1. Introduction

Education plays a salient role in educating the nation's life according to the national development goals. Successful education is characterized by an effective, efficient, and fun teaching-learning process, bringing about more optimum learning outcomes. Evaluation is thus of great importance to identify learning outcome completeness. Evaluation is assessing student success levels related to achieving the determined goals of a program (Syah, 2003:195).

Individuals learn to understand how to perform some activity. Individuals have a learning outcome and undergo behavioral changes after they learn. It is analogous to Bloom, in Sudjana (2006:22), who argues that learning outcomes indicate abilities of students after they receive learning experiences.

Learning outcomes, according to Bloom, in Sudjana (2006:23), cover three areas, which are (1) cognitive, (2) affective, and (3) psychomotor. Individuals can learn if they have the readiness to learn. Each individual shows different development background as they differ, yielding different readiness development patterns. Readiness in learning has a strong impact on individual development to realize mature learning willingness, allowing individuals to be quick and ready to receiving the subject learned and acquiring maximum learning outcomes (Vovi, 2017:12).

* Corresponding author: Nuryam Gazi

Our observation pointed out that some students at SMA Negeri 1, during the classroom learning process of the economic subject, could not develop their skills. It was very regrettable because they would not compete well in their tertiary education or the working world as a result of poor self-quality, as shown by their learning outcomes. Students showed boredom during learning and no enthusiasm in finishing assignments the teacher gave. Most students were unwilling to think and contingent upon their friends' work, which they would cheat. They showed reluctance in solving problems by themselves and no motivation, bringing on low learning outcomes. There were one or two students who were active in the class, proposed questions, expressed opinions, gave ideas based on the facts and information they received, and finish assignments by themselves during the economic learning process. Others showed passiveness, causing the learning process to solely focus on teachers or engendering a teacher-centered learning process.

Data on students' economic learning outcomes collected at SMA Negeri 1 Wonosari, as stated by assessment data samples collected by the economic teacher, suggested a mean score of 73.47. 33.33% of students could not attain learning objectives, and 66.67% others could. These data demonstrated student learning outcomes which did not meet the expectation. It adversely influenced final learning outcomes of students in the end-year evaluation. The problem highlights requisite roles of the teacher to realize national educational goals or school goals, considering that the teacher directly communicates students at the school.

Departing from issues found at SMA Negeri 1 Wonosari, we assume that the teacher has to be concerned about student needs to enhance student learning outcomes. The teacher can identify or map student learning needs through differentiated learning. Tomlinson (2001:45), in his book, posits that we can categorize student needs based on at least three aspects: student learning readiness, student interest, and student learning styles.

We are hence interested in undertaking research on "The Effect of Learning Readiness, Learning Interest, and Learning Styles on Student Learning Outcomes at SMA Negeri 1 Wonosari". We aim to observe the partial or simultaneous effect of learning readiness, learning interest, and learning styles on student learning outcomes at SMA Negeri 1 Wonosari

2. Methods

This quantitative research was engaged with three independent variables, i.e., learning readiness (X1), learning interest (X2), and learning style (X3), and one dependent one, which was student learning outcome (Y). Data were collected through questionnaire distribution and documentation. Data were analyzed using the double linear regression analysis technique employing the R-test, F-test, and t-test.

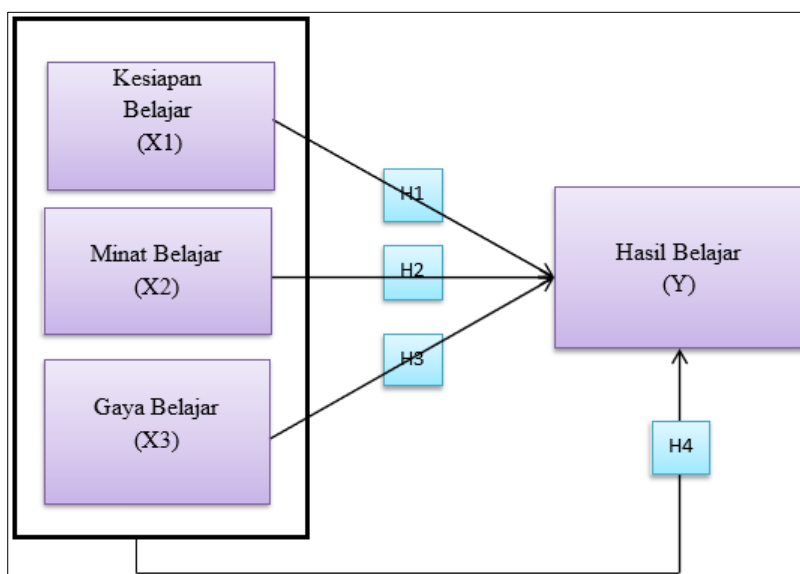


Figure 1 Research Design

3. Results

3.1. Data Analysis

3.1.1. Data Normality Test

A normality test would identify whether the dependent variable and independent variables in a regression model were distributed normally. We carried out the Kolmogorov-Smirnov test at a Sig. value > 0.01 as the normality test. If in the table of the test of normality using the Kolmogorov-Smirnov test the Sig. value > 0.01, data were distributed normally. We present our analysis requirement test in Table 1.

Table 1 Kolmogorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test					
		Learning Readiness	Learning Interest	Learning Style	Learning Outcome
N		80	80	80	80
Normal Parameters ^{a,b}	Mean	96.31	91.81	117.93	14.53
	Std. Deviation	16.040	12.314	21.202	4.415
Most Extreme Differences	Absolute	0.056	0.063	0.095	.097
	Positive	0.047	0.039	0.051	.085
	Negative	-0.056	-0.063	-0.095	-.097
Test Statistic		.056	0.063	0.095	0.097
Asymp. Sig. (2-tailed)		.200 ^{c,d}	0.200 ^{c,d}	0.070 ^c	0.061 ^c

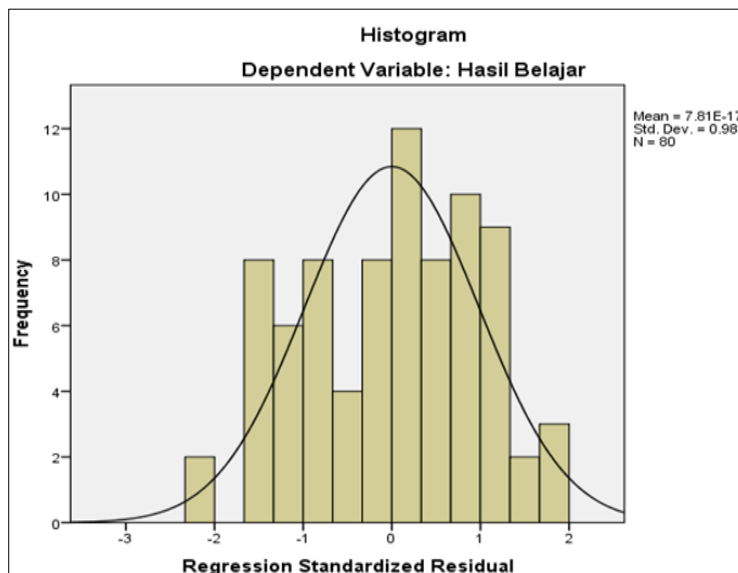


Figure 2 Histogram Chart

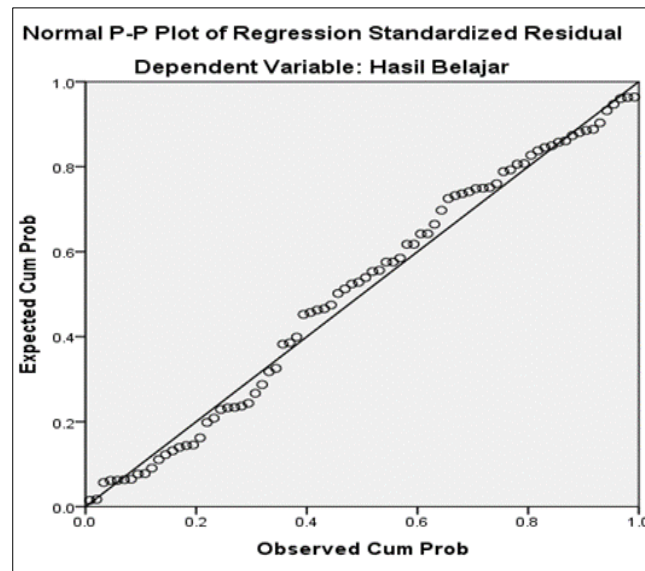


Figure 3 Normal P-P Plot

Residual Data Normality Test between Learning Readiness (X_1) and Learning Outcome (Y)

Table 1 demonstrates the acquired residual data followed a normal distribution, and the output exhibited a significant Kolmogorov-Smirnov test result at $0.20 > 0.01$. Residual data were hence distributed normally. Figure 2 indicates that residual data pointed out a normal curve with a perfect bell shape, and Figure 3 presents a residual data distribution which followed a normal line pattern (a straight line).

Residual Data Normality Test between Learning Interest (X_2) and Learning Outcome (Y)

Table 1 shows that residual data acquired followed a normal distribution, and the output stated a significant Kolmogorov-Smirnov value at $0.07 > 0.01$. Residual data were therefore distributed normally. Figure 2 suggests that residual data demonstrated a normal curve with a perfect bell shape, and Figure 3 exhibits a residual data distribution following a normal line pattern (a straight line).

Residual Data Normality Test between Learning Style (X_3) and Learning Outcome (Y)

Table 1 indicates that residual data acquired followed a normal distribution, and the output pointed out a significant Kolmogorov-Smirnov value at $0.06 > 0.01$. Residual data were thus normally distributed. Figure 2 presents the description that residual data had a normal curve with a perfect bell shape, and Figure 3 shows a residual data distribution in a normal line pattern (a straight line).

3.1.2. Data Linearity Test

A linearity test aimed to identify whether two or more variables tested had a significant linear relationship. The test could be undertaken by quantifying the regression equation of research variables with the following test criteria: the hypothesis was accepted if the F-count \leq F-table and it was rejected if F-count \geq F-table at the determined significance level $\alpha = 0.01$.

Data Linearity Test between Learning Readiness (X_1) and Learning Outcome (Y)

The SPSS output stated a Sig of $0.16 > 0.01$. F-count = $1.407 < F\text{-table} = 3.120$. The hypothesis was hence accepted. The regression equation of X_1 and Y was therefore in a form of a straight line.

Data Linearity Test between Learning Interest (X_2) and Learning Outcome (Y)

The SPSS output suggested a Sig of $0.17 > 0.01$. F-count = $1.354 < F\text{-table} = 3.120$. The hypothesis was thus accepted. The regression equation of X_2 and Y was hence in a form of a straight line.

Data Linearity Test between Learning Style (X₃) and Learning Outcome (Y)

The SPSS output demonstrated a Sig of 0.11 > 0.01. F-count = 1.541 < F-table = 3.120. The hypothesis was therefore accepted. The regression equation of X₃ and Y was thus in a form of a straight line.

3.2. Research Hypothesis Test

3.2.1. R (R-Square) Test

We exhibit the ability of the independent variables of learning readiness (X₁), learning interest (X₂), and learning style (X₃) to explain the dependent variable of learning outcome (Y) in Table 2, which also indicates an R of 0.947 × 0.947 = the coefficient of R-Square of 0.896. As we used double linear regression, the determined adjusted R-square was 0.892.

Table 2 R (R-Square) Test Results

Model Summary				
Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	0.947a	0.896	0.892	1.449

a. Predictors: (Constant), Learning Style, Learning Interest, Learning Readiness

3.2.2. F-Test (ANOVA)

An F-test was carried out to decide whether the independent variables of learning readiness (X₁), learning interest (X₂), and learning style (X₃) had a simultaneous effect on the dependent one, which was learning outcome (Y). The F-test results are pointed out in Table 3.

Table 3 F-Test Results

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1380.367	3	460.122	219.129	0.000b
	Residual	159.583	76	2.100		
	Total	1539.950	79			

a. Dependent Variable: Learning Outcome; b. Predictors: (Constant), Learning Style, Learning Interest, Learning Readiness

The F-test conducted using SPSS gave an output of the significance (Sig.) value of 0.000 < 0.01, leading us to a conclusion that learning readiness (X₁), learning interest (X₂), and learning style (X₃) affected learning outcome (Y) simultaneously. With df₁ = K - 1 = 4 - 1 = 3 (horizontal/N for the variable) and df₂ = N - 3 = 80 - 3 = 76 (vertical/N for the respondent), we acquired an F-table of 3.12. We could hence understand that F-count > F-table (F_h > F_t = 219.12 > 3.12) and inferred that “learning readiness (X₁), learning interest (X₂), and learning style (X₃), had a simultaneous effect on learning outcome (Y)”.

3.2.3. T-Test (Double Linear Regression)

A t-test was performed to make a comparison between two or more independent variables and the dependent one.

Table 4 T-Test Results

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-12.892	1.267		-10.175	0.000
	Learning Readiness	0.111	0.027	0.404	4.111	0.000

Learning Interest	0.106	0.030	0.297	3.550	0.001
Learning Style	0.059	0.020	0.283	2.944	0.004

a. Dependent Variable: Learning Outcome

Testing the Hypothesis of Learning Readiness (X_1) Affecting Learning Outcome (Y)

The empirical test of learning readiness (X_1) effect on learning outcome (Y) resulted in a significance value of $0.000 < 0.01$. $t\text{-count} > t\text{-table} = 4.111 > 1.665$. Taking these results into account, we summed up that the hypothesis stating learning readiness (X_1) affecting learning outcome (Y) was accepted. The Beta in Unstandardized Coefficients of the effect of the variable learning readiness (X_1) on learning outcome (Y) was 0.111, implying that the coefficient of the effect of learning readiness (X_1) on learning outcome (Y) was 0.111.

Testing the Hypothesis of Learning Interest (X_2) Affecting Learning Outcome (Y)

The empirical test of learning interest (X_2) effect on learning outcome (Y) resulted in a significance value of $0.001 < 0.01$. $t\text{-count} > t\text{-table} = 3.550 > 1.665$. These results led us to a conclusion that the hypothesis stating learning interest (X_2) affecting learning outcome (Y) was accepted. The Beta in Unstandardized Coefficients of the effect of the variable learning interest (X_2) on learning outcome (Y) was 0.106, presenting the coefficient of the effect of learning interest (X_2) on learning outcome (Y) of 0.106.

Testing the Hypothesis of Learning Style (X_3) Affecting Learning Outcome (Y)

The empirical test of learning style (X_3) effect on learning outcome (Y) resulted in a significance value of $0.004 < 0.01$. $t\text{-count} > t\text{-table} = 2.944 > 1.665$. These results led us to a conclusion that the hypothesis stating learning style (X_3) affecting learning outcome (Y) was accepted. The Beta in Unstandardized Coefficients of the effect of the variable learning style (X_3) on learning outcome (Y) was 0.059, showing a coefficient of 0.059.

4. Discussion

This discussion referred to the research objective, which was to identify the partial or simultaneous effect of learning readiness, learning interest, and learning style on student learning outcomes at SMA Negeri 1 Wonosari.

We undertook requirement tests before testing the hypotheses and carried out a data normality test as the first requirement test to determine research sample normality using the Kolmogorov-Smirnov test with the following test criterion: If $\text{Sig.} > 0.01$, data were distributed normally. In terms of learning readiness, learning interest, and learning style, the Kolmogorov-Smirnov test output stated significant Sig. values of $0.20 > 0.01$, $0.07 > 0.01$, and $0.06 > 0.01$, respectively. We could therefore conclude that residual data were normally distributed.

We carried out a linearity test as the second requirement test to identify whether two or more variables tested had a significant linear relationship. The output was as follows: in terms of learning readiness, $\text{Sig.} = 0.16 > 0.01$, $F\text{-count} = 1.407 < F\text{-table} = 3.120$; in terms of learning interest, $\text{Sig.} = 0.17 > 0.01$, $F\text{-count} = 1.354 < F\text{-table} = 3.120$; and in terms of learning style, $\text{Sig.} = 0.11 > 0.01$, $F\text{-count} = 1.541 < F\text{-table} = 3.120$. These outputs suggested that hypotheses were accepted, and accordingly, the regression equation was linear in the form of a straight line.

Our research results we elaborated above demonstrated how learning readiness impacted student learning outcomes during the economic lesson. This impact could be interpreted that increases in the independent variable were followed by increases and decreases in the dependent variable.

Our descriptive analysis of the effect of learning readiness on economic learning outcomes of tenth graders at SMA Negeri 1 Wonosari Boalemo Gorontalo Province in the academic year 2022/2023 disclosed the presence of the effect. Widiarti (2018), carrying out similar research, demonstrated how learning readiness impacted economic learning outcomes of tenth graders majoring social sciences at SMA Negeri 2 Banguntapan, Bantul.

We conducted an analysis using an R-test as the first hypothesis test to identify the effect of learning readiness on economic learning outcomes of students and specifically to measure the ability of the independent variables of learning readiness (X_1), learning interest (X_2), and learning style (X_3) to describe the dependent variable of learning outcome (Y). The results, as exhibited in Table 2, indicated an R of $0.947 \times 0.947 =$ the coefficient of R-Square of 0.896 and an adjusted R-square of 0.892. The interpretation was hence in the range of 0 to 1.

An F-test (a simultaneous test) aimed to find whether the independent variables, i.e., learning readiness (X_1), learning interest (X_2), and learning style (X_3) had a simultaneous effect on the dependent variable, i.e., learning outcome (Y). The F-table, if $df_1 = K - 1 = 4 - 1 = 3$ (horizontal/N for the variables) and $df_2 = N - 3 = 80 - 3 = 76$ (vertical/N for the respondents), was therefore 3.12. We could clearly identify here that F-count was higher than F-table ($F_h > F_t = 219.12 > 3.12$) and thus concluded that “learning readiness (X_1), learning interest (X_2), and learning style (X_3) had a simultaneous effect on learning outcome (Y)”.

Our partial t-test attested to that learning readiness inflected economic learning outcomes of students at a significance level of $0.000 < 0.05$. That was, learning readiness (X_1) had a positive effect on learning outcome (Y). Students with good learning readiness would be prepared to partake in learning. The results indicating the effect of learning readiness on economic learning outcomes of students proved that the hypothesis of learning readiness positively affecting economic learning outcomes of students at SMA Negeri 1 Wonosari Boalemo Gorontalo Province in the academic year 2022/2023 was accepted.

The teacher observed several students with unhealthy physical conditions and unpreparedness during task giving and the daily test, whereas other students were sleepy, brought no book required, student worksheets, and other requirements, did not study, and finished their tasks when learning the economic subject. Tomlison (2013), in Kristiani (2021:23), conveyed that readiness here constituted student knowledge and skills in achieving learning goals. Student readiness had to be commensurate with how the teacher thought that each student came with a potency for growing well physically, mentally, and intellectually.

Our descriptive analysis revealed that learning interest influenced economic learning outcomes of tenth graders at SMA Negeri 1 Wonosari Boalemo District Gorontalo Province in the academic year 2022/2023. Amalia (2021) performed similar research but pointed out that learning interest did not have a significant effect on economic learning outcomes of tenth graders majoring in social science at SMA Negeri 1 Pekanbaru. The result was opposed to ours, that learning interest had an impact on economic learning outcomes of students at SMA Negeri 1 Wonosari.

Our partial t-test presented evidence that learning interest inflected economic learning outcomes of students at a significance level of $0.001 < 0.05$, showing a positive influence of learning interest (X_2) on learning outcome (Y). Students with economic learning interest were more enthusiastic in learning economic. As stated through our research, learning interest affected economic learning outcomes of students, and hence, the research hypothesis suggesting a positive effect of learning interest on economic learning outcomes of students at SMA Negeri 1 Wonosari Boalemo Gorontalo Province in the academic year 2022/2023 was accepted.

Learning interest motivated students in learning. We based our research on the degree of the effect of learning interest on student learning outcomes and measured it through student happiness, interest, attention, and engagement. As we observed the teacher in teaching, task giving, and daily test giving activities, we also notified some students showing low motivation, boredom, imagining, and showing no seriousness, while Slameto (2013:180) posited that learning interest was preference and interest in an object or activity with no instruction from others to behave so.

Our research on learning style suggested the finding that it had an impact on economic learning outcomes of students. Furthermore, our descriptive analysis showed the influence of learning style on economic learning outcomes of tenth graders at SMA Negeri 1 Wonosari Boalemo Gorontalo Province in the academic year 2022/2023. Nugroho et al. (2020) undertook similar research with similar results, that learning styles of tenth graders majoring Office Administration at SMKN 9 Semarang affected their learning outcomes in the archives learning subject. The results comported with ours, that learning styles of students at SMA Negeri 1 Wonosari had an impact on their economic learning outcomes.

Our partial t-test exhibited the effect of student learning style on economic learning outcome at a significance level of $0.004 < 0.05$, indicating a positive effect of learning style (X_3) on learning outcome (Y). Students understanding their learning style would have sustainable opportunities for thinking and discussing how they could learn best and be more aware of their power and needs to augment learning outcomes. We found that student learning style had an impact on economic learning outcomes, as shown by the results. We could therefore conclude that the hypothesis stating that student learning styles had a positive effect on economic learning outcomes at SMA Negeri 1 Wonosari Boalemo Gorontalo Province in the academic year 2022/2023 was accepted.

Learning style referred to an approach or method students chose to understand a lesson well. We also foregrounded the degree of the effect of student learning style on economic learning outcome and measured it through visual, auditive, and kinesthetic styles. Porter et al. (2011:110) defined learning style as a keyword to develop performance at work,

schools, and within interpersonal situations. Once students realized how their friends and they absorbed and processed information, they could learn and communicative more efficiently using their learning style.

5. Conclusion

We could finally infer, based on our analysis, that partially, the variable of learning readiness (X_1) affected learning outcome (Y) by 0.111, the variable of learning interest (X_2) affected learning outcome (Y) by 0.106, and the variable of learning style (X_3) affected learning outcome (Y) by 0.056 and that simultaneously, learning readiness (X_1), learning interest (X_2), and learning style (X_3) affected learning outcome (Y) by an F of 219.12.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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