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The mediating role of self-efficacy in the effects of project-based learning and learning motivation on work readiness: a PLS-SEM analysis

Intan Dwi Saputri*)[1], Siti Sri Wulandari[2]
[1] Office Administration Education, Universitas Negeri Surabaya, Surabaya, Indonesia
[2] Economic Education, Universitas Negeri Surabaya, Surabaya, Indonesia

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ABSTRACT

This study aims to examine the effects of Project-Based Learning (PjBL) and learning motivation on students' work readiness, with self-efficacy as a mediating variable among Office Management students at SMKS Mahardika Surabaya. This study employed a quantitative approach using a survey method. The research population consisted of 291 students, with a sample of 115 students selected using a purposive sampling technique based on predetermined criteria. Data were collected through questionnaires. Instrument validity was tested using the Pearson Product-Moment correlation, while reliability testing was conducted using Cronbach's Alpha with the assistance of SPSS software. The test results showed that the Project-Based Learning variable obtained a Cronbach's Alpha value of 0.929, learning motivation 0.919, self-efficacy 0.933, and work readiness 0.925. The data were subsequently analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the assistance of SmartPLS 4 software. The model evaluation results demonstrated a Standardized Root Mean Square Residual (SRMR) value of 0.068 and a Normed Fit Index (NFI) value of 0.798. The hypothesis testing results indicated that PjBL and learning motivation had positive and significant effects on both work readiness and self-efficacy. Furthermore, self-efficacy had a positive and significant effect on work readiness and partially mediated the effects of PjBL and learning motivation on students' work readiness. These findings indicate that students' work readiness can be enhanced through the implementation of project-based learning, the strengthening of learning motivation, and the development of self-beliefs in their own capabilities.

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Corresponding Author:

Intan Dwi Saputri
Universitas Negeri Surabaya
Email: intan.23084@mhs.unesa.ac.id

Introduction

Education in the twenty-first century requires students to possess skills that align with workplace needs. Skills such as critical thinking, creativity, communication, collaboration, and adaptability are important competencies for responding to changes in the world of work (World Economic Forum 2023). In addition, the ability to adapt to technological changes and modern work environments is an important part of preparing students to enter the workforce (Fahriati, Yohana, and Faslah 2024). Therefore, vocational education plays an important role in equipping students with not only academic competencies but also the skills and attitudes that support work readiness.

Work readiness among graduates of vocational high schools (SMK) remains a challenge in vocational education in Indonesia. Indonesia's Open Unemployment Rate (TPT) reached 4.68% in February 2026, with approximately 7.24 million people unemployed. By educational attainment, vocational high school graduates had an unemployment rate of 7.74%, making them one of the groups with a high unemployment rate (Badan Pusat Statistik, 2026). This condition indicates that challenges remain in preparing vocational graduates with competencies that match workplace needs. In East Java, the unemployment rate among vocational high school graduates reached 5.73% in February 2026 (Badan Pusat Statistik Provinsi Jawa Timur, 2026). This situation highlights the need to continue focusing on improving vocational students' work readiness.

Work readiness is an individual condition that encompasses the mastery of knowledge, skills required for employment, positive work attitudes and behaviors, and an understanding of workplace demands (Novian and Sukardi 2023). Work readiness is not formed solely through the mastery of learning materials but is also related to learning experiences, individual characteristics, and environments that support the competency development process. This aligns with Suroto et al. (2024), who identified that vocational high school students' work readiness is influenced by three groups of factors: individual factors, the learning process, and contextual factors. Individual factors include motivation, interpersonal skills, self-efficacy, self-regulation, and soft skills. Meanwhile, learning process factors encompass direct learning experiences, such as fieldwork practices and teaching factories, which connect school learning with the application of competencies in the work environment. The results of this study indicate that work readiness is a multidimensional construct that needs to be understood by considering the interrelationships between individual factors and learning experiences.

One learning factor relevant to the development of work readiness is Project-Based Learning (PjBL). PjBL is a learning model that actively involves students in project completion, thereby developing critical thinking, creativity, communication, collaboration, and problem-solving skills (Kristiana et al. 2026). This model provides students with the opportunity to face problems and complete tasks related to real-world situations. The implementation of PjBL also aligns with the characteristics of vocational education because it encourages students to connect the knowledge acquired in the classroom with its application in practical activities (Nirmayani, Putu, and Prastya 2021). Previous studies have shown that the implementation of PjBL can increase students' active learning through direct involvement in the learning process and project activities (Hartono et al. 2023). A study by Anggraini and Wulandari (2021) also indicated that applying PjBL can enhance student engagement in the learning process. Furthermore, Hariyanto et al. (2025) found that PjBL has a positive effect on employability skills, which are a crucial aspect of work readiness. Thus, project-based learning experiences possess the potential to support the development of competencies required by students to face the workplace.

In addition to learning factors, individual factors also play a role in shaping work readiness, one of which is learning motivation. Learning motivation is an intrinsic and extrinsic drive that influences a student's engagement, effort, and persistence in achieving learning goals (Ilishkina et al., 2022). Students with good learning motivation tend to be driven to participate actively in learning, develop competencies, and complete tasks. Research by Purnama and Wagiran (2020) showed that learning motivation has a positive effect on the work readiness of vocational high school students. Irwanto (2020) also explained that learning experiences and motivation during the vocational education process relate to students' readiness to face the industrial world. These findings indicate that learning motivation is a personal factor requiring attention in developing students' work readiness.

Another individual factor related to work readiness is self-efficacy, which is an individual's belief in their ability to perform specific actions and achieve desired goals (Waddington 2023). Students with high self-efficacy tend to be more confident in completing tasks, facing challenges, and sustaining their efforts when encountering difficulties. This belief can help students address learning demands as well as situations related to the workplace. Research by Hepriyadi and Pahlevi (2026) showed that self-efficacy positively influences the work readiness of vocational high school students. In addition to being directly related to work readiness, self-efficacy is also relevant to examine as a variable that can explain how learning experiences and learning motivation relate to work readiness.

The relationships among PjBL, learning motivation, self-efficacy, and work readiness can be explained through the perspective of Social Cognitive Theory. This perspective posits that individual development relates to the interactions between personal factors, behaviors, and the environment. In this study, PjBL illustrates the learning environment factor that provides students with experiences to complete projects, solve problems, collaborate, and make decisions. These experiences can help students recognize their capabilities and build self-efficacy. Meanwhile, learning motivation is a personal factor that drives students' engagement, persistence, and efforts in achieving learning goals. This drive can support the creation of successful experiences that strengthen students' beliefs in their own capabilities. Furthermore, self-efficacy relates to students' beliefs in applying knowledge and skills, facing challenges, and resolving job demands. Thus, self-efficacy is positioned as a

mediating variable explaining the linkage between learning experiences and learning motivation with work readiness. This explanation aligns with research by Emilda and Susanti (2026), who applied Social Cognitive Theory in examining the relationship between self-efficacy and learning motivation among vocational high school students.

Although previous studies have examined various factors related to work readiness, testing the relationship between learning factors and personal factors within a single research model still requires further development. Suroto et al. (2024), through their systematic review, identified that vocational high school students' work readiness is related to individual factors, learning processes, and contextual factors. Individual factors encompass motivation and self-efficacy, while learning processes encompass direct learning experiences, such as fieldwork practices and teaching factories. However, this study has not specifically examined the relationship between Project-Based Learning (PjBL) and learning motivation with work readiness through self-efficacy as a mediating variable. In addition, previous studies used as references in this research examined inter-variable relationships in different contexts and models. Therefore, empirical testing that integrates learning factors and personal factors is necessary to obtain a more comprehensive understanding of their relationship with students' work readiness, particularly in the field of Office Management.

Based on these gaps, the novelty of this study lies in the integrated examination of the effects of PjBL and learning motivation on work readiness, both directly and indirectly through self-efficacy, among Office Management students at SMKS Mahardika Surabaya. This study not only tests the direct effect of each variable but also analyzes the role of self-efficacy in explaining the relationship between learning experiences and learning motivation with work readiness. This examination is essential because the work readiness of vocational high school students relates not only to the competencies acquired through learning but also to the drive to develop competencies and the confidence in applying them. The research findings are expected to provide empirical evidence regarding the mechanisms of these relationships and serve as a reference for schools and teachers in developing learning that supports students' work readiness.

This study aims to analyze: (1) the effect of PjBL on work readiness; (2) the effect of learning motivation on work readiness; (3) the effect of PjBL on self-efficacy; (4) the effect of learning motivation on self-efficacy; (5) the effect of self-efficacy on work readiness; (6) the effect of PjBL on work readiness through self-efficacy; and (7) the effect of learning motivation on work readiness through self-efficacy. This study was conducted on Office Management students at SMKS Mahardika Surabaya using a quantitative approach and Structural Equation Modeling-Partial Least Squares (SEM-PLS) analysis. Thus, this study is expected to provide empirical evidence regarding the direct and indirect effects of learning factors and students' internal factors on work readiness within the context of vocational education in the office administration field.

Method

This study employed a quantitative approach with a survey method and a causal correlational design. The study aimed to analyze the effects of PjBL and learning motivation on students' work readiness, with self-efficacy as a mediating variable. The research was conducted at SMKS Mahardika Surabaya during the odd semester of the 2026/2027 academic year.

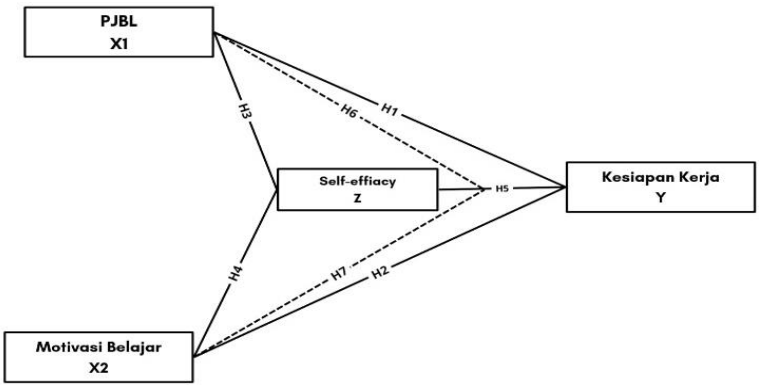

Figure 1. Research Design

The research population consisted of 291 Office Management students at SMKS Mahardika Surabaya. The research sample comprised 115 students selected using a purposive sampling technique. The sample size determination referred to Hair et al. (2019), which recommends 5 to 10 times the number of research indicators.

This study utilized 16 indicators with a sampling ratio of 7 times the number of indicators, yielding an initial calculation of 112 respondents. This number was subsequently rounded up to 115 respondents. Respondent selection was conducted using a purposive sampling technique based on specific criteria: active Office Management students at SMKS Mahardika Surabaya in the 2026/2027 academic year, having completed Fieldwork Practices, having participated in learning using the PjBL model, and being willing to serve as respondents and fully complete the research questionnaire.

Data were collected through pre-research interviews and questionnaires. The pre-research interviews were conducted semi-structurally with a supervising teacher who also served as the Head of the Office Management Expertise Program to obtain preliminary information regarding students' work readiness, the implementation of PjBL, learning motivation, and self-efficacy. The questionnaire was developed based on the indicators for each variable derived from theories and previous studies, adapted to the research context. The research instrument utilized a 1-5 Likert scale.

In this study, PjBL was operationally defined as students' perceptions of the implementation of project-based learning. This variable was measured using five indicators adapted from Novalia et al. (2025), which were developed into 10 questionnaire items. Learning motivation was operationally defined as the underlying drive for students' engagement in learning activities to achieve learning goals. This variable was measured using five indicators referring to Krismony et al. (2020), which were elaborated into 10 questionnaire items. Self-efficacy was operationally defined as students' beliefs in their ability to complete tasks and face learning challenges. This variable was measured using three indicators adapted from the self-efficacy concept by Ariska et al. (2021), which were developed into six questionnaire items. Work readiness was operationally defined as students' readiness to enter the workforce based on knowledge, attitudes, and skills relevant to job demands. This variable was measured using three indicators referring to the work readiness aspects discussed by Inderanata and Sukardi (2023), which were elaborated into six questionnaire items tailored to the context of Office Management students at SMKS Mahardika Surabaya. Consequently, the entire questionnaire consisted of 32 items.

Prior to being used for the primary data collection, the instrument was tested on 30 students outside the respondent group. The validity test was conducted using the Pearson Product-Moment correlation, while the reliability test was performed using Cronbach's Alpha with the assistance of SPSS software. The results of the validity and reliability tests served as the basis for ensuring the instrument's feasibility before its use in the main data collection. The results of the instrument validity testing on 30 students outside the research respondents are presented in Table 1 below.

Table 1. Pearson Product Moment

Variable	Indicators	Items	Source	Corrected-Item Total	Criteria
PjBL	Defining Basic Questions; Designing Project Planning; Scheduling; Monitoring and Evaluating Project Progress; Testing the Results	10	Novalia et al. (2025)	0.661–0.871	Valid
Learning Motivation	Desire and aspiration to succeed; Drive and need for learning; Future hopes and aspirations; Interesting learning activities; Conducive learning environment	10	Krismony et al. (2020)	0.601–0.883	Valid
Self-Efficacy	Confidence in completing tasks; Confidence in one's abilities; Applying self-confidence in various situations and conditions	6	Ariska et al. (2021)	0.720–0.944	Valid
Work readiness	Knowledge; Attitudes; Skills	6	Inderanata and Sukardi (2023)	0.838–0.866	Valid

Based on Table 1, all statement items in the research instrument met the validity testing criteria and were therefore declared valid. Consequently, the instrument could be used for the subsequent reliability testing stage. The reliability test results for the instrument are presented in Table 2 below.

Table 2. Cronbach's Alpha

Variable	Cronbach Alpha	Criteria
PjBL	0.929	Reliable
Learning Motivation	0.919	Reliable
Self-Efficacy	0.933	Reliable
Work readiness	0.925	Reliable

Based on Table 2, all statement items in the research instrument were declared reliable and thus could be utilized for the primary data collection. Once the instrument was deemed feasible, data analysis was conducted

using Structural Equation Modeling-Partial Least Squares (SEM-PLS) version 4, assisted by SmartPLS 4 software. The analysis included the evaluation of the measurement model (outer model) and the structural model (inner model). The outer model evaluation was conducted through convergent validity tests, discriminant validity tests, construct reliability tests, and goodness of fit tests. The inner model evaluation involved collinearity testing using the Variance Inflation Factor (VIF), the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and path coefficients. Hypothesis testing was carried out using the bootstrapping procedure. Furthermore, the mediation test was performed through indirect effects to determine the role of self-efficacy in mediating the effects of PjBL and learning motivation on work readiness.

Results and Discussions

This study aimed to analyze the effects of PjBL and Learning Motivation on Work Readiness with Self-Efficacy as a mediating variable among Office Management students at SMKS Mahardika Surabaya. After obtaining an overview of the research data, the next step was to evaluate the measurement model (outer model). This evaluation was conducted to ensure that the research instruments met the required validity and reliability criteria, as well as to determine the model fit prior to testing the structural model. The assessment of the measurement model encompassed convergent validity, discriminant validity, goodness of fit, and construct reliability. Convergent validity was evaluated using outer loading values and Average Variance Extracted (AVE). The outer loading results are presented in Figure 2 below.

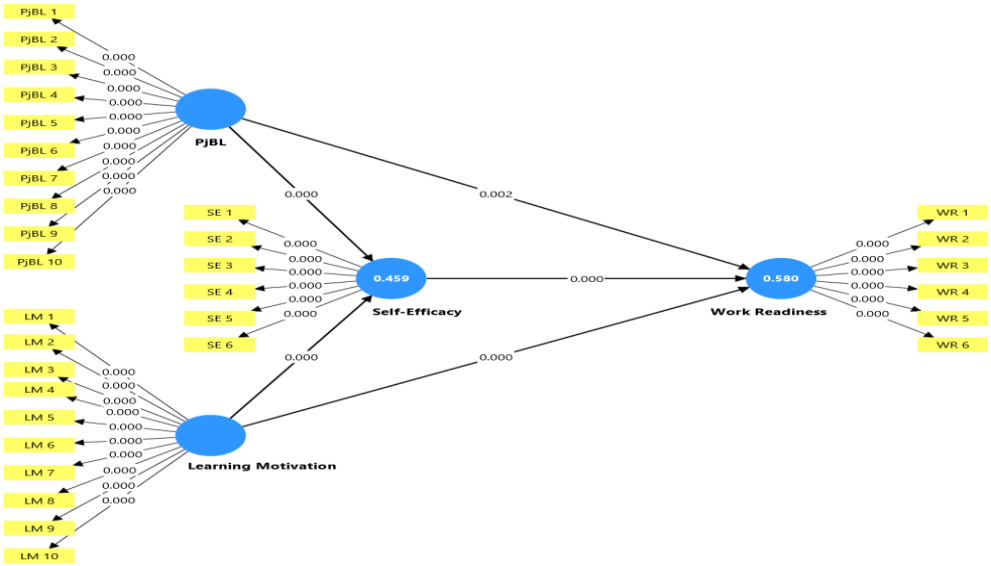

Figure 2. Outer Loading Diagram

Based on the analysis results, all indicators for the Project-Based Learning (PjBL), Learning Motivation (LM), Self-Efficacy (SE), and Work Readiness (WR) constructs exhibited outer loading values above the recommended threshold of 0.70. The Project-Based Learning (PjBL) construct showed outer loading values ranging from 0.722 to 0.842; the Learning Motivation construct had outer loading values ranging from 0.727 to 0.808; the Self-Efficacy construct showed outer loading values ranging from 0.744 to 0.818; while the Work Readiness construct demonstrated outer loading values ranging from 0.742 to 0.862. These results indicate that all indicators adequately represent their respective constructs and have satisfied the criteria for convergent validity. Therefore, all indicators were declared valid and retained for subsequent analyses. Furthermore, convergent validity was also evaluated based on the Average Variance Extracted (AVE) values. The AVE testing results for each construct are presented in Table 3 below.

Table 3. Average Variance Extracted (AVE)

Konstruk	AVE	Criteria
PjBL	0.611	Valid
Learning Motivation	0.617	Valid
Self-Efficacy	0.628	Valid
Work Readiness	0.657	Valid

Based on Table 3, all constructs possess AVE values above 0.50. The AVE value for the PjBL construct is 0.611, Learning Motivation is 0.617, Self-Efficacy is 0.628, and Work Readiness is 0.657. These results indicate

that all constructs have met the criteria for convergent validity. Subsequently, discriminant validity was evaluated using the Heterotrait-Monotrait Ratio (HTMT). Discriminant validity is used to ensure that each construct in the model has adequate distinction from other constructs. The HTMT testing results are presented in Table 4 below.

Table 4. Heterotrait-Monotrait Ratio (HTMT)

Konstruk	PjBL	Learning Motivation	Self-Efficacy	Work Readiness
PjBL	-	0.318	0.603	0.554
Learning Motivation	0.318	-	0.586	0.684
Self-Efficacy	0.603	0.586	-	0.745
Work Readiness	0.554	0.684	0.745	-

Based on Table 4, all HTMT values between constructs are below the threshold of 0.90. All values being below 0.90 indicates that each construct maintains adequate distinction from other constructs. Consequently, all research constructs have satisfied the discriminant validity criteria. Furthermore, the Goodness of Fit (GoF) assessment results are presented in Table 5 below.

Table 5. Goodness of Fit (GoF)

Goodness of Fit Index	Saturated Model	Estimated Model	Criteria
SRMR	0.068	0.068	Fit
NFI	0.798	0.798	Not Fit

Based on Table 5, the Goodness of Fit assessment results demonstrate that the research model possesses an adequate level of fit. The SRMR value of 0.068 falls into the fit category as it is below the threshold criterion of 0.08. Meanwhile, the NFI value of 0.798 has not yet met the recommended criterion of ≥ 0.90, indicating that the model's level of fit based on the NFI index is still not optimal. Nevertheless, these results do not directly indicate that the research model is unfit for use. Therefore, while maintaining consideration of the measurement model (outer model) and structural model (inner model) evaluation results, the research model can proceed for further analysis and hypothesis testing to determine the inter-variable relationships in the study. Subsequently, reliability testing was conducted to determine the internal consistency level of each construct in measuring the research variables. Reliability was evaluated using Cronbach's Alpha and Composite Reliability. The reliability testing results for each construct are presented in Table 6 below.

Table 6. Construct Reliability

Construct	Cronbach's Alpha	Composite Reliability	Criteria
PjBL	0.929	0.942	Reliabel
Learning Motivation	0.931	0.940	Reliabel
Self-Efficacy	0.881	0.910	Reliabel
Work Readiness	0.895	0.920	Reliabel

Based on Table 6, all constructs demonstrate Cronbach's Alpha and Composite Reliability values above 0.70. These findings indicate that all constructs possess good internal consistency and have met the reliability criteria. Thus, all research constructs were declared reliable and could be utilized for subsequent analyses.

After all constructs were confirmed valid and reliable, the next phase involved evaluating the inner model (structural model). The inner model evaluation was conducted to ascertain the model's capability in explaining the relationships among constructs and to test the structural relationships formulated in the research hypotheses. The inner model evaluation in this study included the Variance Inflation Factor (VIF), coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and path coefficients. Subsequently, direct effect testing was performed to determine the direct influences between constructs, while indirect effect testing was used to examine indirect influences through Self-Efficacy as a mediating variable. One evaluation of the inner model was conducted by inspecting the Variance Inflation Factor (VIF) values to detect whether high collinearity problems existed among predictor constructs in the research model. The VIF testing results on the structural model are presented in Table 7 below.

Table 7. Inner VIF

Structural Relationship	VIF
PjBL → Self-Efficacy	1.110
Learning Motivation → Self-Efficacy	1.110
PjBL → Work Readiness	1.436
Learning Motivation → Work Readiness	1.427
Self-Efficacy → Work Readiness	1.847

Based on Table 7, all Variance Inflation Factor (VIF) values are below 5. The VIF values range from 1.110 to 1.847. These results indicate that there are no severe collinearity issues among the predictor constructs in the research model. Next, inner model evaluation was performed by inspecting the coefficient of determination (R^2) values. The R^2 value is used to determine how much variance in an endogenous construct can be explained by exogenous constructs. The R^2 testing results for each endogenous construct are presented in Table 8 below.

Table 8. Coefficient of Determination (R^2)

Endogenous Construct	R^2	Interpretation
Self-Efficacy	0.459	Moderate
Work Readiness	0.580	Moderate

Based on Table 8, the R^2 value for the Self-Efficacy construct is 0.459, which falls into the moderate category. This indicates that PjBL and Learning Motivation are able to explain 45.9% of the variance in Self-Efficacy. Furthermore, the R^2 value for the Work Readiness construct is 0.580, which also falls into the moderate category. This demonstrates that PjBL, Learning Motivation, and Self-Efficacy jointly explain 58.0% of the variance in Work Readiness. Additionally, inner model evaluation was conducted by examining effect size (f^2) values to determine the magnitude of contribution of each exogenous construct to the endogenous constructs in the research model. The effect size (f^2) testing results are presented in Table 9 below.

Table 9. Effect Size (f^2)

Path	f^2	Interpretation
PjBL → Self-Efficacy	0.294	Moderate
Learning Motivation → Self-Efficacy	0.286	Moderate
PjBL → Work Readiness	0.064	Small
Learning Motivation → Work Readiness	0.245	Moderate
Self-Efficacy → Work Readiness	0.159	Moderate

Based on Table 9, PjBL on Self-Efficacy yields an f^2 value of 0.294, and Learning Motivation on Self-Efficacy yields 0.286, both falling into the moderate category. Furthermore, the effect of PjBL on Work Readiness shows an f^2 value of 0.064, which is in the small category, whereas Learning Motivation on Work Readiness shows an f^2 value of 0.245, categorized as moderate. Meanwhile, Self-Efficacy on Work Readiness exhibits an f^2 value of 0.159, categorized as moderate. These results indicate that each construct contributes varying levels of influence toward the endogenous constructs in the research model. Subsequently, inner model evaluation examined the predictive relevance (Q^2) values to assess the model's ability to predict endogenous constructs. The predictive relevance (Q^2) testing results are presented in Table 10 below.

Table 10. Predictive Relevance (Q^2)

Variable	Q^2
Self-Efficacy	0.432
Work Readiness	0.492

Based on Table 10, the research findings show that all endogenous constructs possess positive Q^2 values, indicating that the model has predictive relevance. Specifically, the Q^2 values for Self-Efficacy and Work Readiness are 0.432 and 0.492, respectively, demonstrating that the model has adequate predictive capability for both of these endogenous constructs. Having established the explanatory power and predictive capability of the structural model, hypothesis testing was then conducted to examine the relationships among constructs in this study. Hypothesis testing was performed to determine the statistical significance of direct effects between constructs based on path coefficients, T-statistics, and P-values. The direct effect testing results are presented in Table 11 below.

Table 11 Direct Effect

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
PjBL -> WR	0.197	0.197	0.064	3.090	0.002
LM -> WR	0.383	0.384	0.073	5.279	0.000
PjBL -> SE	0.421	0.422	0.073	5.759	0.000
LM -> SE	0.415	0.419	0.069	6.013	0.000
SE-> WR	0.351	0.354	0.087	4.056	0.000

Based on Table 11, the results of the direct effect analysis indicate that all relationships between constructs are positive and statistically significant. The effect of PjBL on Work Readiness shows a path coefficient of 0.197, with a T-statistic of 3.090 and a P-value of 0.002 ($p < 0.05$). This result indicates that PjBL has a positive and significant effect on Work Readiness; therefore, the first hypothesis (H1) is supported. Furthermore, the effect of Learning Motivation on Work Readiness yields a path coefficient of 0.383, with a T-statistic of 5.279 and a P-value of 0.000 ($p < 0.05$). This finding shows that Learning Motivation has a positive and significant effect on Work Readiness; thus, the second hypothesis (H2) is supported. Additionally, the effect of PjBL on Self-Efficacy shows a path coefficient of 0.421, with a T-statistic of 5.759 and a P-value of 0.000 ($p < 0.05$). This result demonstrates that PjBL has a positive and significant effect on Self-Efficacy; therefore, the third hypothesis (H3) is supported. The effect of Learning Motivation on Self-Efficacy also exhibits a path coefficient of 0.415, with a T-statistic of 6.013 and a P-value of 0.000 ($p < 0.05$). This result shows that Learning Motivation has a positive and significant effect on Self-Efficacy; thus, the fourth hypothesis (H4) is supported. Meanwhile, the effect of Self-Efficacy on Work Readiness yields a path coefficient of 0.351, with a T-statistic of 4.056 and a P-value of 0.000 ($p < 0.05$). This indicates that Self-Efficacy has a positive and significant effect on Work Readiness; therefore, the fifth hypothesis (H5) is supported. Overall, all direct effect hypotheses proposed in this study are empirically supported.

Subsequently, an indirect effect analysis was conducted to determine whether Self-Efficacy serves as a mediating variable in the relationships between PjBL and Learning Motivation on Work Readiness. This analysis aimed to test the significance of the mediating pathways through Self-Efficacy. The indirect effect analysis results are presented in Table 12 below.

Table 12 Indirect effect

	Original sample (O)	**Sample mean (M)**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	**P values**
PjBL -> SE -> WR	0.148	0.150	0.047	3.170	0.002
LM -> SE ->WR	0.146	0.148	0.045	3.217	0.001

Based on Table 12, the results of the indirect effect analysis demonstrate that the indirect effect of PjBL on Work Readiness through Self-Efficacy yields a path coefficient of 0.148, with a T-statistic of 3.170 and a P-value of 0.002 ($p < 0.05$). This result indicates that the indirect effect is positive and statistically significant. Therefore, Self-Efficacy is confirmed to function as a mediating variable in the relationship between PjBL and Work Readiness, such that the sixth hypothesis (H6) is supported. This finding suggests that enhancing PjBL can increase students' Self-Efficacy, which subsequently contributes to improved Work Readiness. Furthermore, the indirect effect of Learning Motivation on Work Readiness through Self-Efficacy yields a path coefficient of 0.146, with a T-statistic of 3.217 and a P-value of 0.001 ($p < 0.05$). This result shows that the indirect effect is positive and statistically significant. Therefore, Self-Efficacy is confirmed to act as a mediating variable in the relationship between Learning Motivation and Work Readiness, such that the seventh hypothesis (H7) is supported. This finding indicates that increasing Learning Motivation can boost students' Self-Efficacy, which in turn contributes to enhanced Work Readiness.

Moreover, because the direct effect of PjBL on Work Readiness remains significant while the indirect effect through Self-Efficacy is also significant, Self-Efficacy serves as a partial mediator in the relationship between PjBL and Work Readiness. A similar pattern occurs in the relationship between Learning Motivation and Work Readiness, as the direct effect of Learning Motivation on Work Readiness remains significant, while the indirect effect through Self-Efficacy is also significant. Thus, Self-Efficacy functions as a partial mediator in the relationship between Learning Motivation and Work Readiness. To provide a clearer illustration regarding the relationships among constructs within the research model, the analysis results are also presented in the form of a path diagram in Figure 3.

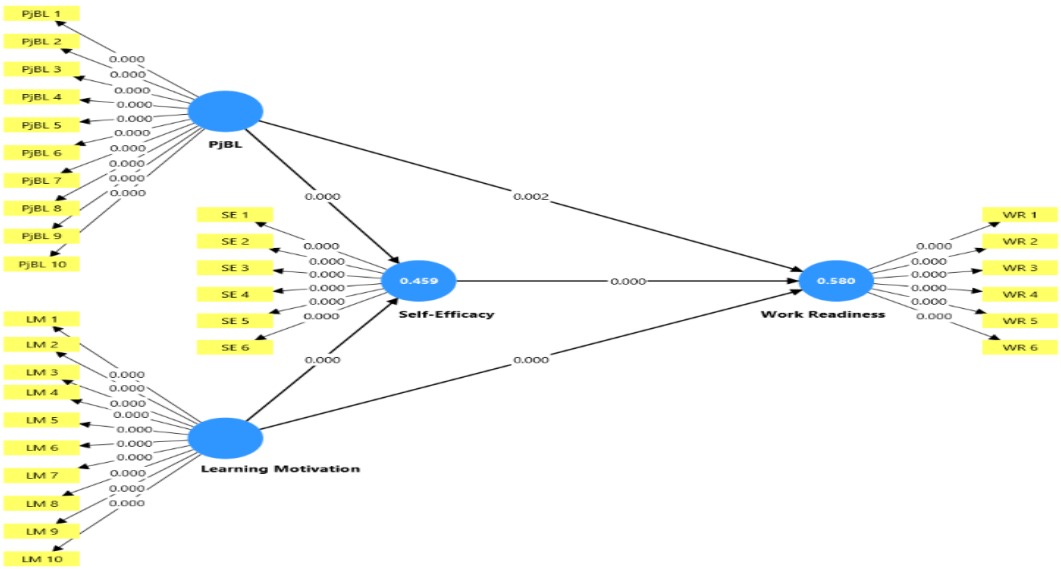

Figure 3 Bootstrapping Output Diagram

Based on Figure 3, all inter-variable relationships demonstrate P-values below 0.05. These results indicate that PjBL has a significant effect on Self-Efficacy and Work Readiness, Learning Motivation has a significant effect on Self-Efficacy and Work Readiness, and Self-Efficacy also has a significant effect on Work Readiness. Consequently, all direct relationships proposed in the research model are proven statistically significant.

The research findings demonstrate that PjBL has a positive and significant effect on students' work readiness. This indicates that better implementation of PjBL in learning leads to higher work readiness among students. This finding applies to the context of Office Management students at SMKS Mahardika Surabaya who served as respondents in this study. Through PjBL, students are actively involved in completing projects, starting from identifying problems, formulating plans, executing tasks, to producing a product or tangible outcome. This process provides students with opportunities to develop competencies aligned with workplace demands, such as independence, communication, collaboration, and problem-solving skills.

In the vocational education context, PjBL provides learning experiences that enable students to integrate theoretical knowledge with the application of practical skills. This is essential because Office Management students are prepared to face jobs requiring administrative capabilities, professional communication, precision, coordination, and structured task management. Through projects that represent actual tasks in the office field, such as digital archive management, business document drafting, meeting management simulations, and public relations services, students are given the opportunity to practice problem-solving, communication, group coordination, and structured time management. These experiences are highly relevant to workplace requirements because students are expected not only to comprehend learning materials but also to apply knowledge and skills to complete real tasks.

This finding aligns with Kristiana et al. (2026), who explained that PjBL, through authentic projects, real-world problem solving, and collaboration, can support students' skill development in the vocational education context. Empirical support is also found in the research of Hariyanto et al. (2025) regarding the implementation of PjBL through authentic projects and simulations to enhance students' employability skills and competencies. The study indicated that project-based learning can support the development of skills relevant to professional needs. Thus, the positive effect of PjBL on students' work readiness can be explained through students' active involvement in projects that provide practical experiences, train responsibility for task completion, and habituate students to facing problems resembling work situations. Through this process, PjBL assists students in integrating theoretical knowledge with practical skills as a foundation for facing workplace demands.

The research findings demonstrate that learning motivation has a positive and significant effect on students' work readiness. This indicates that higher learning motivation among students leads to greater readiness in facing the world of work. Learning motivation drives students to more actively participate in learning, complete tasks, and develop the necessary knowledge and skills. Students possessing high learning motivation tend to have the drive to achieve good learning outcomes, confront learning difficulties, and continuously strive to enhance their competencies as preparation for entering the workforce.

In the context of vocational education, learning motivation becomes crucial because work readiness relates not only to material mastery but also to students' efforts in developing capabilities aligned with job demands. For Office Management students, this motivation can be reflected through the willingness to learn administrative skills, meticulously complete tasks, utilize office applications, and understand work procedures. When students possess clear learning goals and the drive to achieve expected outcomes, they are more driven to participate optimally in the learning process. Through such engagement and perseverance, students acquire the opportunity to improve the knowledge, skills, and work attitudes required when facing the workplace.

This finding aligns with Hanifah and Siswanto (2024), who found that learning motivation has a positive and significant effect on the work readiness of vocational high school students. This finding supports the notion that learning motivation plays a role in driving students to utilize the learning process to enhance the capabilities and competencies needed in the workforce. Further support is found in the research of Andani et al. (2024), which showed that learning motivation also contributes to work readiness. Thus, the positive effect of learning motivation on work readiness can be explained through students' internal drive to learn, perseverance in task completion, and willingness to develop job-relevant competencies. The greater the students' drive to engage in the learning process and enhance their capabilities, the greater their opportunities to prepare themselves for workplace demands.

The research findings demonstrate that PjBL has a positive and significant effect on students' self-efficacy. This indicates that better implementation of PjBL in learning leads to stronger students' beliefs in their own capabilities to complete tasks and face learning challenges. Through project-based learning, students are provided with the opportunity to directly engage in identifying problems, planning solutions, executing tasks, and evaluating work outcomes. This process provides learning experiences that allow students to recognize their own capabilities, especially when they manage to overcome obstacles and complete projects according to established goals.

In Office Management learning, the implementation of PjBL can be linked to project activities relevant to administrative work, such as digital archive management, business document drafting, and administrative service simulations. These activities provide opportunities for students to apply knowledge, make decisions, and seek solutions when encountering problems during project execution. When students successfully complete tasks and face emerging challenges, these experiences can strengthen their beliefs in their own capabilities. Thus, PjBL can support the development of self-efficacy through active involvement and direct task completion experiences.

This finding aligns with Anjli et al. (2023) , who found that the PjBL model has a significant effect on students' self-efficacy. Furthermore, Zain et al. (2026) discovered an increase in students' self-efficacy following the implementation of the PjBL model. Both findings support this study's conclusion that project-based learning relates to the strengthening of students' beliefs in their own capabilities. Therefore, PjBL not only provides opportunities for students to develop knowledge and skills through project completion but also assists them in building beliefs to face future learning tasks and challenges.

The research findings demonstrate that learning motivation has a positive and significant effect on students' self-efficacy. This indicates that higher learning motivation among students leads to stronger beliefs in their own capabilities to complete tasks and confront learning difficulties. Learning motivation drives students to set goals, strive to achieve expected results, and persevere when encountering obstacles. When students have the drive to learn and actively participate in the learning process, they are afforded opportunities to gain mastery experiences that can reinforce beliefs in their own capabilities.

In Office Management learning, learning motivation can be reflected through students' willingness to understand administrative materials, complete tasks well, and improve required skills. When students strive to complete tasks despite facing difficulties, they possess the opportunity to recognize their potential and develop their capabilities. Success in understanding materials or completing tasks can serve as positive experiences that help students feel more confident in their abilities. Thus, learning motivation can support the formation of self-efficacy through students' perseverance, active involvement, and efforts in achieving learning goals.

This research finding gains support from Handrianto (2026), who found that learning motivation significantly contributes to self-efficacy. In addition, Gitara and Fahmawati (2024) found a significant correlation between self-efficacy and learning motivation in students. Similar findings were also reported by Illahi et al. (2024), who found a positive relationship between students' self-efficacy and learning motivation. These research results provide support for the connection between learning motivation and students' beliefs in their own capabilities. Thus, learning motivation can serve as a factor that supports the development of self-efficacy, particularly through the drive to continuously learn, face difficulties, and complete assigned tasks.

The research findings demonstrate that self-efficacy has a positive and significant effect on students' work readiness. This indicates that the stronger the students' beliefs in their own capabilities, the higher their readiness to face the world of work. Students with high self-efficacy tend to be more confident in completing tasks, facing challenges, making decisions, and resolving emerging obstacles. This belief is crucial because work readiness is determined not only by the mastery of knowledge and skills but also by students' confidence in applying their possessed capabilities when confronting job demands.

In the context of vocational education, self-efficacy helps students believe that they are capable of applying the knowledge and skills they have learned to complete jobs. In the Office Management field, this belief can be reflected through confidence in completing administrative tasks, operating office applications, communicating professionally, and adapting to work procedures. When students are confident in their capabilities, they are inclined to be more courageous in facing new tasks, strive to find solutions when encountering difficulties, and not easily give up when obtained results fall short of expectations. Thus, self-efficacy can support work readiness through students' beliefs in applying competencies and facing various situations that potentially emerge in the work environment.

This research finding aligns with Ramadhan and Aulia (2023), who found a positive and significant relationship between self-efficacy and work readiness among vocational high school students. Similar findings were reported by Nabilah and Ulya (2025), which demonstrated that self-efficacy significantly affects the work readiness of vocational high school students. In addition, Hepriyadi and Pahlevi (2026) examined the role of self-efficacy as a factor associated with students' work readiness in the Office Management expertise competency. These research results reinforce the importance of beliefs in one's own capabilities in preparing students to face the world of work. Thus, the development of work readiness needs to be supported not only through the enhancement of knowledge and skills but also through learning experiences that can help students recognize their capabilities, build confidence, and practice facing challenges. The stronger the students' beliefs in their capabilities to complete tasks and meet job demands, the better their readiness to enter the workforce.

The research findings demonstrate that self-efficacy mediates the effect of PjBL on students' work readiness. This finding indicates that the implementation of PjBL relates to work readiness not only through project-based learning experiences but also through students' beliefs in their own capabilities to complete tasks and face challenges. Project-based learning provides opportunities for students to actively engage in problem-solving processes, make decisions, collaborate, and complete tasks in accordance with set goals. These experiences can help students recognize their capabilities so that the belief to face job demands grows.

In the context of Office Management learning, experiences in executing projects relevant to administrative tasks can help students develop skills while concurrently building beliefs in their capabilities. When students are capable of completing tasks, collaborating with group members, and finding solutions to emerging problems, they are afforded opportunities to build trust in their own capabilities. This belief is crucial because work readiness requires not only the mastery of knowledge and skills but also the belief to apply those capabilities when facing job demands. Thus, self-efficacy becomes a mechanism explaining how learning experiences through PjBL can support students' work readiness.

These research findings also demonstrate that self-efficacy acts as a partial mediator in the relationship between PjBL and work readiness. This implies that the effect of PjBL on work readiness occurs through two pathways, namely directly, and indirectly through self-efficacy. PjBL provides opportunities for students to develop skills relevant to jobs, while self-efficacy helps reinforce their beliefs in utilizing those skills to complete tasks and face challenges. Therefore, the implementation of PjBL accompanied by learning experiences that support students' self-beliefs can serve as a deliberate effort to prepare them for the workforce.

This finding is supported by Krsmanovic (2021), who found significant differences in students' self-efficacy following the implementation of a project-based learning approach. In addition, Nabilah and Ulya (2025) found that self-efficacy significantly affects the work readiness of vocational high school students. Both studies support the interconnectedness of PjBL, self-efficacy, and work readiness. In this study, the indirect effect testing results demonstrate that self-efficacy acts as a mediating variable in the effect of PjBL on students' work readiness.

The research findings demonstrate that self-efficacy mediates the effect of learning motivation on students' work readiness. This finding indicates that learning motivation relates to work readiness not only directly but also through students' beliefs in their own capabilities to complete tasks and face challenges. Learning motivation drives students to actively engage in learning, strive to achieve goals, and develop necessary competencies. When students possess a strong learning drive, they tend to be more persistent in completing tasks and confronting difficulties. These experiences can help students recognize their capabilities, thereby further developing the belief to complete tasks and face job demands.

In the context of vocational education, learning motivation and self-efficacy are interconnected in preparing students to enter the workforce. Students who are motivated to learn administrative skills, complete tasks, and enhance their competencies possess opportunities to gain successful learning experiences. These experiences can strengthen beliefs in their own capabilities, which in turn helps students face job challenges with greater confidence. Thus, self-efficacy acts as a mechanism explaining how learning motivation can relate to students' work readiness.

This finding expands the understanding of the relationship between learning motivation and work readiness by showing that beliefs in one's own capabilities also play a role in this relationship. Learning motivation provides the drive for students to develop capabilities, whereas self-efficacy helps students believe that those capabilities can be utilized to complete tasks and face challenges. Therefore, efforts to enhance students' work readiness need to address learning motivation while concurrently building their beliefs in their own capabilities. Learning that encourages active engagement, perseverance, and successful experiences can serve as a method to support both of these aspects.

This finding aligns with Handrianto (2026), who found that learning motivation significantly contributes to self-efficacy. In addition, Gitara and Fahmawati (2024) found a significant relationship between self-efficacy and learning motivation among Vocational High School (SMK) students. Meanwhile, Hepriyadi and Pahlevi (2026) found that self-efficacy has a positive and significant effect on students' work readiness in the Office Management expertise competency. These findings support the connection among learning motivation, self-efficacy, and work readiness. In this study, the indirect effect testing results also show that self-efficacy serves as a mediating variable in the effect of learning motivation on students' work readiness.

Overall, this study demonstrates that PjBL and learning motivation affect students' work readiness, both directly and indirectly through self-efficacy. This finding is critical because work readiness is a key aspect requiring development to assist vocational high school students in facing workforce demands. This study involved Office Management students at SMKS Mahardika Surabaya. The testing results demonstrated that PjBL and learning motivation have positive and significant effects on work readiness and self-efficacy, while self-efficacy has a positive and significant effect on work readiness. Furthermore, self-efficacy partially mediates the effects of PjBL and learning motivation on work readiness. Consequently, the development of students' work readiness needs to pay attention to the implementation of project-based learning, support for learning motivation, and the reinforcement of students' beliefs in their own capabilities.

These findings indicate that enhancing students' work readiness must be conducted through an approach that integrates instructional and psychological aspects. In the context of vocational education, teachers can implement PjBL through projects related to office jobs, such as digital archive management, business document drafting, the use of office applications, and administrative service simulations. Additionally, students' learning motivation needs to be supported through the provision of clear learning objectives, constructive feedback, and opportunities to progressively develop skills. Experiences gained from completing projects and facing learning challenges are expected to strengthen students' self-efficacy, making them better prepared to face workplace demands.

Nevertheless, this study possesses limitations as it focuses exclusively on Office Management students at SMKS Mahardika Surabaya with the variables of PjBL, learning motivation, self-efficacy, and work readiness. Therefore, the research findings need to be understood in accordance with respondent characteristics and the specific research context utilized. Future research is recommended to involve respondents from more diverse schools and expertise competencies, as well as consider other factors potentially influencing students' work readiness. Consequently, the findings of this study are expected to serve as a reference point for schools and teachers in designing instructional strategies that not only enhance students' competencies but also fortify their beliefs in their own capabilities as a foundation for entering the workforce.

Conclusions

Based on the research findings, Project-Based Learning and Learning Motivation have positive and significant effects on the Work Readiness of Office Management students at SMKS Mahardika Surabaya, both directly and indirectly through Self-Efficacy as a partial mediating variable. Project-Based Learning supports work readiness through practical project completion experiences, problem solving, communication, and collaboration, whereas Learning Motivation drives students to actively engage in learning and develop essential workforce competencies. Both variables also have positive and significant effects on Self-Efficacy, which plays a pivotal role in building students' beliefs in their capabilities to overcome challenges and complete tasks. Based on direct effects, Learning Motivation exhibited a standardized path coefficient of 0.383, which is larger compared to Project-Based Learning at 0.197. Meanwhile, the indirect effect of Project-Based Learning through Self-Efficacy

was 0.148 (t-statistic = 3.170; p-value = 0.002), slightly larger compared to Learning Motivation at 0.146 (t-statistic = 3.217; p-value = 0.001). Nevertheless, Learning Motivation still demonstrates a stronger direct effect on Work Readiness, making it a more dominant predictor based on direct influences. This study also contributes to Social Cognitive Theory by demonstrating the interconnectedness among learning experiences as a learning environment aspect, motivation and self-beliefs as personal factors, and work readiness as the examined outcome. The findings regarding the mediating role of Self-Efficacy reinforce the relevance of this theory in explaining the relationship between learning experiences, learning motivation, and students' work readiness within the context of vocational education. Future research could employ an experimental design to examine the effect of PjBL implementation and the strengthening of learning motivation on changes in students' work readiness. In addition, a longitudinal design could be utilized to observe the development of Self-Efficacy and Work Readiness over time.

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