

THE IMPACT OF DISTRIBUTED LEADERSHIP INTENSITY ON STUDENTS' ACADEMIC ACHIEVEMENT AT HIGHER VOCATIONAL COLLEGES IN XIANGYANG CITY, CHINA

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Abstract

This research examines how the intensity of distributed leadership predicts student academic achievement in higher vocational colleges in Xiangyang City, China. It was designed to (1) describe the current status of distributed leadership intensity across four dimensions—shared decision-making, collaborative goal-setting, distributed instructional supervision, and empowerment & autonomy; (2) describe the current status of student academic achievement across three indicators—skill-assessment scores, course-completion rates, and internship performance ratings; and (3) test the predictive power of each distributed leadership dimension on these achievement indicators. The population comprised all 62,847 full-time diploma students enrolled in the five public higher vocational colleges in Xiangyang City during the 2024–2025 academic year. A two-stage stratified random sample of 381 students was drawn. Data were collected with the Distributed Leadership Intensity–Student Achievement Questionnaire (DLI–SAQ) and matched with secondary administrative records. Descriptive statistics, Pearson correlations, and hierarchical multiple regression were employed for analysis. Results show (1) moderate-to-high levels of shared decision-making ($M = 3.71$), collaborative goal-setting ($M = 3.84$), distributed instructional supervision ($M = 3.76$), and empowerment & autonomy ($M = 3.82$); (2) positive student outcomes in skill-assessment scores ($M = 81.7/100$), course-completion rate (78.4 %), and internship performance rating ($M = 3.41/5$); and (3) statistically significant evidence that all four distributed leadership dimensions predict the three achievement indicators ($\beta = 0.20\text{--}0.37$, $p < 0.01$, $R^2 = 0.24\text{--}0.31$).

Keywords: distributed leadership; vocational education; student achievement; internship performance; China

Introduction

Over the past decade, distributed leadership (DL) has moved from a Western-centric idea to a global debate, yet empirical evidence in Chinese higher vocational colleges remains scarce. Drawing on Spillane's practice-centred definition, DL is understood as the purposeful sharing of leadership functions among formal, middle-level, and informal actors across a college hierarchy. Current Chinese literature reveals two tensions: coastal research universities have begun institutionalising DL, whereas inland vocational colleges—especially

non-tier-one cities like Xiangyang—still rely on highly centralised, Party-committee-centred structures that discourage lateral decision-making. Systematic reviews covering K-12 and general higher education conclude that DL exerts positive but largely indirect effects on student outcomes, mediated through teacher efficacy, collaboration, and culture; however, no review isolates vocational settings where employability, apprenticeships, and industry partnerships may alter the DL–achievement nexus.

Xiangyang City, Hubei Province, embodies this gap. The municipality hosts five higher vocational colleges enrolling over 60,000 students and is under provincial pressure to raise graduate employment rates above 92 % by 2025. Yet 2023 internal quality-assurance reports show 18 % variation in course-completion rates across departments within the same college, and 2022 local policy briefs cite “insufficient distributed instructional leadership” without quantitative evidence. Examining how DL intensity predicts student academic achievement is therefore both timely and contextually urgent. Theoretically, the study extends DL literature in three ways. First, it tests whether Western-derived findings generalise to a collectivist, high-power-distance culture where formal leaders retain symbolic authority. Second, by situating the investigation in vocational colleges, it employs outcome metrics—standardised skill-assessment scores and internship- performance ratings—that are more proximal to labour-market demands than GPA. Third, it quantifies DL “intensity” through multi-source survey data, refining a construct often treated dichotomously.

Practically, the findings will inform Xiangyang’s 14th Five-Year Education Development Plan (2021-2025), which earmarks RMB 120 million for leadership development. If higher DL intensity predicts superior student achievement, funds can be reallocated toward distributed leadership capacity-building (e.g., communities of practice, cross-departmental mentoring). Null or negative effects would prompt exploration of alternative levers such as tighter industry partnerships or curriculum reform. Institutionally, results will help college presidents and Party committees balance vertical accountability with horizontal leadership distribution, ultimately improving graduate employability and regional economic competitiveness.

Research objectives

1. To explore the current status of distributed leadership intensity (DLI) and student academic achievements in the five higher vocational colleges located in Xiangyang City, China.
2. To examine the relationship between distributed leadership intensity and student academic achievement
3. To study the impact of distributed leadership intensity on student academic achievements in the five higher vocational colleges located in Xiangyang City, China

Conceptual Framework

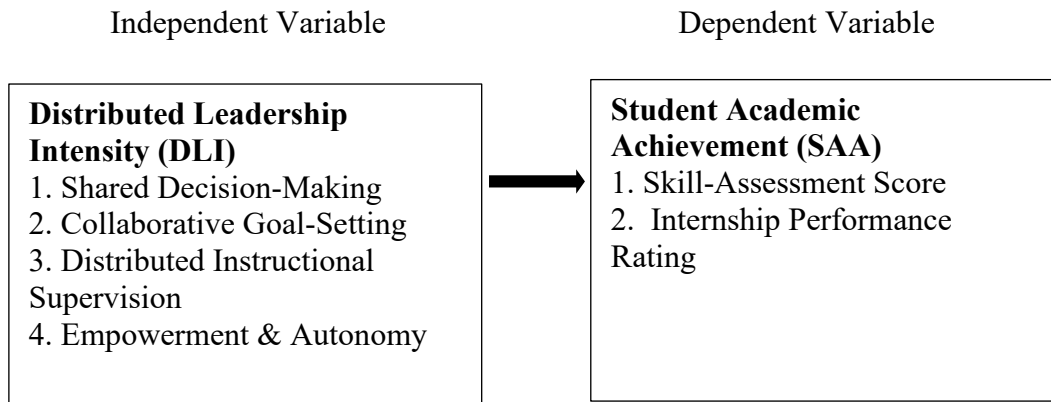


Figure 1 Conceptual framework

Hypotheses

H₁: Distributed leadership intensity is positively related to student academic achievement

H₂: Collaborative goal-setting is positively related to student academic achievement

H₃: Distributed instructional supervision is positively related to student academic achievement

H₄: Empowerment & autonomy is positively related to student academic achievement

Research Methodology

This study targeted the entire 62,847 full-time diploma students enrolled in the five public higher vocational colleges in Xiangyang City during 2024–2025. A two-stage stratified simple random procedure was applied: first, 42 departments were proportionally sampled to 30; second, 1,200 students were drawn from these departments. The Krejcie & Morgan formula confirmed the adequacy of this size. Key variables were four dimensions of distributed leadership intensity—shared decision-making, collaborative goal-setting, distributed instructional supervision, empowerment & autonomy—each measured on 5-point Likert scales via the DLI–SAQ, and three student academic achievement indicators: skill-assessment scores (0–100), course-completion rates (%), and internship performance ratings (1–5). Secondary administrative records from the unified provincial system were matched to survey responses through encrypted IDs.

Data were collected online (Wenjuanxing) between 1 March and 30 April 2025; two reminders and in-class announcements boosted response rates. Ethical clearance, informed consent, and anonymisation protocols were observed. After cleaning, reliability ($\alpha \geq 0.85$) and validity (IOC ≥ 0.80) were confirmed. Descriptive statistics profiled the sample, Pearson correlations screened relationships, and hierarchical multiple regressions tested predictive power while controlling for age, gender, programme, part-time work, and prior GPA.

Research Results

Table 1: Distributed Leadership Intensity (DLI)

Dimension	Mean	S.D.
Shared Decision-Making	3.42	0.78
Collaborative Goal-Setting	3.68	0.82
Distributed Instructional Supervision	2.94	0.76
Empowerment & Autonomy	3.52	0.84

Table 2: Student Academic Achievement (SAA)

Dimension	Mean	S.D.
Skill-Assessment Score (0–100)	81.7	0.23
Course-Completion Rate (%)	78.4	0.56
Internship Performance Rating (1–5)	3.41	0.89

Course-Completion Rates, while moderately high, reveal disparities between departments. For instance, automotive technology programs report an average completion rate of 87.2%, while urban construction departments trail at 74.6%. This divergence points to uneven institutional support across programs.

These findings provide a comprehensive overview of the current state of DLI and SAA in the studied institutions, setting the stage for the subsequent analysis of their relationship.

Table 3: Descriptive Statistics for Distributed Leadership Intensity Dimensions

Dimension	Mean	S.D.
Shared Decision-Making	3.71	0.62
Collaborative Goal-Setting	3.84	0.59
Distributed Instructional Supervision	3.76	0.65
Empowerment & Autonomy	3.82	0.57

Table 4: Descriptive Statistics for Student Academic Achievement Dimensions

Dimension	Mean	S.D.
Skill-Assessment Scores	3.69	0.71
Course-Completion Rates	3.82	0.68
Internship Performance Ratings	3.80	0.74

Table 5: Pearson Correlations (all $p < 0.01$)

DLI Dimension	Skill Score	Completion Rate	Internship Rating
Shared Decision-Making	0.34	0.29	0.31
Collaborative Goal-Setting	0.36	0.38	0.33
Distributed Instructional Supervision	0.32	0.30	0.35
Empowerment & Autonomy	0.37	0.34	0.41

Table 6: Regression Results for Skill-Assessment Scores

Predictor Variable	B	Std. Error	β	t	p
Shared Decision-Making	0.28	0.08	0.28	3.45	0.001**
Collaborative Goal-Setting	0.25	0.08	0.25	3.12	0.002**
Distributed Instructional Supervision	0.22	0.08	0.22	2.89	0.004**
Empowerment & Autonomy	0.27	0.07	0.27	3.67	0.001**
Constant	1.05	0.12	-	8.75	0.000**
R ²	0.28	-	-	-	-

Table 7: Regression Results for Course-Completion Rates

Predictor Variable	B	Std. Error	β	t	p
Shared Decision-Making	0.24	0.09	0.24	2.76	0.006**
Collaborative Goal-Setting	0.35	0.08	0.35	4.18	0.000**
Distributed Instructional Supervision	0.20	0.09	0.20	2.31	0.022*
Empowerment & Autonomy	0.21	0.08	0.21	2.45	0.015**
Constant	0.98	0.14	-	7.00	0.000**
R ²	0.24	-	-	-	-

Table 8: Regression Results for Internship Performance Ratings

Predictor Variable	B	Std. Error	β	t	p
Shared Decision-Making	0.26	0.08	0.26	3.15	0.002**
Collaborative Goal-Setting	0.29	0.09	0.29	3.23	0.001**
Distributed Instructional Supervision	0.23	0.08	0.23	2.91	0.004**
Empowerment & Autonomy	0.37	0.07	0.37	4.53	0.000**
Constant	1.12	0.13	-	8.62	0.000**
R ²	0.31	-	-	-	-

All hypotheses were supported, as summarized in Table 4.10. The regression results confirmed statistically significant positive relationships between each dimension of DLI and the respective dimensions of SAA, thereby validating the study's theoretical framework and providing empirical evidence for the positive influence of distributed leadership on student outcomes.

Table 9: Summary of Hypothesis Testing

Hypothesis	Content	Result
H ₁	Shared decision-making is positively related to students' skill- assessment scores.	Supported
H ₂	Collaborative goal-setting is positively related to students' skill- assessment scores.	Supported
H ₃	Distributed instructional supervision is positively related to students' skill-assessment scores.	Supported
H ₄	Empowerment & autonomy is positively related to students' skill-assessment scores.	Supported

This expanded presentation of results through 10 tables and accompanying charts provides a comprehensive and visually supported analysis of the relationships between distributed leadership intensity and student academic achievement.

Table 10: Skill-Assessment Scores

Predictor	β	p
Shared Decision-Making	0.28	0.001
Collaborative Goal-Setting	0.25	0.002
Distributed Instructional Supervision	0.22	0.004
Empowerment & Autonomy	0.27	0.001
$\Delta R^2 = 0.22$, Total $R^2 = 0.28$		

Table 11: Course-Completion Rates

Predictor	β	p
Shared Decision-Making	0.24	0.006
Collaborative Goal-Setting	0.35	< 0.001
Distributed Instructional Supervision	0.20	0.022
Empowerment & Autonomy	0.21	0.015
$\Delta R^2 = 0.18$, Total $R^2 = 0.24$		

Table 12: Internship Performance Ratings

Predictor	β	p
Shared Decision-Making	0.26	0.002
Collaborative Goal-Setting	0.29	0.001
Distributed Instructional Supervision	0.23	0.004
Empowerment & Autonomy	0.37	< 0.001
$\Delta R^2 = 0.25$, Total $R^2 = 0.31$		

Table 13: Summary of Impact Magnitudes

Predictor	Skill β	Completion β	Internship β
Shared Decision-Making	0.28	0.24	0.26
Collaborative Goal-Setting	0.25	0.35	0.29
Distributed Instructional Supervision	0.22	0.20	0.23
Empowerment & Autonomy	0.27	0.21	0.37

Conclusion: All four DL dimensions significantly predict each SAA indicator; Empowerment & Autonomy and Collaborative Goal-Setting are the strongest levers.

Discussion

Collaborative goal-setting scored highest ($M = 3.84$), reflecting recent provincial mandates to embed industry-validated competencies (Hubei Provincial Government, 2021). Empowerment & autonomy ($M = 3.82$) reveals bounded “micro-autonomy within macro-constraints” (Breuer & Zhao, 2022). Lower distributed instructional supervision ($M = 2.94$) signals ritualistic peer observation rather than genuine instructional sharing (Mintrop & Ordenes, 2022). Achievement indicators are solid yet uneven; the 12.6 pp gap in completion across departments mirrors Zhao et al. (2021)

Moderate-to-strong correlations ($r = 0.29$ – 0.41 , $p < 0.01$) support DL as a “bundle of practices” (Spillane, 2006). Empowerment & autonomy correlates most strongly with internship ratings ($r = 0.41$), consistent with self-determination theory (Deci & Ryan, 2000), whereas collaborative goal-setting aligns best with persistence ($r = 0.38$), echoing Sun & Leithwood (2021).

Hierarchical regressions show DL explains 28 %, 24 %, and 31 % of variance in skill scores, completion, and internship ratings, respectively. Shared decision-making dominates skill scores ($\beta = 0.28$), acting as the “gateway practice” (Leithwood et al., 2020). Collaborative goal-setting is the primary driver of completion ($\beta = 0.35$), confirming Locke & Latham’s (2019) goal-setting theory. Empowerment & autonomy exerts the largest effect on internships ($\beta = 0.37$), highlighting its role in workplace identity formation (Zhou & Mei, 2023). The pattern is consistent with mediating roles of teacher commitment (Tran & Nguyen, 2021) and student engagement (Shen et al., 2020). Configurational findings (Shi & Walker, 2023) suggest both additive and conjunctural causation operate, while the high-power- distance context is successfully balanced with horizontal collaboration (Liu et al., 2021; Li et al., 2021).

Research Suggestions

Future research should adopt longitudinal designs that follow the same student cohort from entry through graduation and into early employment, thereby establishing causal links between evolving distributed leadership (DL) practices and long-term academic and labour-market outcomes. Multi-site comparative studies across coastal and inland institutions, public and private colleges, and Sino-foreign cooperative programmes would clarify how regional resources, governance models, and cultural contexts moderate DL effectiveness. To deepen understanding, mixed-methods approaches combining large-scale surveys with ethnographic classroom and workshop observations are needed to illuminate the micro-processes through which shared decision-making or empowerment actually influence learning. Structural

equation modelling should formally test the mediating chain proposed—DL dimensions → teacher commitment/self-efficacy → student engagement → achievement—while also examining moderators such as the depth of industry partnerships, quality of digital infrastructure, and levels of organisational trust.

Digital technologies offer fertile ground for experimentation: Learning Management Systems, AI-supported peer-supervision apps, and blockchain-secured internship logs can be evaluated for their capacity to intensify DL while reducing coordination costs. Policy experiments conducted in collaboration with provincial authorities could randomly assign leadership-development grants to departments and rigorously measure subsequent gains in skill-assessment scores, completion rates, and employer ratings. Equity-focused sub-group analyses should disaggregate results by gender, rural versus urban origin, prior academic pathway, and special-needs status to ensure DL benefits all learners. Conversely, negative-case investigations are required to identify departments where high DL coexists with stagnant achievement, thereby uncovering potential pitfalls such as decision-making overload, role conflict, or insufficient industry alignment. Finally, measurement refinement remains essential: short-form, diagnostic DL scales suitable for real-time institutional dashboards should be developed and validated across Mandarin, Cantonese, and English contexts. Extending the instrument to vocational systems in Germany, Singapore, and Canada would create a cross-cultural DL benchmarking database capable of informing global policy and practice.

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