

Learning Engagement in Vocational Education Architecture Students: The Role of Professional Identity and Learning Motivation

Kaijun Du, Krittavit Bhumithavara*

Rajamangala University of Technology Krungthep, Thailand

Email : krittavit.b@mail.rmutk.ac.th

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ABSTRACT

Keywords:

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*Corresponding Author

This research is situated within the backdrop of China's rapidly expanding higher education, where the quality of higher education has become a focal point. Historically, higher education quality evaluation has emphasized external factors such as teaching staff and facilities. However, with the evolution of research, there has been a shift towards focusing on students as the core. Learning engagement, as a key indicator of students' growth and higher education quality, has drawn significant attention. Given its low-to-medium level among most students, improving it has become an urgent matter. The study focuses explicitly on architecture students in vocational education, exploring the relationships among professional identity, learning motivation, and learning engagement. The research variables include personal factors, professional identity, learning motivation (subdivided into internal and external motivation), and learning engagement. The study uses students from Sichuan College of Architectural Technology and Zhejiang College of Construction as the sample, selected using random and stratified sampling methods. The research holds great significance. It aims to uncover the internal mechanisms of students' learning behaviors, offering theoretical and practical guidance for enhancing the quality of vocational education and promoting students' all-round development. Proposed hypotheses include the significant influence of personal factors, the positive impact of professional identity, and the significant influence of learning motivation on the learning engagement of architecture students. Although the research conclusion is not explicitly stated in the given text, the study aims to provide insights into improving architecture students' learning engagement in vocational education, thereby potentially enhancing the quality of vocational education in the architecture field.

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INTRODUCTION

In the context of China's vigorous development and continuous expansion of higher education, the quality of higher education has become a core issue of great concern to all sectors of society. From a strategic perspective, the national target outline had clearly emphasized the need to focus on building high-quality undergraduate education and comprehensively improving the quality of higher education (Hu, Ho, & Nguyen, 2025).

However, looking back on the evaluation of higher education quality in the past, it mainly focused on external resources, such as teaching staff and teaching facilities. Although this evaluation method had reflected the operational conditions of universities to a certain extent, with the continuous, in-depth development of higher education quality research, its limitations had gradually become more prominent (Kuh, G. D. 1982).

At that time, there had been an important shift in the perspective on higher education quality assessment, with greater emphasis on students as the primary body of learning. The essence of education has been to promote students' all-round development. Therefore, the evaluation of higher education quality should not have relied solely on external resources and research achievements, but should have paid more attention to students' actual gains and growth in the learning process. Driven by this concept, relevant scholars proposed innovatively using students' knowledge, skills, and attitudes as important criteria for measuring higher education quality, opening a new path for higher education quality assessment. As a key indicator that comprehensively reflects the growth experience of college students and the quality of higher education, learning engagement has consequently become a research focus in the academic community (Sentot, Triya Tribuce & Firnadi, 2025). Numerous studies have shown that most students' learning engagement at that time was at a medium or even lower level. This situation had seriously restricted the transformation of higher education from scale expansion to quality improvement, becoming an important obstacle to higher education "transforming from large-scale to high-quality". Therefore, how to improve college students' learning engagement and thus promote substantial improvement in higher education quality has become an urgent issue to be addressed (Yang, L., & Yang, X., 2020).

For architecture students, their professional learning has been highly specialized and practical, playing a crucial foundational role in their future career development. Professional identity, as students' cognitive, emotional, and behavioral tendencies towards their major, had a vital impact on their learning engagement. When students had a high level of professional identity with the architecture major, they were more likely to experience pleasure and achievement in the learning process, becoming more proactive in their learning and laying a solid foundation for their future career development. At the same time, professional identity had not only been related to students' current learning status but also closely connected to their future employment quality and career direction. In the long run, enhancing the professional identity of architecture students has been of far-reaching significance for both their personal career development and the improvement of talent cultivation quality in the construction industry (Huang, Z. D., & Zhuang, Y., 2016).

In addition, learning motivation, as an internal driving force influencing students' learning behaviors, has also played a non-negligible role in learning engagement. Learning motivation can be divided into internal and external motivation. Internal motivation stemmed from students' thirst for knowledge and their interest in learning itself, while external motivation came from rewards, pressures, and other factors. A reasonable learning motivation could stimulate students' enthusiasm for learning, enabling them to be more focused and persistent in their learning activities. In the field of architecture, a deep understanding of students' learning motivation has been of great practical significance for guiding students to establish a correct learning attitude and improve their learning engagement.

To sum up, exploring the relationship among professional identity, learning motivation, and learning engagement among architecture students not only helped reveal the internal mechanisms of students' learning behaviors but also provided an important theoretical basis and practical guidance for improving the quality of learning engagement and promoting the all-around development of students.

RESEARCH METHODS

This research focused on vocational architecture students and employed quantitative methods to explore factors influencing professional identity and learning motivation, and their impact on learning engagement. A cross-sectional questionnaire design was used. Structured questionnaires,

developed based on established scales and pre-tested for validity and reliability, were administered to a sample of 400 students from Sichuan College of Architectural Technology and Zhejiang College of Construction. The questionnaires measured variables such as professional identity (using the Professional Identity Scale), learning motivation (via the Academic Motivation Scale), and learning engagement (with the Utrecht Work Engagement Scale for Students). The collected data were analyzed using SPSS. Descriptive statistics summarized sample characteristics, while Pearson correlations and multiple regression analysis identified relationships among variables and determined predictive factors for learning engagement. Ethical approval had been obtained, and participants provided informed consent.

RESULTS AND DISCUSSION

Descriptive Statistics

Demographic Factors

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

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

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

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

Differences in Demographic Factors Generate Differences in Learning Engagement

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 one-way ANOVA results for grade differences in learning engagement, yielding an F-value of 3.202 and a p-value of 0.023 ($p < 0.05$), which rejected the null hypothesis (H_0).

Differences in Only Child Generate Differences in Learning Engagement

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 the independent samples t-test results for only child status and learning engagement. Non-only children (4.258, $SD = 0.651$) scored significantly higher than only children (3.425, $SD = 0.759$), with a t-value of 13.096 and a p-value of 0.000 ($p < 0.001$). This rejected the null hypothesis (H_0), indicating that only child status significantly influences learning engagement, with non-only children exhibiting higher engagement.

Differences in Major Choice Generate Differences in Learning 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			

Table 7 reports the one-way ANOVA results for major choice and learning engagement, with an F-value of 39.391 and a p-value of 0.000 ($p < 0.001$), rejecting the null hypothesis (H_0).

Differences in Academic Performance Generate Differences in Learning Engagement

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			

Table 8 presents the one-way ANOVA results for academic performance and learning engagement, with an F-value of 24.820 and a p-value of 0.000 ($p < 0.001$), rejecting the null hypothesis (H_0).

Professional Identity Influence on Learning Engagement

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

		Coefficient ^a				
Model		Unstandardized Coefficients	Standardized Coefficients Beta	t	p-value	
		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

Table 9 presents the results of the multiple linear regression analysis examining the impact of professional identity on learning engagement. The four dimensions of professional identity (cognition, emotion, behavior, and professional training) collectively explained 95.3% of the variance in learning engagement (adjusted $R^2 = 0.953$). All regression coefficients for these dimensions were statistically significant ($p < 0.05$), with the cognitive dimension ($\beta = 0.425$, $p = 0.000$) and the behavioral dimension ($\beta = 0.382$, $p = 0.000$) exerting the strongest effects. This result rejected the null hypothesis (H_0), indicating that professional identity—particularly its cognitive and behavioral dimensions—positively influenced learning engagement.

Learning Motivation Influence on Learning Engagement

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

Table 10 shows the results of the multiple linear regression analysis investigating the impact of learning motivation on learning engagement. The two dimensions of learning motivation (extrinsic motivation and intrinsic motivation) together explained 93.1% of the variance in learning engagement (adjusted $R^2 = 0.931$). The regression coefficients for both dimensions were statistically significant ($p < 0.000$), with intrinsic motivation (standardized coefficient $\beta = 0.713$) exerting a stronger influence than extrinsic motivation (standardized coefficient $\beta = 0.300$). This result rejected the null hypothesis (H_0), demonstrating that both intrinsic and extrinsic motivation significantly affect learning engagement, with intrinsic motivation playing a more prominent role.

Professional Identity, Learning Motivation, and Influence on Learning Engagement

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

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

Table 11 presents the results of the multiple linear regression analysis examining the combined impact of professional identity and learning motivation on learning engagement. Together, these two variables explained 96.4% of the variance in learning engagement (adjusted $R^2 = 0.964$). The regression coefficients for both variables were statistically significant ($p < 0.000$), with professional identity ($\beta = 0.626$) exerting a stronger influence than learning motivation ($\beta = 0.368$). This result rejected the null hypothesis (H_0), confirming that professional identity and learning motivation together significantly predict learning engagement, with professional identity being the more influential predictor.

CONCLUSION

Differences in Demographic Factors Affect Learning Engagement: The study found that certain demographic factors significantly influenced learning engagement among 400 vocational architecture students. Specifically, grade level showed a significant effect ($p=0.023$), with seniors scoring 0.378 points higher in learning engagement than sophomores. Only child status also had a notable impact ($p=0.000$), as non-only children exhibited a mean engagement score (4.258) that was 0.833 points higher than that of only children (3.425). Major choice proved significant ($p=0.000$), with students who chose their major independently scoring 0.788 points higher than those with adjusted majors. Additionally, academic performance correlated strongly with engagement ($p=0.000$), as students with good performance scored 0.790 points higher than those with poor performance. In contrast, gender did not show a significant effect ($p=0.090$).

Professional Identity Influence on Learning Engagement: Professional identity had a significant positive impact on learning engagement, explaining 95.3% of its variance. All four dimensions of professional identity (cognition, emotion, behavior, and professional training) contributed significantly ($p<0.05$), with the cognitive ($\beta=0.425$) and behavioral ($\beta=0.382$) dimensions exerting the most potent effects. This indicated that students' understanding of their profession, positive emotional attachment, proactive professional behaviors, and satisfaction with professional training collectively enhanced their involvement in learning.

Learning Motivation Influence on Learning Engagement: Both intrinsic and extrinsic motivation significantly predicted learning engagement, together explaining 93.1% of its variance. Intrinsic motivation ($\beta=0.713$) played a more prominent role than extrinsic motivation ($\beta=0.300$), both of which were significant ($p<0.000$). When combined with professional identity, both factors jointly predicted learning engagement, together explaining 96.4% of its variance, with professional identity ($\beta=0.626$) emerging as the stronger predictor.

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