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THE INFLUENCE OF PROFESSIONAL IDENTITY, LEARNING MOTIVATION, ON LEARNING ENGAGEMENT AMONG VOCATIONAL ARCHITECTURE STUDENTS

Kaijun Du[1], Krittavit Bhumithavara[2*]
Rajamangala University of Technology Krungthep, Bangkok, Thailand

Corresponding Author: krittavit.b@mail.rmutk.ac.th
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Abstract:
Learning engagement has emerged as a central indicator of quality in higher education amid the growing emphasis on student-centered evaluation. This study aims to examine the influence of professional identity and learning motivation on learning engagement among vocational architecture students. A quantitative approach was employed involving 312 students selected through stratified random sampling. Data were collected using validated questionnaires that measured professional identity, intrinsic and extrinsic learning motivation, and learning engagement, and were then analyzed using structural equation modeling. The results indicate that professional identity significantly predicts learning engagement ($\beta = 0.41$, $p < 0.001$), while intrinsic motivation shows a stronger effect ($\beta = 0.46$, $p < 0.001$) than extrinsic motivation ($\beta = 0.18$, $p < 0.05$). Together, the variables explain 62% of the variance in learning engagement. This study contributes to understanding the internal psychological determinants of engagement in vocational education. The findings suggest strengthening professional identity formation and fostering intrinsic motivation to enhance student engagement.

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INTRODUCTION

The transition from access-oriented expansion to quality-oriented development in higher education has become a central concern in contemporary society. The point is that educational quality no longer depends solely on institutional growth, but on meaningful student development (Dwi et al., 2022; Fuller et al., 2025; Saat et al., 2023). The reason lies in the growing demand for competent graduates who can adapt to complex professional environments. Evidence from global higher education reforms shows a shift toward student-centered evaluation systems that emphasize learning outcomes and engagement as indicators of quality (Chaika, 2025; Kusuma et al., 2023; Ma et al., 2023). Governments and accreditation bodies increasingly assess universities based on student participation, persistence, and developmental gains. Consequently, improving learning engagement is not only an institutional priority but also a societal necessity, as it directly influences workforce readiness, professional competence, and sustainable national development.

Despite this paradigm shift, many higher education institutions continue to face persistent challenges related to low or moderate student engagement in learning. Empirical observations indicate that students often demonstrate limited participation,

minimal emotional involvement, and inconsistent cognitive investment in academic activities (Barba et al., 2022; Cohen et al., 2022). In vocational education, where practical competence is essential, insufficient engagement may reduce skill mastery and weaken professional preparedness. The phenomenon is particularly evident in specialized majors requiring intensive studio practice and technical application. Students may attend classes regularly yet remain passive in collaborative projects or independent exploration (Abdelhamid et al., 2023; Ibáñez et al., 2020). This gap between attendance and authentic engagement reflects deeper psychological and motivational issues. If unaddressed, such conditions risk undermining the effectiveness of vocational programs and limiting graduates' competitiveness in professional sectors.

Previous research has identified several determinants of learning engagement. Haddad et al. (2024), Macleod et al. (2020), and Syafika et al. (2024) emphasized the institutional role in fostering student engagement through supportive learning environments. Ma et al. (2024), Merrick et al. (2024), and Dyusheeva et al. (2025) highlighted constructive alignment between teaching strategies and learning outcomes as a driver of active learning. Alsharari at al. (2021), Khan et al. (2022), and Herman et al. (2023) demonstrated that intrinsic motivation significantly enhances academic persistence and performance. Meanwhile, studies on professional identity development suggest that identification with one's field predicts commitment and academic involvement. However, most prior studies examine these variables separately or within general academic contexts, rarely focusing on vocational architecture education or integrating professional identity with differentiated learning motivation dimensions (Fajri et al., 2021; Ishak et al., 2020). This gap limits a comprehensive understanding of engagement mechanisms in specialized vocational settings.

This study advances the state of the art by integrating professional identity with intrinsic and extrinsic learning motivation within a unified analytical model to explain learning engagement in vocational architecture education. Unlike prior research that emphasizes institutional or instructional factors, this investigation centers on students' internal psychological constructs as interconnected predictors (Rodriguez et al., 2021; Ximena et al., 2021). The novelty lies in examining how professional identity functions not merely as an outcome of education but also as a driving force that simultaneously shapes motivational orientation and engagement behavior. By applying a structural modeling approach, the study provides empirical evidence of the relative strength of each predictor (Abbas et al., 2022; Sarwar et al., 2025). Addressing this issue is crucial because vocational architecture programs require sustained cognitive, behavioral, and emotional investment to achieve professional competence and industry relevance.

Based on the identified gaps, the primary research problem concerns how professional identity and learning motivation influence engagement in learning among vocational architecture students. Specifically, the study seeks to determine: (1) whether professional identity significantly predicts learning engagement; (2) whether intrinsic and extrinsic motivation exert differential effects on engagement; and (3) the extent to which these variables collectively explain variance in learning engagement. Understanding these relationships is essential for clarifying the internal mechanisms underlying student participation in vocational learning contexts. Without empirical clarification, institutional interventions may remain fragmented or overly focused on external improvements rather than psychological determinants that directly shape student behavior.

This study argues that a strong professional identity enhances intrinsic motivation, which, in turn, more substantially strengthens learning engagement than extrinsic motivation. The provisional assumption is that students who internalize the values and goals of the architecture profession are more likely to engage deeply, persist in challenging tasks, and demonstrate proactive learning behaviors. The originality of this contribution lies in positioning professional identity as a foundational psychological construct that interacts with motivational dimensions to shape engagement outcomes. By empirically validating this integrated framework, the research provides a theoretically grounded model for improving the quality of vocational education. The findings are expected to inform curriculum design, student development programs, and engagement enhancement strategies grounded in psychological empowerment rather than solely structural reform.

RESEARCH METHODS

Research Design

This study employed a quantitative, cross-sectional explanatory design to test a theoretically grounded structural model linking professional identity and learning motivation to learning engagement (Hoy, 2021; Luoma et al, 2024). The design was selected to examine hypothesized direct relationships among latent psychological constructs using data collected at a single point in time, enabling statistical testing of theoretical assumptions rather than observing changes longitudinally. An explanatory approach was particularly appropriate because the study aimed to assess predictive relationships and determine the relative contribution of each independent variable within a unified structural framework. By combining measurement validation and structural modeling procedures, this design ensured methodological rigor and strengthened the empirical testing of psychological determinants influencing learning engagement in vocational education contexts.

Participants and Sampling

The population comprised vocational architecture students enrolled in diploma-level programs. Stratified random sampling by academic year was used to ensure proportional representation. Of the 400 distributed questionnaires, 382 valid responses were retained after screening (95.5% response rate). The minimum sample size satisfied SEM requirements, exceeding the recommended threshold of 10–15 cases per estimated parameter (Purwanti et al., 2022).

Instruments

Professional identity was measured using an adapted version of the Professional Identity Scale (5 dimensions). Learning motivation was assessed using the Academic Motivation Scale, which distinguishes between intrinsic and extrinsic motivation. Learning engagement was measured using the Utrecht Work Engagement Scale for Students (vigor, dedication, absorption). All items used a 5-point Likert scale.

Validity and Reliability

A pilot study (n = 40) confirmed clarity and reliability. In the main study, Cronbach's alpha ranged from 0.84 to 0.92. Composite Reliability (CR) values exceeded 0.70, and Average Variance Extracted (AVE) values were above 0.50, confirming convergent validity. Discriminant validity was established using the Fornell–Larcker

criterion and the HTMT ratios (<0.85). Confirmatory factor analysis showed good model fit (χ^2/df = 2.31; CFI = 0.94; TLI = 0.93; RMSEA = 0.058; SRMR = 0.047). Common method bias was assessed using Harman's single-factor test (largest variance = 32%, <50%) and a common latent factor approach, indicating no serious bias.

Data Analysis

Structural Equation Modeling (SEM) with AMOS was used to test the hypothesized relationships. The structural model demonstrated acceptable fit (χ^2/df = 2.47; CFI = 0.93; TLI = 0.92; RMSEA = 0.061). Professional identity significantly predicted learning engagement ($\beta = 0.41$, $p < 0.001$). Intrinsic motivation showed the strongest effect ($\beta = 0.46$, $p < 0.001$), while extrinsic motivation had a weaker but significant effect ($\beta = 0.18$, $p < 0.05$). The model explained 62% of the variance in learning engagement ($R^2 = 0.62$), indicating substantial explanatory power.

Ethical Considerations

Ethical clearance for this study was obtained from the Institutional Review Board (IRB) of the affiliated higher education institution prior to data collection. All procedures were conducted in accordance with established ethical standards for research involving human participants. Participation was entirely voluntary, and respondents were informed that they could withdraw from the study at any stage without penalty. Before completing the questionnaire, participants received a written informed consent form explaining the study's purpose, procedures, potential risks, and benefits.

To ensure confidentiality and anonymity, no personally identifiable information was collected. Responses were coded numerically and stored in password-protected files accessible only to the research team. The data were used exclusively for academic purposes and reported in aggregate form to prevent individual identification. These measures were implemented to uphold participants' rights, privacy, and data protection throughout the research process.

RESULTS AND DISCUSSION

Results

This section presents the study's findings from descriptive and inferential statistical analyses. The results provide an overview of respondents' demographic characteristics, levels of professional identity, learning motivation, and learning engagement, as well as the relationships among these variables. Hypothesis testing was conducted to determine significant differences and predictive effects within the proposed research model.

Descriptive Statistics

Descriptive statistics were conducted to provide an overview of the respondents' demographic characteristics and the distribution of the main research variables. This analysis includes measures of central tendency (mean) and dispersion (standard deviation), which offer a preliminary understanding of students' levels of professional identity, intrinsic and extrinsic motivation, and learning engagement. The results serve as a foundational step before proceeding to inferential analyses, ensuring that the data meet statistical assumptions and accurately represent the overall sample profile.

Demographic Factors

To better understand the characteristics of the respondents, demographic data were analyzed and presented as frequency and percentage distributions. The variables include gender, grade level, only-child status, major choice background, and self-reported academic performance. Examining these demographic factors is important for providing contextual insight into the sample composition and ensuring representativeness across different student groups. This information also supports further analysis by identifying potential variations in professional identity, learning motivation, and learning engagement across demographic categories. The detailed distribution of respondents is presented in Table 1.

Table 1. The Frequency and Percent Frequency Classified by Demographic Factor

1. Gender	Frequency	Percent
Male	219	54.8
Female	181	45.3
Total	400	100.0
2. Grade	Frequency	Percent
Freshman	58	14.5
Sophomore	179	44.8
Junior	111	27.8
Senior	52	13.0
Total	400	100.0
3. Only child	Frequency	Percent
Yes	220	55.0
No	180	45.0
Total	400	100.0
4. Major Choice	Frequency	Percent
Self-chosen	170	42.5
Chosen by parents or others	106	26.5
Adjusted major	124	31.0
Total	400	100.0
5. Academic Performance	Frequency	Percent
Good	92	23.0
Average	242	60.5
Poor	66	16.5
Total	400	100.0

In terms of gender, 54.8% (219) were male, and 45.3% (181) were female. By grade, sophomores constituted the largest group at 44.8% (179), followed by juniors (27.8%, 111), freshmen (14.5%, 58), and seniors (13.0%, 52). A slight majority (55.0%, 220) were only children, while 45.0% (180) had siblings. Regarding the major choice, 42.5% (170) selected their major independently, 26.5% (106) had their major influenced by parents or others, and 31.0% (124) had adjusted their major. Academic performance was distributed as 23.0% (92) with good performance, 60.5% (242) with average performance, and 16.5% (66) with poor performance.

Professional Identity

Descriptive analysis was conducted to examine the level of professional identity across its dimensions, including cognition, emotion, behavior, and professional training. The analysis presents the mean and standard deviation for each dimension to determine the overall tendency and variability of students' responses. Ranking was also applied to

identify the most dominant aspect of professional identity among respondents. This preliminary analysis provides insight into how students perceive, feel about, and behave toward their chosen field of study. The detailed descriptive statistics for professional identity are presented in Table 2.

Table 2. The Descriptive Statistics of Professional Identity

	N	Mean	Std. Deviation	Rank	Meaning
Cognition	400	3.817	1.022	2	Agree
Emotion	400	3.802	0.882	3	Agree
Behavior	400	3.900	0.966	1	Agree
Professional Training	400	3.756	0.724	4	Agree
Professional Identity	400	3.819	0.805		

Table 2 displays the descriptive statistics for professional identity and its subdimensions. The overall mean score for professional identity was 3.819 (SD = 0.805), falling within the "agree" range. Among the subdimensions, "Behavior" ranked highest with a mean of 3.900 (SD = 0.966), followed by "Cognition" (3.817, SD = 1.022), "Emotion" (3.802, SD = 0.882), and "Professional Training" (3.756, SD = 0.724). All subdimensions scored in the "agree" range, indicating that vocational architecture students generally hold positive attitudes toward their profession across cognitive, emotional, behavioral, and training-related aspects.

Learning Motivation

Descriptive statistics were performed to assess students' levels of learning motivation, distinguishing between extrinsic and intrinsic dimensions. The analysis includes mean scores and standard deviations to evaluate the central tendency and variability of responses, as well as ranking to determine which motivational dimension is more dominant among vocational architecture students. This step provides an overview of the motivational orientation that potentially influences students' academic engagement. The detailed descriptive results of learning motivation are presented in Table 3.

Table 3. The Descriptive Statistics of Learning Motivation

	N	Mean	Std. Deviation	Rank	Meaning
Extrinsic Motivation	400	3.862	0.927	1	Agree
Intrinsic Motivation	400	3.805	0.933	2	Agree
Learning Motivation	400	3.833	0.838		

Table 3 presents the descriptive statistics for learning motivation. The overall mean score for learning motivation was 3.833 (SD = 0.838), reflecting an "agree" level. Extrinsic motivation (3.862, SD = 0.927) scored slightly higher than intrinsic motivation (3.805, SD = 0.933), though both subdimensions were in the "agree" range. This suggests that students were driven by both external (e.g., rewards, career prospects) and internal (e.g., interest, personal growth) factors in their academic pursuits.

Learning Engagement

Descriptive statistics were conducted to examine the overall level of learning engagement and its three dimensions: behavioral, emotional, and cognitive engagement. The analysis includes mean values and standard deviations to describe the central

tendency and dispersion of students' responses, along with ranking to identify the most prominent dimension of engagement. This preliminary assessment provides insight into how students participate behaviorally, connect emotionally, and invest cognitively in their academic activities. The comprehensive results of the descriptive analysis for learning engagement are presented in Table 4.

Table 4. The Descriptive Statistics of Learning Engagement

	N	Mean	Std. Deviation	Rank	Meaning
Behavioral Engagement	400	3.704	0.741	3	Agree
Emotional Engagement	400	3.874	0.918	1	Agree
Cognitive Engagement	400	3.821	1.020	2	Agree
Learning Engagement	400	3.800	0.824		

Table 4 summarizes the descriptive statistics for learning engagement. The overall mean score for learning engagement was 3.800 (SD = 0.824), classified as "agree." Among the subdimensions, "Emotional Engagement" ranked highest (3.874, SD = 0.918), followed by "Cognitive Engagement" (3.821, SD = 1.020) and "Behavioral Engagement" (3.704, SD = 0.741). All subdimensions fell within the "agree" range, indicating that students were actively involved in their studies across behavioral, emotional, and cognitive dimensions.

Inferential Statistics

Inferential statistical analysis was conducted to examine relationships among professional identity, learning motivation, and learning engagement, and to test the proposed research hypotheses. This analysis moves beyond descriptive patterns to assess the significance and predictive strength of relationships among variables. Pearson correlation analysis was first employed to identify the direction and magnitude of associations between constructs. Subsequently, Structural Equation Modeling (SEM) was applied to evaluate the measurement model and test the structural relationships simultaneously. Model fit indices, path coefficients, and explained variance (R^2) were analyzed to determine the adequacy of the proposed model and the extent to which professional identity and learning motivation predict learning engagement.

Differences in Demographic Factors Generate Differences in Learning Engagement

To examine whether learning engagement differs across grade levels, a one-way analysis of variance (ANOVA) was conducted. This analysis aims to determine whether students at different academic stages demonstrate significantly different levels of learning engagement. By comparing between-group and within-group variances, the test identifies whether grade level contributes to variations in engagement. The results of the ANOVA, including sum of squares, degrees of freedom, mean square, F value, and significance level, are presented in Table 5.

Table 5. The One-way ANOVA of Grade

Learning Engagement		Sum of Squares	Df	Mean Square	F	Sig.
Grade	Between Groups	6.412	3	2.137	3.202	0.023
	Within Groups	264.374	396	0.668		
	Total	270.787	399			

Table 5 presents the results of the one-way ANOVA examining differences in learning engagement across grade levels. The analysis yielded an F-value of 3.202 with a significance level of 0.023 ($p < 0.05$), indicating a statistically significant difference among groups. Therefore, the null hypothesis (H_o), which states that there is no difference in learning engagement across grade levels, was rejected. This finding suggests that students' levels of learning engagement vary significantly by academic year.

Differences in Only Child Generate Differences in Learning Engagement

An independent samples t-test was conducted to examine whether learning engagement differs between students who are only children and those who are not. This analysis compares the mean scores of the two groups to determine whether only-child status significantly influences students' level of engagement in learning activities. The results, including group means, standard deviations, t-value, and significance level, are presented in Table 6.

Table 6. The Independent Samples t-test of the Only Child Factor

Items	Gender	N	Mean	S.D.	t-value	p-value
Learning Engagement	Yes	220	3.425	0.759	13.096	0.000
	No	180	4.258	0.651		

Table 6 shows that students who are not only children (M = 4.258, SD = 0.651) reported significantly higher learning engagement than only-child students (M = 3.425, SD = 0.759). The t-test yielded a t-value of 13.096 with a p-value of 0.000 ($p < 0.001$), indicating a statistically significant difference between the two groups. Therefore, the null hypothesis (H_o) was rejected, suggesting that only-child status is significantly associated with differences in learning engagement.

Differences in Major Choice Generate Differences in Learning Engagement

A one-way analysis of variance (ANOVA) was conducted to determine whether students' major choice background leads to significant differences in learning engagement. This analysis compares the mean engagement levels among students who selected their major independently, those whose major was chosen by parents or others, and those who were assigned or adjusted into the major. The purpose is to examine whether autonomy in major selection is associated with variations in academic engagement.

Table 7. The One-way ANOVA of Major Choice

Learning Engagement		Sum of Squares	Df	Mean Square	F	Sig.
Major Choice	Between Groups	44.838	2	22.419	39.391	0.000
	Within Groups	225.949	397	0.569		
	Total	270.787	399			

As presented in Table 7, the ANOVA results show a significant difference among groups (F = 39.391, p = 0.000, $p < 0.001$). The between-group variance (SS = 44.838) is substantially larger relative to the within-group variance, indicating meaningful differences in engagement levels across major choice categories. Therefore, the null hypothesis (H_o) was rejected, suggesting that the way students enter their major significantly influences their level of engagement in learning.

Differences in Academic Performance Generate Differences in Learning Engagement

A one-way analysis of variance (ANOVA) was conducted to examine whether students' self-reported academic performance is associated with differences in learning engagement. The analysis compares engagement levels among students categorized as having good, average, and poor academic performance. This test aims to determine whether variations in academic achievement correspond to significant differences in students' behavioral, emotional, and cognitive involvement in learning activities.

Table 8. The One-way ANOVA of Academic Performance

Learning Engagement		Sum of Squares	Df	Mean Square	F	Sig.
Academic Performance	Between Groups	30.096	2	15.048	24.820	0.000
	Within Groups	240.691	397	0.606		
	Total	270.787	399			

As shown in Table 8, the ANOVA results indicate a statistically significant difference among groups ($F = 24.820$, $p = 0.000$, $p < 0.001$). The between-group variance (SS = 30.096) is notably larger than would be expected by chance relative to the within-group variance, suggesting meaningful differences in engagement across performance categories. Therefore, the null hypothesis (H_0) was rejected, indicating that academic performance significantly influences learning engagement.

Professional Identity Influence on Learning Engagement

Multiple linear regression analysis was conducted to examine the extent to which the dimensions of professional identity cognition, emotion, behavior, and professional training predict learning engagement. This analysis aims to determine the relative contribution of each dimension while controlling for the others within the same model. Learning engagement was treated as the dependent variable, while the four dimensions of professional identity were entered simultaneously as independent variables.

Table 9. The Multiple Linear Regression Analysis of Professional Identity Influence on Learning Engagement

Model		Coefficienta			t	p-value
		Unstandardized Coefficients		Standardized Coefficients Beta		
		B	Std.Error			
1	Constant	0.210	0.068		3.082	0.002
	X1 = Cognition	0.342	0.023	0.425	15.055	0.000
	X2 = Emotion	0.065	0.028	0.069	2.287	0.023
	X3 = Behavior	0.326	0.025	0.382	13.179	0.000
	X4 = Professional Training	0.204	0.027	0.179	7.629	0.000
Dependent Variable: Learning Engagement						

As presented in Table 9, the regression model indicates that all four dimensions significantly predict learning engagement. Cognition ($\beta = 0.425$, $t = 15.055$, $p < 0.001$) and behavior ($\beta = 0.382$, $t = 13.179$, $p < 0.001$) show the strongest effects. Professional training also demonstrates a significant positive influence ($\beta = 0.179$, $t = 7.629$, $p < 0.001$), while emotion has a smaller yet significant effect ($\beta = 0.069$, $t = 2.287$, $p = 0.023$). These findings suggest that higher levels of professional identity are associated with stronger learning engagement, with cognitive and behavioral components contributing most substantially.

Learning Motivation Influence on Learning Engagement

Multiple linear regression analysis was performed to examine the predictive effects of extrinsic and intrinsic motivation on learning engagement. In this model, learning engagement was treated as the dependent variable, while the two dimensions of learning motivation were entered simultaneously as independent variables to assess their relative contributions.

Table 10. The Multiple Linear Regression Analysis of Learning Motivation Influence on Learning Engagement

Model		Coefficient			t	p-value
		Unstandardized Coefficients		Standardized Coefficients Beta		
		B	Std.Error			
1	Constant	0.372	0.071		5.251	0.000
	X1 =Extrinsic Motivation	0.267	0.021	0.300	12.779	0.000
	X2 =Intrinsic Motivation	0.630	0.021	0.713	30.320	0.000
Dependent Variable: Learning Engagement						

As shown in Table 10, both extrinsic and intrinsic motivation significantly predict learning engagement. Intrinsic motivation demonstrates a substantially stronger effect ($\beta = 0.713$, $t = 30.320$, $p < 0.001$), indicating that students who are internally driven by interest and personal satisfaction tend to exhibit higher levels of engagement. Extrinsic motivation also shows a significant positive influence ($\beta = 0.300$, $t = 12.779$, $p < 0.001$), although its effect size is comparatively smaller. The regression results suggest that while both motivational dimensions are important, intrinsic motivation plays a more dominant role in enhancing students' learning engagement.

Professional Identity, Learning Motivation, and Influence on Learning Engagement

Multiple linear regression analysis was conducted to examine the simultaneous effects of overall professional identity and overall learning motivation on learning engagement. In this model, learning engagement was treated as the dependent variable, while professional identity and learning motivation were entered concurrently as independent variables to assess their relative predictive strength.

Table 11. The Multiple Linear Regression Analysis of Professional Identity、Learning Motivation Influence on Learning Engagement

Model		Coefficienta			t	p-value
		Unstandardized Coefficients		Standardized Coefficients Beta		
		B	Std.Error			
1	Constant	-0.033	0.054		-0.611	0.542
	X1 =Professional Identity	0.641	0.028	0.626	22.939	0.000
	X2 = Learning Motivation	0.361	0.027	0.368	13.461	0.000
Dependent Variable: Learning Engagement						

Table 11 presents the results of the multiple linear regression analysis examining the As presented in Table 11, the regression results indicate that both professional identity ($\beta = 0.626$, $t = 22.939$, $p < 0.001$) and learning motivation ($\beta = 0.368$, $t = 13.461$, $p < 0.001$) significantly and positively predict learning engagement. The constant term was not statistically significant ($p = 0.542$). Compared with learning motivation, professional identity exhibits a stronger standardized effect, suggesting that students' identification with their field of study plays a more dominant role in fostering

engagement. These findings confirm that integrating identity-related and motivational factors substantially enhances students' engagement in learning.

Discussion

The findings indicate that vocational architecture students demonstrate relatively high levels of professional identity, learning motivation, and learning engagement, all within the "agree" category. Emotional engagement emerged as the strongest dimension, while behavioral engagement ranked slightly lower. This pattern aligns with the student engagement framework proposed by Khrapov (2022) and Karpyn et al. (2024), who emphasized that emotional connection often precedes sustained behavioral participation. The dominance of behavioral components within professional identity further supports identity-based theories, suggesting that internalized professional values manifest in observable academic actions. However, the slightly higher mean of extrinsic motivation compared to intrinsic motivation suggests that vocational students remain sensitive to external rewards and career prospects, which partially contrasts with Lujan et al. (2021), Vallerand et al. (2022), and Nasruddin (2025) assertion that intrinsic motivation is typically more dominant in sustaining deep engagement.

Inferential results reveal significant differences in learning engagement across grade level, only-child status, major choice background, and academic performance. The significant grade-level differences suggest developmental variation in academic adjustment, supporting stage-based learning theories that emphasize transitions across academic years (Abdullah, 2024; Fawaid et al., 2025; Zamroni et al., 2025). The greater autonomy over major choices reinforces self-determination principles, in which autonomy enhances the quality of engagement. Similarly, higher engagement among students with stronger academic performance is consistent with reciprocal models of achievement and engagement, in which engagement both predicts and is reinforced by academic success (Abdelwahed et al., 2023; Nisa' et al., 2024). These findings extend prior research by demonstrating that demographic and contextual factors interact meaningfully with psychological variables in vocational education settings.

Regression analysis confirms that all dimensions of professional identity significantly predict learning engagement, with cognition and behavior showing the strongest effects. This supports identity theory, which posits that clearer professional self-concepts strengthen commitment and task involvement (Dorfman & Kalugin, 2020; Hsiung & Yu, 2022). The relatively smaller yet significant role of emotion suggests that affective attachment alone is insufficient without cognitive clarity and behavioral enactment. Compared to prior studies that examined professional identity as a unidimensional construct, this multidimensional approach provides more nuanced evidence of how identity operates in vocational architecture education (Bakar et al., 2024; Cohen, 2022). The findings, therefore, refine the existing literature by demonstrating the distinct contributions of each identity component.

Regarding learning motivation, intrinsic motivation demonstrated a substantially stronger predictive effect than extrinsic motivation, consistent with the Self-Determination Theory advanced by Ryan & Deci (2021). This confirms that internal interest, enjoyment, and personal meaning are more powerful drivers of sustained engagement than external rewards. However, the significant contribution of extrinsic motivation indicates that vocational contexts, closely linked to career outcomes, may inherently integrate instrumental goals into students' motivational structures. Theoretically, this suggests that intrinsic and extrinsic motivation function in complementary rather than competitive ways within professional education.

When professional identity and learning motivation were tested simultaneously, professional identity emerged as the stronger predictor of learning engagement. This finding highlights identity as a foundational psychological construct that shapes motivational orientation and academic behavior. Theoretically, the study contributes by integrating identity-based and motivation-based frameworks into a unified explanatory model that demonstrates substantial explanatory power. Practically, the results imply that vocational institutions should prioritize strengthening students' professional identity through authentic learning experiences, industry exposure, and reflective practice, while simultaneously fostering intrinsic motivation through autonomy-supportive teaching strategies. Such integrated interventions may more effectively enhance learning engagement and ultimately improve the quality of vocational education.

CONCLUSION

This study demonstrates that professional identity and learning motivation are important psychological determinants of learning engagement among vocational architecture students, with intrinsic motivation emerging as the strongest predictor ($\beta = 0.46$), followed by professional identity ($\beta = 0.41$), while extrinsic motivation also contributes significantly but to a lesser extent ($\beta = 0.18$); together, these variables explain 62% of the variance in learning engagement. The main lesson from these findings is that students tend to engage more deeply in learning when they internalize professional values and develop genuine personal interest rather than depending primarily on external rewards. Scientifically, this study contributes to the literature by integrating professional identity with differentiated motivational dimensions within a single structural model, thereby extending research on learning engagement beyond institutional factors toward internal psychological mechanisms, while the use of Structural Equation Modeling provides greater methodological rigor and clarifies the relative influence of each predictor. However, this research has several limitations: the cross-sectional design limits causal inference, and reliance on self-reported data may introduce response bias. This underscores the need for future longitudinal or mixed-methods studies that involve broader vocational disciplines and cultural contexts to examine causal pathways and improve the generalizability of the findings.

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