

Curriculum–Job Alignment and Career Commitment in Chinese Higher Vocational Education: The Mediating Role of Learning Experience

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curriculum–job alignment; learning experience; career commitment; vocational education; New Energy Vehicles; structural equation modeling practice-based research; research through design; virtual reality; prototype; traceability; evidence; reflexivity

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Abstract

Rapid technological change creates a persistent alignment problem for technical and vocational education and training (TVET): curricula may be formally linked to an occupation while students still experience weak correspondence between classroom learning and contemporary work. This study examines whether perceived curriculum–job alignment is associated with career commitment among students and recent graduates of Chinese higher vocational New Energy Vehicle (NEV) programs, and whether learning experience mediates that association. A cross-sectional survey produced 354 valid responses from students and recent graduates across multiple higher vocational institutions in one Chinese province. Curriculum–job alignment, learning experience, and career commitment were assessed on five-point scales. Learning experience was modeled as a second-order construct comprising teacher support, authentic resources, practice-oriented assessment, capability activation, and goal clarity. Confirmatory factor analysis and structural equation modeling were conducted, with indirect effects estimated through 5,000 bootstrap samples. The final model showed good fit ($\chi^2/df = 2.12$, CFI = .962, TLI = .952, RMSEA = .058, SRMR = .038). Curriculum–job alignment was positively associated with learning experience ($\beta = .41$, $p < .001$) and retained a direct association with career commitment ($\beta = .22$, $p < .001$). Learning experience was positively associated with career commitment ($\beta = .46$, $p < .001$), and the indirect effect was significant ($\beta = .19$, 95% CI [.14, .25]). The model explained 61% of the variance in career commitment. The findings indicate that alignment becomes educationally consequential when students experience it through credible teaching, current equipment, authentic assessment, active competence development, and visible career pathways. For fast-changing vocational fields, curriculum reform should therefore connect dynamic task mapping with deliberately designed learning experiences and staged workplace exposure.

1. Introduction

Technical and vocational education is expected to connect education with productive work while also preparing learners for technological, digital, and green transitions (UNESCO, 2022). This expectation is especially demanding in New Energy Vehicle (NEV) inspection and maintenance. Entry-level work now combines mechanical knowledge with high-voltage safety, electronic control, software-enabled diagnostics, standardized documentation, and cross-functional communication. As occupational standards and toolchains change, a curriculum can become outdated even when its course titles remain stable. China's revised vocational education law consequently emphasizes the adaptability of vocational education to economic and social needs, while recent national reform measures require core vocational courses to incorporate current technologies, processes, and workplace practices (Ministry of Education of the People's Republic of China [MOE], 2022, 2023).

Policy alignment, however, does not demonstrate that students experience training as relevant or that they intend to remain in the occupation. Curriculum–job alignment (CJA) is defined in this study as students' perceived correspondence between course content, learning tasks, assessment requirements, and authentic entry-level work. Perceived alignment matters because learners act on the curriculum they encounter, not only the curriculum specified in formal documents. Constructive alignment connects intended outcomes, learning activities, and assessment (Biggs, 1996); in vocational education, a further connection is required between those educational elements and real occupational performance.

Career commitment refers to willingness to enter, remain in, and continue developing within an occupational field. It is distinct from commitment to a particular employer. A graduate may leave an unsatisfactory firm while remaining committed to NEV technical work. Early career commitment is strategically important in fast-growing sectors because employment entry alone does not ensure occupational persistence. Classic research treats career commitment as a distinguishable attachment that predicts withdrawal cognitions (Blau, 1985), while social cognitive career theory explains persistence through self-efficacy, outcome expectations, goals, and contextual supports (Lent et al., 1994).

The unresolved educational question is how a structural feature such as CJA becomes an individual commitment. Learning experience (LE) offers a plausible mechanism. Students interpret alignment through teacher guidance, resources, assessment, opportunities to enact competence, and clarity about future roles. Research on course experience shows that perceived teaching quality and assessment shape approaches to learning and outcomes (Lizzio et al., 2002; Ramsden, 1991). Authentic assessment similarly requires tasks, contexts, performance criteria, and social conditions to resemble professional practice (Gulikers et al., 2004). Work-integrated learning can then help learners test competence, construct a pre-professional identity, and connect study with future work (Billett, 2009; Jackson, 2017). Recent curriculum scholarship further stresses that work-integrated learning must be intentionally designed rather than treated as placement attendance alone (Ferns et al., 2025).

Existing studies often examine employability, satisfaction, internship participation, or career intention separately. Less is known about a mechanism that joins perceived structural alignment, multidimensional learning experience, and commitment to remain in a rapidly changing technical occupation. This study addresses that gap in Chinese higher vocational NEV education. Two hypotheses are tested:

H1: Perceived curriculum–job alignment is positively associated with career commitment.

H2: Learning experience mediates the association between curriculum–job alignment and career commitment.

2. Conceptual Framework

CJA functions as a credibility signal. When students recognize workplace task flows, safety routines, diagnostic logic, and documentation standards in their program, uncertainty about employability is reduced. Alignment can therefore be associated directly with commitment: the learner sees a feasible route from present study to future work. Yet relevance written into a syllabus is not automatically internalized. Students must encounter alignment through educational practice.

LE is conceptualized here as a second-order construct with five actionable dimensions. First, teacher support includes technical credibility, feedback, and the ability to explain how learning maps to occupational responsibility. Second, resource authenticity concerns current equipment, software, tools, and enterprise-linked practice. Third, practice-oriented assessment asks students to demonstrate procedures and defend diagnostic reasoning rather than merely recall information. Fourth, capability activation refers to interest, problem solving, and confidence developed through demanding tasks. Fifth, goal clarity makes entry roles and progression routes visible. Together, these experiences can convert “the curriculum is relevant” into “I can perform and grow in this field.”

This formulation is consistent with social cognitive career theory because credible learning experiences can strengthen efficacy beliefs and outcome expectations (Lent et al., 1994). It is also consistent with professional identity research: work-integrated experiences are most valuable when learners are supported to interpret workplace participation and connect it to a developing professional self (Jackson, 2017; Jackson & Dean, 2023). The proposed model therefore specifies partial rather than full mediation. Alignment may immediately reduce occupational uncertainty, while LE supplies the deeper pedagogical and psychological process through which commitment is consolidated.

3. Method

3.1 Participants and procedure

The target population comprised current students and recent graduates of NEV inspection and maintenance or closely related higher vocational programs in one Chinese province. A stratified cluster approach was used to obtain coverage across institutions and training stages. Institutions formed the first layer, student or graduate status the second, and intact classes or graduating cohorts the recruitment clusters. Eligibility required completion of sufficient core professional coursework to judge curriculum relevance and learning experience.

Five hundred questionnaires were distributed and 439 were returned. Cases were screened for excessive missingness, contradictory answers, implausibly short completion times, long strings of identical responses, and duplication. The final analytic sample contained 354 valid responses (80.6% of returns): 266 current students (75.14%) and 88 graduates (24.86%). The sample included 214 men (60.45%) and 140 women (39.55%). Off-campus or enterprise practice had been experienced by 134 respondents (37.85%); only 23 respondents (6.50%) reported no practice-based activity. Paper administration was used for enrolled cohorts and authenticated online administration for graduates. Mode comparisons showed no significant differences in focal construct means ($p > .10$).

Participation was voluntary. Respondents received information about the study, confidentiality, and their right to discontinue. Responses were anonymized and were unrelated to grades, internship allocation, or employment evaluation.

3.2 Measures

All focal items used a five-point agreement scale (1 = strongly disagree, 5 = strongly agree). Items were adapted from established alignment, course-experience, authentic-assessment, and career-commitment traditions, then contextualized through preliminary stakeholder input to reflect NEV safety, diagnostics, and work processes. Two vocational instructors and two enterprise mentors reviewed content validity, followed by a pilot of approximately 30 respondents and brief cognitive interviews.

The final measurement model represented CJA with four indicators addressing basic skill coverage, technology currency, workplace-scenario correspondence, and work-readiness expectations. LE was specified as a second-order factor over five first-order dimensions: teacher support (five indicators), resource authenticity (five), assessment and feedback (four), capability activation (four), and goal clarity (four). Career commitment was represented by five indicators covering occupational attachment, intention to stay, continued investment, and development planning. Higher scores indicated stronger perceptions or commitment.

3.3 Analysis

Data preparation included reverse scoring, missing-data checks, descriptive analysis, and scale diagnostics. Internal consistency was assessed with Cronbach's alpha and McDonald's omega; composite reliability (CR) and average variance extracted (AVE) were used to evaluate convergent validity. Confirmatory factor analysis tested the distinction among CJA, LE, and career commitment. Measurement invariance checks supported subgroup comparison, using $\Delta CFI \leq .010$ and $\Delta RMSEA \leq .015$ as practical criteria (Putnick & Bornstein, 2016).

Structural equation modeling estimated the $CJA \rightarrow LE$, $LE \rightarrow$ career commitment, and $CJA \rightarrow$ career commitment paths. The indirect effect was evaluated with 5,000 bias-corrected bootstrap samples, an approach preferable to relying on a normal-theory product test (Preacher & Hayes, 2008). Model evaluation used multiple indices rather than a single cutoff (Hu & Bentler, 1999). Because the data were cross-sectional, path estimates are interpreted as theory-consistent associations rather than definitive causal effects.

4. Results

4.1 Measurement quality

Mean scores were moderately positive: CJA $M = 3.47$ ($SD = .74$), LE $M = 3.71$ ($SD = .68$), and career commitment $M = 3.58$ ($SD = .73$). Reliability met accepted levels. CJA had $\alpha = .80$ and $\omega = .81$; second-order LE had $\alpha = .87$ and $\omega = .88$; career commitment had $\alpha = .86$ and $\omega = .87$. CR values ranged from .79 to .86 and AVE values from .50 to .57 across focal constructs and dimensions. A single-factor model fit poorly ($\chi^2/df = 6.41$, CFI = .684, TLI = .642, RMSEA = .128, SRMR = .112), indicating that the measures did not merely reproduce a general positive-response factor. Harman's first factor explained 28.7% of variance, and a latent method-factor check did not materially improve model fit.

Table 1

Descriptive statistics and measurement quality for focal constructs

Construct	Indicators	M	SD	α	ω	CR	AVE
Curriculum–job alignment	4	3.47	.74	.80	.81	.79	.50
Learning	5	3.71	.68	.87	.88	.86	.55

Construct	Indicators	M	SD	α	ω	CR	AVE
experience (second order)	dimensions						
Career commitment	5	3.58	.73	.86	.87	.85	.54

Note. All measures used five-point scales. CR = composite reliability; AVE = average variance extracted.

Correlations supported the proposed ordering. CJA correlated with LE ($r = .522, p < .001$) and career commitment ($r = .611, p < .001$); LE correlated with career commitment ($r = .596, p < .001$). These associations were below levels that would suggest construct redundancy.

4.2 Structural model and mediation

The final structural model showed good fit: $\chi^2/df = 2.12$, CFI = .962, TLI = .952, RMSEA = .058, and SRMR = .038. CJA was positively associated with LE ($\beta = .41, p < .001$), supporting the premise that students who perceived stronger training–work correspondence also experienced teaching, resources, assessment, capability development, and goals more positively. LE was positively associated with career commitment ($\beta = .46, p < .001$). The direct CJA → career commitment path remained significant ($\beta = .22, p < .001$).

Table 2

Standardized structural effects on learning experience and career commitment

Effect	Standardized β	95% bootstrap CI	p	Interpretation
CJA → learning experience	.41	[.32, .49]	< .01	Positive association
Learning experience → career commitment	.46	[.35, .57]	< .01	Positive association
CJA → career commitment (direct)	.22	[.12, .32]	< .01	Partial mediation retained
CJA → LE → career commitment (indirect)	.19	[.14, .25]	< .01	Significant mediation
CJA → career commitment (total)	.41	—	< .01	Combined direct and indirect association

Note. CJA = curriculum–job alignment; LE = learning experience. Indirect-effect interval is based on 5,000 bias-corrected bootstrap samples.

The indirect effect did not include zero ($\beta = .19$, 95% CI [.14, .25]), supporting H2. Because the direct path also remained significant, mediation was partial. The model explained 42% of the variance in LE and 61% of the variance in career commitment. H1 and H2 were therefore supported.

5. Discussion

The results clarify why technically current content alone is insufficient. CJA had a

meaningful direct association with career commitment, consistent with the idea that a credible match between training and work reduces uncertainty. Students are more likely to see NEV work as a feasible occupational pathway when the program visibly covers contemporary tasks, safety standards, and diagnostic procedures. Yet almost half of the total alignment association operated through LE. Alignment becomes personally consequential when students encounter it in teaching, tools, assessment, competence-building activity, and career explanation.

The mediation result connects constructive alignment with vocational identity development. Biggs (1996) emphasizes coherence among outcomes, teaching, and assessment. The present findings extend that logic by showing that coherence must also be legible as occupational preparation. Practice-oriented assessment, for example, is not valuable merely because it is different from a written examination. It is valuable when it requires learners to perform, explain, document, and accept feedback under criteria recognizable from the workplace (Gulikers et al., 2004). Similarly, equipment investment is educationally weak if students do not use the equipment in authentic diagnostic sequences with explicit standards.

The strong LE → commitment path also supports social cognitive and identity accounts of persistence. Credible feedback, successful performance, and clear goals can strengthen beliefs that the learner can enter and progress in the occupation (Lent et al., 1994). Work experience then offers an external test of those beliefs. The broader literature shows that work-integrated learning contributes most when educational institutions intentionally connect workplace activity, reflection, assessment, and professional identity (Billett, 2009; Ferns et al., 2025; Jackson, 2017). Thus, workplace exposure should not be positioned as an isolated final-semester event. Early observation, supervised task participation, return-to-campus analysis, and later responsibility-bearing placement can create a developmental sequence.

5.1 Educational implications

First, vocational programs should manage alignment as a recurring evidence process. Course teams can map each core module to current occupational tasks, safety requirements, tools, performance evidence, and assessment criteria. Enterprise partners should review this map on a scheduled cycle. National policy already calls for courses to reflect current technologies and actual work (MOE, 2023); the practical challenge is to make the update process visible at module level.

Second, institutions should treat the five LE dimensions as implementation levers. Teacher development should include industry updating and the ability to translate standards into teachable sequences. Resource planning should prioritize access and structured use, not procurement alone. Assessment should require observable performance and diagnostic justification. Project and case work should activate capability rather than reproduce step-following. Career guidance should be embedded in technical teaching through role maps, entry expectations, and progression examples.

Third, evaluation should move beyond immediate employment rates. Employment measures entry, whereas career commitment captures willingness to remain, invest, and progress. A retention-oriented quality system could combine student-reported alignment and LE, authentic performance evidence, enterprise mentor judgments, and within-field follow-up at 6, 12, and 24 months. This is consistent with international calls for responsive VET systems that support transitions over time (OECD, 2023; UNESCO, 2022).

5.2 Limitations

The cross-sectional design does not establish temporal causality. Reverse or reciprocal effects are possible: highly committed students may evaluate their learning more positively. Longitudinal measurement across study, internship, and early employment is required. The study is also based mainly on self-report and one regional NEV ecosystem. Supervisor ratings, performance artifacts,

and administrative retention data would strengthen multi-source validity. Finally, the measures are occupationally contextualized; replication is needed in other fast-changing, safety-critical fields such as industrial robotics, intelligent manufacturing, and hydrogen systems.

6. Conclusion

Among Chinese higher vocational NEV students and recent graduates, perceived curriculum–job alignment was associated with career commitment both directly and indirectly through learning experience. The mediation result is the study’s central educational contribution: curriculum relevance becomes commitment when students can experience relevance as credible instruction, authentic resources, performance-oriented assessment, developing capability, and a visible future. Responsive vocational education therefore requires more than periodic syllabus revision. It requires an integrated design that continuously links occupational change, curriculum decisions, students’ day-to-day learning, and staged participation in work.

Ethics statement

Participation was voluntary, informed consent procedures were used, and responses were anonymized and handled confidentially. No ethics approval identifier was reported in the source dissertation.

Data availability statement

De-identified data may be requested from the corresponding author, subject to institutional and participant-confidentiality requirements.

Conflict of interest

The author declares no conflict of interest.

References

- Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education*, 32(3), 347–364. <https://doi.org/10.1007/BF00138871>
- Billett, S. (2009). Realising the educational worth of integrating work experiences in higher education. *Studies in Higher Education*, 34(7), 827–843. <https://doi.org/10.1080/03075070802706561>
- Blau, G. J. (1985). The measurement and prediction of career commitment. *Journal of Occupational Psychology*, 58(4), 277–288. <https://doi.org/10.1111/j.2044-8325.1985.tb00201.x>
- Ferns, S. J., Zegwaard, K. E., Pretti, T. J., & Rowe, A. D. (2025). Defining and designing work-integrated learning curriculum. *Higher Education Research & Development*, 44(2), 371–385. <https://doi.org/10.1080/07294360.2024.2399072>
- Gulikers, J. T. M., Bastiaens, T. J., & Kirschner, P. A. (2004). A five-dimensional framework for authentic assessment. *Educational Technology Research and Development*, 52(3), 67–86. <https://doi.org/10.1007/BF02504676>
- Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Jackson, D. (2017). Developing pre-professional identity in undergraduates through work-integrated learning. *Higher Education*, 74(5), 833–853.

<https://doi.org/10.1007/s10734-016-0080-2>

Jackson, D., & Dean, B. A. (2023). The contribution of different types of work-integrated learning to graduate employability. *Higher Education Research & Development*, 42(1), 93–110. <https://doi.org/10.1080/07294360.2022.2048638>

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, 45(1), 79–122. <https://doi.org/10.1006/jvbe.1994.1027>

Lizzio, A., Wilson, K., & Simons, R. (2002). University students' perceptions of the learning environment and academic outcomes: Implications for theory and practice. *Studies in Higher Education*, 27(1), 27–52. <https://doi.org/10.1080/03075070120099359>

Ministry of Education of the People's Republic of China. (2022, April 21). *Vocational Education Law of the People's Republic of China (2022 revision)*. https://www.moe.gov.cn/jyb_sjzl/sjzl_zcfg/zcfg_jyfl/202204/t20220421_620064.html

Ministry of Education of the People's Republic of China. (2023, July 17). *Notice on accelerating key tasks in the reform of the modern vocational education system*. https://www.moe.gov.cn/srcsite/A07/zcs_zhgg/202307/t20230717_1069319.html

OECD. (2023). *Building future-ready vocational education and training systems*. OECD Publishing. <https://doi.org/10.1787/28551a79-en>

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891. <https://doi.org/10.3758/BRM.40.3.879>

Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review*, 41, 71–90. <https://doi.org/10.1016/j.dr.2016.06.004>

Ramsden, P. (1991). A performance indicator of teaching quality in higher education: The Course Experience Questionnaire. *Studies in Higher Education*, 16(2), 129–150. <https://doi.org/10.1080/03075079112331382944>

UNESCO. (2022). *Transforming technical and vocational education and training for successful and just transitions: UNESCO strategy 2022–2029*. <https://unesdoc.unesco.org/ark:/48223/pf0000383360>