

Self-awareness and teacher attitudes influencing student learning discipline: A quantitative study

Tyas Indasari*, Tutik Susilowati

Office Administration Education, Sebelas Maret University, Surakarta, Indonesia

Email: tyasindasari@student.uns.ac.id

Abstrak

Penelitian ini bertujuan untuk: (1) mengetahui pengaruh self-awareness terhadap disiplin belajar siswa kelas XI MPLB di SMK Negeri 6 Surakarta; (2) mengetahui pengaruh sikap guru terhadap disiplin belajar; (3) mengetahui pengaruh self-awareness dan sikap guru secara bersama-sama terhadap disiplin belajar. Penelitian kuantitatif ini menggunakan populasi 106 siswa dengan teknik sampling jenuh. Instrumen yang digunakan divalidasi untuk memastikan keandalan data. Data dikumpulkan melalui kuisioner tertutup menggunakan skala Likert 1–4. Analisis data menggunakan regresi linear berganda dengan bantuan IBM SPSS versi 26. Hasil penelitian menunjukkan: (1) ada pengaruh yang positif dan signifikan self-awareness terhadap disiplin belajar siswa kelas XI MPLB di SMK Negeri 6 Surakarta ($t_{hitung} 3,630 > t_{tabel} 1,983$); (2) ada pengaruh yang positif dan signifikan sikap guru terhadap disiplin belajar siswa kelas XI MPLB di SMK Negeri 6 Surakarta ($t_{hitung} 5,441 > t_{tabel} 1,983$); (3) ada pengaruh yang positif dan signifikan self-awareness dan sikap guru terhadap disiplin belajar siswa kelas XI MPLB di SMK Negeri 6 Surakarta ($F_{hitung} 34,607 > F_{tabel} 3,08$). Temuan lain menunjukkan sumbangan efektif self-awareness sebesar 14,5% dan sikap guru sebesar 25,7% terhadap disiplin belajar.

Kata kunci: pendekatan kuantitatif; perilaku siswa; sekolah menengah kejuruan

Abstract

This study examined the influence of self-awareness and teacher attitudes on learning discipline among eleventh-grade Management of Office and Business Services (MPLB) students at SMK Negeri 6 Surakarta. Employing a quantitative approach with multiple linear regression analysis, the research utilized a saturated sampling technique encompassing all 106 students in the target population. Data collection was conducted through validated questionnaires using a 4-point Likert scale, with subsequent analysis performed using IBM SPSS version 26. The findings revealed significant positive effects: (1) self-awareness demonstrated a significant influence on learning discipline ($t_{count} = 3.630 > t_{table} = 1.983$); (2) teacher attitudes showed a

* Corresponding author

significant impact on learning discipline ($t_{\text{count}} = 5.441 > t_{\text{table}} = 1.983$); and (3) the combined effect of both variables was statistically significant ($F_{\text{count}} = 34.607 > F_{\text{table}} = 3.08$). The effective contribution analysis indicated that self-awareness contributed 14.5% and teacher attitudes contributed 25.7% to student learning discipline, with a total variance explanation of 40.2%. These results provide empirical evidence for the importance of developing student self-awareness and fostering positive teacher attitudes in enhancing learning discipline within vocational education settings.

Keywords: quantitative approach; student behaviour; vocational high school

Received June 16, 2025; Revised July 07, 2025; Accepted August 07, 2025; Published Online September 02, 2025

<https://dx.doi.org/10.20961/jikap.v9i5.104220>

Introduction

Education serves as a fundamental necessity for individuals to navigate developmental challenges and enhance human resource quality in an increasingly complex world (Rosy & Matusolikhah, 2021). Students, as primary actors in the learning process, are expected to actively apply their knowledge and realize their potential (Siahaan & Pramusinto, 2018). Among the critical elements that facilitate effective learning processes, discipline emerges as a cornerstone factor that significantly influences educational outcomes.

From an ethical perspective, discipline represents an individual's willingness and action to comply with established rules for achieving specific objectives (Puteri et al., 2023). Learning discipline encompasses behaviors that foster time management skills, prevent wasteful practices, and facilitate structured preparation for academic activities (Mu'min et al., 2022). This behavioral framework is essential for creating conducive learning environments and promoting academic achievement.

Contemporary research has identified concerning patterns in student discipline across educational institutions. Mu'min et al. (2022) documented various manifestations of undisciplined behavior, including unauthorized absences, tardiness, classroom disruptions during instruction, incomplete assignment submissions, creation of non-conducive classroom atmospheres, and academic dishonesty through copying. Similarly, Sugiarto (2019) reported persistent disciplinary challenges characterized by unauthorized absences, inappropriate dress codes, and incomplete school uniform compliance. These behavioral patterns indicate systemic issues that require comprehensive intervention strategies.

The discipline-related challenges extend to SMK Negeri 6 Surakarta, particularly among eleventh-grade MPLB students, where preliminary observations revealed significant disciplinary concerns. Statistical evidence from the preliminary study indicated that 51.6% of students failed to attend classes punctually, 64.5% neglected to record instructional materials, and 67.4% exhibited resistance when following teacher directives. These findings underscore the critical need for enhanced disciplinary interventions within this educational context.

The factors contributing to learning discipline challenges can be categorized into internal and external dimensions. According to Rusnawati (2022), internal factors encompass inherent characteristics, awareness levels, interest and motivation patterns, and cognitive frameworks. External factors include modeling influences, advisory interventions, training experiences, family and school environmental conditions, and peer group dynamics. Yuliantika (2017) further emphasized that learning discipline is influenced by internal psychological conditions and external factors such as school regulation implementation and rule compliance mechanisms.

Self-awareness represents an individual's capacity to understand their thoughts, emotions, behaviors, and environmental interactions (Hafizha, 2022). Within educational contexts, self-awareness plays a crucial role in helping students recognize their learning responsibilities, develop

time management skills, and make appropriate decisions that enhance disciplinary behaviors. This metacognitive capability enables students to engage in reflective practices that promote academic responsibility and behavioral regulation.

Teacher attitudes constitute behavioral tendencies demonstrated by educators based on their understanding and emotional responses to specific situations (Dachmiati, 2015). In learning environments, teacher attitudes serve as significant factors influencing student discipline. Educators who demonstrate positive, consistent attitudes are better positioned to guide students toward disciplined behavior throughout the learning process (Nugraheni, 2023). The quality of teacher-student interactions significantly impacts the development of disciplinary behaviors and academic engagement.

The present study addresses a significant gap in the literature by examining the combined influence of self-awareness and teacher attitudes on learning discipline a relationship that has not been comprehensively investigated in previous research. This investigation is particularly relevant given the specific contextual challenges observed at SMK Negeri 6 Surakarta, where teacher approaches to discipline implementation appear insufficiently assertive, leading to student complacency and inappropriate classroom behaviors.

The research objectives are threefold: (1) to examine the influence of self-awareness on learning discipline among eleventh-grade MPLB students at SMK Negeri 6 Surakarta; (2) to investigate the effect of teacher attitudes on student learning discipline; and (3) to analyze the combined influence of self-awareness and teacher attitudes on learning discipline outcomes.

Research Method

This study was conducted at SMK Negeri 6 Surakarta, located at Jl. Adi Sucipto No. 38, Kerten, Laweyan District, Surakarta City, Central Java. The research timeline extended from September 2024 to April 2025, encompassing all phases from initial proposal development through thesis examination and revision processes.

The study employed a quantitative research approach utilizing an associative method. According to Sugiyono (2019), associative methods aim to examine relationships or influences between two or more variables, focusing on causal or correlational relationships. This methodological approach was selected to analyze the influence of self-awareness as the first independent variable (X_1) and teacher attitudes as the second independent variable (X_2) on student learning discipline as the dependent variable (Y). The associative method was particularly appropriate because the research sought to establish causal relationships rather than merely descriptive associations between variables.

The research population comprised all eleventh-grade Management of Office and Business Services (MPLB) students at SMK Negeri 6 Surakarta during the 2024/2025 academic year, totaling 106 students. The selection of this specific population was based on preliminary study findings that identified significant disciplinary challenges within this student cohort.

The sampling technique employed was non-probability sampling with saturated sampling. This approach was justified by the relatively small population size and the accessibility of all population members, enabling comprehensive data collection from all 106 students without sampling limitations.

Data collection utilized structured questionnaires containing predetermined response options (Karwanto, 2023). The questionnaire distribution was conducted through direct classroom visits, with completion facilitated through Google Forms prepared by the researchers. To ensure response integrity and accuracy, comprehensive instructions were provided prior to completion, independent response completion was emphasized without external pressure, and respondent confidentiality was guaranteed. Additionally, researchers provided technical assistance throughout the completion process.

The study employed Likert scale measurements for data collection. According to Sugiyono (2019), Likert scales effectively measure attitudes, perspectives, and perceptions of individuals or groups regarding social phenomena under investigation. Before final data collection, the

questionnaire instruments underwent comprehensive validity and reliability testing using Microsoft Excel and SPSS version 25.

Validity testing employed Pearson Product Moment correlation techniques, with items considered valid when r -calculated values exceeded r -table values. Reliability assessment utilized Cronbach's Alpha formula, with instruments considered reliable when alpha coefficients reached or exceeded 0.60. According to Sujawerni (2014), instruments demonstrate adequate reliability with alpha values between 0.60-0.70, while values ≥ 0.70 indicate good reliability. Pilot testing was conducted with 35 tenth-grade MPLB students at SMK Negeri 6 Surakarta, who shared similar characteristics with the research sample.

The data analysis process involved several systematic stages. Initially, data tabulation organized questionnaire responses into tabular formats for analysis facilitation. Subsequently, data conversion transformed responses into appropriate scale formats according to established scoring guidelines. Prerequisite analysis testing included normality tests to assess data distribution patterns, linearity tests to examine variable relationships, multicollinearity tests to identify excessive correlation between independent variables, and heteroscedasticity tests to evaluate residual variance consistency.

Hypothesis testing encompassed multiple linear regression analysis to determine simultaneous independent variable effects on dependent variables. F-tests evaluated overall model significance, examining whether independent variables collectively influenced dependent variables significantly. T-tests assessed individual independent variable significance through partial analysis. Additionally, determination coefficients (R^2) measured independent variable contributions to dependent variables, while effective contribution and relative contribution analyses provided specific insights into individual variable contributions.

The research implementation followed systematic phases including preparation, proposal development, instrument construction and testing, data collection, data processing and analysis, conclusion development, and research report compilation.

Results and Discussion

Research Results

The pilot study conducted with 35 tenth-grade MPLB students at SMK Negeri 6 Surakarta revealed that among 43 questionnaire items, 36 items were validated while 7 items were deemed invalid based on SPSS statistical analysis comparing r -calculated and r -table values. The r -table value for this study was 0.334 with degrees of freedom (df) of 103 ($106-2-1$) and a significance level of 0.05.

Reliability testing demonstrated satisfactory results across all variables: learning discipline achieved a reliability value of 0.698, self-awareness scored 0.732, and teacher attitudes reached 0.750. These results exceeded Sujawerni's reliability threshold of Cronbach's Alpha > 0.60 , confirming instrument reliability. Consequently, the 36 validated items were utilized in the main study, while the 7 invalid items were eliminated.

The questionnaire administration to eleventh-grade MPLB students yielded comprehensive descriptive statistics as presented: (1) Learning Discipline Variable: Scores ranged from 19-53 with a mean of 42.59, standard deviation of 5.480, median of 43.12, and mode in the 44-48 interval, achieving a total score of 4,514 from a maximum possible 12,000. (2) Self-Awareness Variable: Scores ranged from 21-51 with a mean of 34.22, standard deviation of 5.364, median of 34.77, and mode in the 33-36 interval, achieving a total score of 3,267 from a maximum possible 12,000. (3) Teacher Attitudes Variable: Scores ranged from 17-53 with a mean of 36.40, standard deviation of 6.155, median of 35.92, and mode in the 33-36 interval, achieving a total score of 3,859 from a maximum possible 12,000. (4) The prerequisite analysis encompassed normality, linearity, and multicollinearity tests to ensure data appropriateness for multiple linear regression analysis. The normality test yielded an Asymp. Sig. (2-tailed) value of 0.200, exceeding the 0.05 threshold, confirming normal data distribution.

Linearity testing revealed that the deviation from linearity significance value between self-awareness and learning discipline was 0.254, exceeding 0.05 and confirming linear relationships. Similarly, the teacher attitudes and learning discipline relationship demonstrated a deviation from linearity significance value of 0.825, also exceeding 0.05 and confirming linearity.

Multicollinearity testing showed that both self-awareness and teacher attitudes variables achieved Tolerance values of 0.844 and VIF values of 1.185. With Tolerance values > 0.10 and VIF values < 10 , the analysis confirmed the absence of multicollinearity symptoms between independent variables.

As shown in Table 1, the regression equation derived from the analysis is:

$$Y = 17.434 + 0.308X_1 + 0.402X_2$$

This equation demonstrates that: (1) the constant value of 17.434 indicates that when both self-awareness (X_1) and teacher attitudes (X_2) equal zero, student learning discipline is estimated at 17.434; (2) the self-awareness regression coefficient of 0.308 shows that a one-unit increase in X_1 while X_2 remains constant results in a 0.308-unit increase in learning discipline; and (3) the teacher attitudes regression coefficient of 0.402 indicates that a one-unit increase in X_2 while X_1 remains constant leads to a 0.402-unit increase in learning discipline.

Table 1
Multiple Regression Analysis Results

	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	17.434	3.106	
Self-Awareness	.308	.085	.301
Teacher Attitudes	.402	.074	.451

Source: Data processed by researchers (2025)

The t-test results presented in Table 2 demonstrate significant relationships for both independent variables. Self-awareness showed a significance value of 0.00 (< 0.05) with $t_{\text{count}} > t_{\text{table}}$ ($3.630 > 1.983$) at degrees of freedom 103 and $\alpha = 0.05$, leading to H_0 rejection and confirming significant influence of self-awareness on learning discipline.

Teacher attitudes demonstrated a significance value of 0.00 (< 0.05) with $t_{\text{count}} > t_{\text{table}}$ ($5.441 > 1.983$) at degrees of freedom 103 and $\alpha = 0.05$, resulting in H_0 rejection and confirming significant influence of teacher attitudes on learning discipline.

Table 2
T-test Results

	t	Sig.
(Constant)	5.613	.000
Self-Awareness	3.630	.000
Teacher Attitudes	5.441	.000

Source: Data processed by researchers (2025)

Table 3 presents the F-test results with a significance value of 0.00 (< 0.05) and F_{count} value of 34.607 exceeding F_{table} value of 3.08. These results confirm H_0 rejection, indicating significant combined influence of self-awareness and teacher attitudes on eleventh-grade MPLB student learning discipline at SMK Negeri 6 Surakarta.

Table 3
F-test Results

	df	F	Sig.
Regression	2	34.607	.000 ^b
Residual	103		
Total	105		

Source: Data processed by researchers (2025)

As demonstrated in Table 4, the determination coefficient (R Square) value of 0.402 indicates that 40.2% of learning discipline variance among eleventh-grade MPLB students at SMK Negeri 6 Surakarta is explained by self-awareness and teacher attitudes, while the remaining 59.8% is influenced by other factors not examined in this study.

Table 4
Determination Coefficient Results

R	R Square	Adjusted R Square	Std. Error of the Estimate
.634 ^a	.402	.390	4.278

Source: Data processed by researchers (2025)

Table 5 presents the correlation coefficients and regression coefficients used for calculating effective contributions, as detailed in Table 6. The effective contribution analysis reveals that self-awareness contributes 14.5% to learning discipline while teacher attitudes contribute 25.7%, totaling 40.2% and matching the previously calculated R-square value.

Table 5
Correlation Coefficient Results

Variable	Regression Coefficient (Beta)	Correlation Coefficient	R Square
X ₁	0,301	0,480	0,402
X ₂	0,451	0,570	

Source: Data processed by researchers (2025)

Table 6
Effective Contribution of X₁ and X₂ to Y

Effective Contribution	Value	Percentage
Self-Awareness (X ₁)	$0,301 \times 0,480 = 0,145$	14,5%
Teacher Attitudes (X ₂)	$0,451 \times 0,570 = 0,257$	25,7%
Total		40,2%

Source: Data processed by researchers (2025)

Table 7
Relative Contribution of X₁ and X₂ to Y

Relative Contribution	Value	Percentage
Self-Awareness (X ₁)	$14,5\% \div 40,2\%$	0,361%
Teacher Attitudes (X ₂)	$25,7\% \div 40,2\%$	0,639%
Total		100%

Source: Data processed by researchers (2025)

The relative contribution analysis presented in Table 7 shows that self-awareness contributes 36.1% while teacher attitudes contribute 63.9% of the total explained variance, with both variables combining to account for 100% of the explained variation in learning discipline.

Discussion

The effective contribution calculation for self-awareness on learning discipline yielded 14.5%, confirming the first hypothesis that "there is an influence of self-awareness on student learning discipline." This finding aligns with Govanny et al. (2021), who demonstrated a significant relationship between self-awareness and learning discipline of 35.5%. Similarly, Afifah et al. (2022) found that self-awareness influenced student discipline by 38.8%. These convergent findings strengthen the evidence that self-awareness plays a crucial role in shaping student disciplinary behaviors.

Although the percentage contribution in this study appears modest compared to previous research, the statistical significance remains robust, and the analytical process encountered no methodological obstacles. This result is further supported by Puteri et al. (2023), who found that self-awareness influenced student learning discipline by 13.7%, providing additional validation for the current findings.

The effective contribution calculation for teacher attitudes on learning discipline demonstrated 25.7%, supporting the second hypothesis that "there is an influence of teacher attitudes on student learning discipline." This finding corroborates research by Masurska et al. (2022), which indicated that 85.2% of students perceived firm yet positive teacher attitudes as influential in their disciplinary behavior, while 84.2% agreed that friendly teacher-student relationships foster positive discipline.

The substantial contribution of teacher attitudes highlights the critical role of educator behavior in shaping student disciplinary patterns. Teachers who demonstrate consistency, fairness, and supportive approaches create learning environments that naturally encourage disciplined behavior among students.

The determination coefficient (R^2) analysis for the combined effects of self-awareness and teacher attitudes on learning discipline yielded 40.2%, supporting the third hypothesis that "there is an influence of self-awareness and teacher attitudes on student learning discipline." This finding demonstrates that both variables collectively exert substantial influence in shaping student disciplinary behaviors.

The research by Afifah et al. (2022) emphasized the importance of self-awareness in student discipline, while Masurska et al. (2022) highlighted how open, supportive, and consistent teacher attitudes in rule implementation create positive learning climates that encourage student discipline throughout the learning process. Despite extensive research examining these relationships individually, no previous studies have directly investigated the simultaneous influence of self-awareness and teacher attitudes on student learning discipline, establishing the novelty value of this research.

The findings suggest that while eleventh-grade MPLB students at SMK Negeri 6 Surakarta demonstrate adequate self-awareness levels and positive teacher-student relationships exist, learning discipline has not been maximally realized. Therefore, enhancing both self-awareness and teacher attitudes is essential for creating optimal learning discipline within the educational environment.

The research provides empirical evidence for educational practitioners to focus on dual intervention strategies: developing student metacognitive awareness while simultaneously training teachers in effective disciplinary approaches. The higher contribution of teacher attitudes (25.7% vs. 14.5%) suggests that immediate improvements in teacher behavior and classroom management strategies may yield more substantial disciplinary improvements.

Conclusion

Based on the comprehensive data analysis examining the influence of self-awareness and teacher attitudes on learning discipline among eleventh-grade MPLB students at SMK Negeri 6

Surakarta, several key conclusions emerge. First, self-awareness demonstrates a positive and significant influence on student learning discipline (t -calculated 3.630 > t -table 1.983). Second, teacher attitudes show a positive and significant effect on student learning discipline (t -calculated 5.441 > t -table 1.983). Third, the combined influence of self-awareness and teacher attitudes on student learning discipline is positive and significant (F -calculated 34.607 > F -table 3.08). The analysis reveals that teacher attitudes exert a more substantial and dominant influence on learning discipline compared to self-awareness, with effective contributions of 25.7% and 14.5%, respectively. These findings provide empirical support for educational interventions that prioritize teacher development while simultaneously fostering student self-awareness. This study acknowledges several limitations that warrant consideration for future research. First, the investigation was conducted exclusively at SMK Negeri 6 Surakarta among eleventh-grade MPLB students, limiting generalizability to other educational levels or vocational programs with different characteristics. Second, the research focused solely on two variables self-awareness and teacher attitudes while other potentially influential factors affecting student discipline remained unexamined. Future researchers may consider incorporating additional variables that influence learning discipline to expand theoretical knowledge regarding disciplinary factors in educational settings. Furthermore, employing alternative research methodologies such as qualitative or mixed-methods approaches could provide more comprehensive insights into the complex dynamics of student discipline. Longitudinal studies examining the temporal relationships between these variables would enhance understanding of causal mechanisms and intervention effectiveness over time.

References

- Afifah, F., Handayani, A., & Setiawan, A. (2022). Pengaruh self-awareness terhadap kedisiplinan jarak jauh di SMAN 3 Pemalang. *Jurnal Pendidikan dan Konseling*, 4(6), 1386-1394.
- Dachmiati, S. (2015). Program bimbingan kelompok untuk mengembangkan sikap dan kebiasaan belajar siswa. *Faktor Jurnal Ilmu Kependidikan*, 2(1), 10-21.
- Govanny, L. J., Christine, Patricia, R., & Hartini, S. (2021). Kedisiplinan ditinjau dari self-awareness pada siswa kelas XI di SMK Telkom 2 Medan. *Journal of Research in Business, Economics, and Education*, 3(1), 1531-1539.
- Hafizha, R. (2021). Profil self-awareness remaja. *Journal of Education and Counseling*, 2(1), 158-166. <https://doi.org/10.32627/jeco.v2i1.416>
- Karwanto, Soesana, A., Fitri, A., Kuswandi, S., Sastri, L., Falani, I., Aswan, N., Hasibuan, F. A., & Lestari, H. (2023). *Metodologi penelitian kuantitatif*. Yayasan Kita Menulis.
- Marsurska, S., & Vladova, I. (2022). Teachers behaviour and students discipline. *National Sport Academy*, 2, 207-213.
- Mu'min, A., Sindring, A., & Umar, F. N. (2022). Analisis rendahnya kedisiplinan belajar siswa dan penanganannya: Studi kasus siswa kelas X SMAN 5 Enrekang. *Pinisi Journal of Education*, 1, 1-11.
- Puteri, N. H., Febriansyah, D. A., Natasya, I. P., Hartanto, D., & Brangtyamari. (2023). Pengaruh kesadaran diri terhadap kedisiplinan siswa SMKN 3 Yogyakarta. In *Prosiding Seminar Nasional Pelaksanaan Program Lapangan Persekolahan* (pp. 1907-1912). FKIP Universitas Ahmad Dahlan.
- Rahmawati, A. (2020). *Analisis disiplin belajar dengan hasil belajar menganalisis limbah busana siswa kelas X SMK Tata Busana* [Unpublished undergraduate thesis]. Universitas Negeri Yogyakarta.
- Rosy, B., & Matusolikhah, R. (2021). Pengaruh disiplin belajar dan gaya belajar terhadap hasil belajar siswa dalam pembelajaran daring di masa pandemi COVID-19. *Jurnal Ilmu Kependidikan*, 2(2), 225-236. <https://doi.org/10.37478/jpm.v2i2.1030>
- Rusnawati, & Nuffiar. (2022). Urgensi penerapan kedisiplinan pada peserta didik dalam belajar di lingkungan sekolah. *Jurnal Aktualisasi Pendidikan Islam*, 17(2), 88-99. <https://doi.org/10.58645/jurnalazkia.v17i2.263>

- Siahaan, D. C., & Pramusinto, H. (2018). Pengaruh disiplin belajar, lingkungan sekolah, dan fasilitas belajar terhadap hasil belajar. *Economic Education Analysis Journal*, 7(1), 279-285.
- Sugiarto, P. A., Suyati, T., & Yulianti, D. P. (2019). Faktor kedisiplinan belajar pada siswa kelas X SMK Larenda Brebes. *Jurnal Mimbar Ilmu*, 24(2), 232-238. <https://doi.org/10.23887/mi.v24i2.21279>
- Sugiyono. (2019). *Penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Sujawerni, V. W. (2014). *Metodologi penelitian lengkap*. Pustaka Baru Press.
- Yuliantika, S. (2017). Faktor-faktor yang mempengaruhi disiplin belajar siswa kelas X, XI, dan XII di SMA Bhakti Yasa Singaraja tahun pelajaran 2016/2017. *Jurnal Pendidikan Ekonomi Undiksha*, 9(1), 35-44. <https://doi.org/10.23887/jjpe.v9i1.19987>