THE RELATIONSHIP BETWEEN INTEGRATED TEACHING STRATEGY AND STUDENTS' COMPREHENSIVE ABILITY IN MODERN COLLEGE OF NORTHWEST UNIVERSITY*

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Abstract

The objectives of this research were: 1) to study the integrated teaching strategies in Modern College of Northwest University, 2) to study the students' comprehensive ability in Modern College of Northwest University, and 3) to study the relationship between integrated teaching strategies and students' comprehensive ability in Modern College of Northwest University. This study adopts a quantitative method to explore the relationship between integrated teaching strategies and students' comprehensive ability. The accidental random sampling was 367 students at Modern College of Northwest University, selected according to Krejcie and Morgan table (1970). The research instrument was a self-designed questionnaire. The statistics used were frequency, percentage, mean, standard deviation, and Pearson product moment correlation coefficient.

The research results were:

1.Integrated teaching strategy in Modern College of Northwest University in 5 aspects was at a high level ($\bar{X}$=3.57, S.D.=1.04).Considering the results of these 5 research aspects were as follows: the highest rank was "real-world problem-solving", indicates a high level ($\bar{X}$=3.60, S.D.=1.04). Followed by" technological integration" ($\bar{X}$=3.58, S.D.=1.02), whereas "active learning techniques" was the lowest rank ($\bar{X}$=3.54, S.D.=1.03).

2. Students' comprehensive ability in Modern College of Northwest University in 6 aspects was at a high level ($\bar{X}$=3.57, S.D.=1.06). Considering the results of these 6 research aspects were as follows: the highest rank was "collaboration and teamwork", indicates a high level ($\bar{X}$=3.57, S.D.=1.06).

* Received 8 January 2026; Revised 21 January 2026; Accepted 2 February 2026

Followed by “knowledge integration” and “communication skills” ($\bar{X}$=3.57,S.D.=1.05), whereas “practical application” was the lowest rank ($\bar{X}$=3.55, S.D.=1.08).

3. It was found that the correlation between integrated teaching strategy and students' comprehensive ability has a positive correlation at the high level with statistical significance level at .01 (r=0.90**).

Keywords: Integrated Teaching Strategy, Students’ Comprehensive Ability, Northwest University Modern College

Introduction

In the 21st century, higher education has shifted from traditional lecture-based teaching focused on rote memorization and passive learning to integrated teaching strategies that prioritize critical thinking, problem-solving, collaboration, and creativity (Zhao, 2020). For the purpose of this study, integrated teaching strategy is defined as a pedagogical framework that fuses interdisciplinary content, project-based learning (PBL), and technology-enhanced instruction to foster students’ cognitive, social, and emotional competencies. This approach emphasizes both the cross-pollination of knowledge across disciplines and the intentional fusion of evidence-based pedagogies with digital tools. These integrated strategies aim to cultivate well-rounded students capable of adapting to modern society’s dynamic challenges (Wang, L., & Li, C., 2021).

Modern College of Northwest University, dedicated to quality education and innovative pedagogy, has actively adopted such integrated teaching approaches to enhance student learning outcomes. As a leading private undergraduate institution in Northwest China with a distinctive focus on merging liberal arts education with professional practice, the college’s pedagogy uniquely emphasizes the integration of interdisciplinary project-based learning and technology-enhanced instruction across its core curricula. This makes it an ideal “living laboratory” to examine the impact of integrated teaching strategies, as its student body; drawn from diverse regional backgrounds and academic disciplines, offers a rich context to study how these approaches shape comprehensive ability. However, systematic research on how these college

specific strategies specifically influence students' comprehensive ability; encompassing cognitive, social, and emotional skills like analytical thinking, communication, teamwork, and adaptability (Liu, 2019) remains insufficient.

Existing studies confirm the value of integrated teaching: growing body of research has underscored the multifaceted benefits of integrated teaching strategies across educational contexts. Studies have consistently shown that interdisciplinary curricula and project-based learning (PBL) strengthen students' capacity to synthesize fragmented knowledge and address authentic, real-world challenges (Xu & Zhang, 2022; Chen et al., 2020). Complementary to these findings, flipped classroom models have been linked to enhanced critical thinking and autonomous learning competencies (Sun & Huang, 2021), while the integration of digital tools and AI platforms has been proven to facilitate personalized learning experiences that deepen conceptual understanding (Gao, 2021). Additionally, collaborative learning frameworks embedded within integrated teaching have been identified as key drivers of teamwork and communication skills; foundational attributes for future professional success (Zheng & Wang, 2020).

While these individual strands of research collectively validate the efficacy of specific integrated teaching components, they largely focus on isolated strategies or narrow disciplinary contexts (e.g., engineering courses). What remains conspicuously absent is a systematic synthesis of how these elements—interdisciplinarity, PBL, technology enhancement, and collaborative learning—function synergistically within a single institutional setting. More importantly, few studies have empirically examined the holistic impact of a fully integrated teaching model on the multidimensional comprehensive ability of students (encompassing cognitive, social, and emotional domains), particularly within the context of undergraduate institutions in Northwest China that balance liberal arts education with professional practice. This gap in the literature directly motivates the present study, which seeks to fill this void by investigating the interplay between integrated teaching strategies and student comprehensive ability at Modern College of Northwest University.

Despite these findings, critical gaps persist in the literature: most research focuses on the standalone efficacy of individual teaching methods rather than

their collective, synergistic impact on the full spectrum of students' cognitive and non-cognitive skills (Li & Feng, 2019). Further, few empirical studies have centered on regional undergraduate institutions in China, such as Modern College of Northwest University, that cater to a student population preparing for careers in the country's rapidly evolving local workforce. This oversight is particularly salient given a growing mismatch between two key dimensions: on one hand, the fragmented, single-strategy teaching approaches examined in existing research; on the other, the integrated, multi-faceted comprehensive ability that contemporary Chinese employers increasingly demand. These competencies: spanning analytical thinking, cross-disciplinary problem-solving, collaborative communication, and adaptive learning, are not only foundational to graduates' employability but also pivotal to addressing the practical challenges of regional industrial upgrading and community development. As Chinese universities strive to align their pedagogical goals with national talent cultivation strategies and local labor market needs, investigating the link between a holistic integrated teaching model and students' multidimensional comprehensive ability becomes not just relevant, but imperative to the advancement of both educational practice and workforce development.

This study takes Modern College of Northwest University as a case study to address the research gaps. By exploring the implementation status of integrated teaching strategies, the current levels of students' multidimensional comprehensive ability, and the nature of their correlational relationship, it aims to deliver targeted practical insights: specifically, providing a framework for interdisciplinary curriculum integration that bridges disciplinary silos, offering actionable guidelines for teaching optimization such as the effective fusion of project-based learning and digital teaching tools, and proposing evidence-based recommendations for local educational policy formulation that aligns pedagogical reforms with regional workforce demands. Ultimately, this research seeks to contribute to the refinement of evidence-based pedagogical practices and better prepare graduates to meet the evolving competency requirements of the modern Chinese workforce.

Objectives

1. To study integrated teaching strategy in Modern College of Northwest University.

2. To study students' comprehensive ability in Modern College of Northwest University.

3. To study the relationship between integrated teaching strategy and students' comprehensive ability in Modern College of Northwest University.

Literature Review

The literature review explores two keys relevant to the research areas.

1. Integrated teaching strategies

Integrated teaching strategies: As a holistic educational approach, integrated teaching strategy breaks the boundaries of traditional single-subject and isolated teaching, integrating multiple teaching methods, subject areas, and educational resources (Zhang, 2019). Its core advantages lie in helping students form a comprehensive understanding of knowledge, promoting critical thinking and problem-solving abilities, and enhancing learning motivation and engagement (Integrative Teaching Strategy in Grade 7 Science and Students' Learning and Innovation Skills, 2020). Supported by constructivist learning theory and multiple intelligences theory (Li & Wang, 2020), it consists of five core components with clear alignment to these two theories: active learning techniques that transform students into active knowledge constructors (aligned with constructivism's focus on learner-led knowledge building), collaborative learning that fosters teamwork and knowledge co-construction (rooted in constructivism's social interaction tenet and multiple intelligences' interpersonal intelligence dimension), technological integration that enriches teaching through digital tools based on the TPACK framework (Mishra & Koehler, 2016) (tailored to multiple intelligences' emphasis on diverse learning preferences), real-world problem-solving that bridges theory and practice (serving constructivism's goal of applying knowledge in authentic contexts), and continuous assessment that guides learning through ongoing formative feedback (supporting constructivism's progressive knowledge refinement and multiple intelligences' adaptive learning paces).

2. Comprehensive ability.

Students' comprehensive ability is a multi-faceted construct integrating cognitive and non-cognitive factors (UNESCO, 2021), essential for academic success, career development, and social adaptation (SCANS, 2018). Cognitive factors include logical reasoning (measured via analytical problem-solving tasks), information analysis (assessed through data interpretation exercises), and cross-disciplinary knowledge integration (evaluated by interdisciplinary project performance); non-cognitive factors cover communication (gauged by peer feedback on presentation skills), collaboration (measured via group project contribution ratings), practical application (assessed through real-world task completion efficacy), and self-learning adaptability (evaluated by independent learning plan design and execution) (Sternberg, 2018). Rooted in Bloom's taxonomy of educational objectives and social-emotional learning (SEL) theory (Mahoney et al., 2018), this ability enables students to effectively master and apply knowledge, collaborate with others, adapt to diverse environments, and achieve lifelong learning and development. Previous studies have shown a positive correlation between integrated teaching strategies and the improvement of students' comprehensive ability (Yan & Zuo, 2024), but there is a lack of in-depth research in specific college contexts, which this study aims to address.

3. Research Framework

In this study about the relationship between integrated teaching strategy and students' comprehensive ability in Modern College of Northwest University, the independent variable refers to integrated teaching strategies, which include active learning techniques, collaborative learning, technological integration, real-world problem-solving, and continuous assessment (Linn, 2003). These strategies align with modern educational frameworks that emphasize student-centered learning and skill development. The dependent variable is students' comprehensive ability, encompassing 1) cognitive ability, 2) knowledge integration, 3) practical application, 4) communication skills, 5) collaboration and teamwork, 6) self-learning and adaptability (Kyriakides, Panayiotou, & Antoniou, 2023). Several educational theories provide a foundation for understanding the relationship between these variables.

The research framework can be described as the figure following.

Figure 1 Research Framework

Methodology

This study adopts a quantitative research method to systematically explore the relationship between integrated teaching strategies and students' comprehensive ability. The research process includes population and sample determination, research instrument design, data collection, and data analysis.

1. Population and the Sample Group

Population

The research population is 7,444 students from Modern College of Northwest University.

Sample

The sample group of this study is 367 students at Modern College of Northwest University. The sample size was determined using the Krejcie and Morgan table (1970), and convenience sampling was employed to recruit participants who were readily available across academic departments.

2. Research Instrument

The research instrument is a questionnaire with 3 parts:

Part 1: General Information. This section has 3 questions to gather

background information on the respondent's age, gender, faculties.

Part 2: Integrated Teaching Strategies. This section uses a 5-point Likert scale with the standardized labels: "Strongly Disagree (1)" to "Strongly Agree (5)"—an academic norm for measuring attitudes and perceptions. It contains statements related to integrated teaching strategies, organized into 5 dimensions: 1) Active learning techniques, 2) Collaborative learning, 3) Technological integration, 4) Real-world problem-solving, and 5) Continuous assessment.

Part 3: Students' Comprehensive Ability.it is 5 rating Scales. This main section has Students' Comprehensive Ability statements measured on a 5-point Likert scale ranging from "the least agree" to "the most agree". It is organized into 6 dimensions: 1) Cognitive ability, 2) Knowledge integration, 3) Practical application, 4) Communication skills planning, 5) Collaboration and teamwork planning, 6) Self-learning and adaptability planning.

All statements display consistency with the measurement target as evidenced by an average score of 0.67 to 1.00 on the acceptable consistency index (IOC). The reliability of a pilot test of questionnaires assessed using Cronbach's α, a statistic measuring internal consistency, with α value of 0.82, indicating excellent internal consistency.

3. Data Collection

To ensure the systematic collection of data, the researcher implemented the following procedures:

Distribution: The online questionnaires were distributed to students at Modern College of Northwest University via digital channels. Each respondent was informed of the research objectives, confidentiality, and their voluntary participation.

Platform Utilization: Data were collected through the "Questionnaire Star" (Wenjuanxing) online platform, which facilitated efficient data gathering and management.

Data Screening: Upon completion of the collection period, the raw data were screened. Invalid responses, such as incomplete forms or patterned answers, were excluded to ensure the integrity of the results.

Preparation for Analysis: The final valid datasets were coded and organized for statistical processing and analysis.

4. Data analysis

Part 1 To study integrated teaching strategy in Modern College of Northwest University, data analysis uses mean and stand deviation.

Part 2 To study students' comprehensive ability in Modern College of Northwest University work for school students, data analysis uses mean and stand deviation.

Part 3 The relationship between integrated teaching strategy and students' comprehensive ability was analyzed by using the Pearson Product Moment Correlation Coefficient (r).

Results

Part 1: Implementation of Integrated Teaching Strategies

Table 1 The mean ($\bar{X}$) and standard deviation (S.D.) of integrated teaching strategy in Modern College of Northwest University in 5 aspects

Integrated teaching strategy	$\bar{X}$	S.D.	Level	Ranking
1. Active learning techniques (X1)	3.54	1.03	High	5
2. Collaborative learning (X2)	3.56	1.07	High	4
3. Technological integration(X3)	3.58	1.02	High	2
4. Real-world problem-solving(X4)	3.60	1.04	High	1
5. Continuous assessment(X5)	3.56	1.04	High	3
Total	**3.57**	**1.04**	**High**	

From Table 1 considering, the overall average of integrated teaching strategy in Modern College of Northwest University was at a high level ($\bar{X}$=3.57, S.D.=1.04). Considering the results of these 5 research aspects were as follows: the highest rank was “real-world problem-solving” ($\bar{X}$=3.60, S.D.= 1.04), indicates a high level. Followed by “technological integration” ($\bar{X}$=3.58, S.D.=1.02), whereas “active learning techniques” was the lowest rank ($\bar{X}$=3.54, S.D.=1.03).

Part 2: Students’ Comprehensive Ability

Table 2 The mean ($\bar{X}$) and standard deviation (S.D.) of students’ comprehensive ability in 6 aspects.

Students' comprehensive ability	$\bar{X}$	S.D.	Level	Ranking
1. Cognitive ability (Y1)	3.57	1.06	High	4
2. Knowledge integration (Y1)	3.57	1.05	High	2
3. Practical application(Y1)	3.55	1.08	High	6
4. Communication skills(Y1)	3.57	1.05	High	2
5. Collaboration and teamwork (Y1)	3.58	1.06	High	1
6. Self-learning and adaptability(Y1)	3.56	1.05	High	5
Total	**3.57**	**1.06**	**High**	

From Table 2 consideration, the overall average students' comprehensive ability in Modern College of Northwest University in 6 aspects, was at a high level ($\bar{X}$=3.57, S.D.=1.06). Considering the results of these 6 research aspects were as follows: the highest rank was "collaboration and teamwork" ($\bar{X}$=3.57, S.D.=1.06), indicates a high level. Followed by "knowledge integration" and "communication skills" ($\bar{X}$=3.57, S.D.=1.05), whereas "practical application" was the lowest rank ($\bar{X}$=3.55, S.D.=1.08).

Part 3: The relationship between integrated teaching strategy and students' comprehensive ability in Modern College of Northwest University.

Table 3 The relationship between Students' Growth mindset and Learning style.

Students' comprehensive ability (Ytt)	Integrated teaching strategy (Xtt)					
	X1	X2	X3	X4	X5	**Xtt**
Y1	00.54**	0.60**	0.61**	0.61**	0.60**	0.73**
Y2	00.56**	0.59**	0.59**	0.57**	0.58**	0.71**
Y3	00.58**	0.59**	0.59**	0.56**	0.57**	0.71**
Y4	00.56**	0.57**	0.60**	0.60**	0.57**	0.71**
Y5	0.60**	0.61**	0.60**	0.63**	0.57**	0.74**
Y6	0.61**	0.57**	0.62**	0.59**	0.54**	0.72**
Ytt	0.72**	0.74**	0.75**	0.74**	0.71**	0.90**

****** refers to statistical significance level at .01

From table 4.16, it is shown that the overall relationship between integrated teaching strategy and students' comprehensive ability has a positive correlation at the high level with statistical significance level at .01 (r=0.90).

Discussion

Integrated teaching strategies at Modern College of Northwest University are at a high level across five dimensions, with strengths in real-world problem-solving and technological integration, and room for improvement in active learning techniques. Implementation of Integrated Teaching Strategies: The college's integrated teaching strategies are at a high level, with "real-world problem-solving" leading and "active learning techniques" lagging. This aligns with its applied talent cultivation orientation—integrating industry cases strengthens practicality (Yu, 2020), and investment in digital tools meets educational digitalization trends (China Education Daily Online, 2022). However, large-class teaching and traditional inertia limit interactive active learning, a common issue in local universities (Prince, 2004).

Students' comprehensive ability is at a high level across six dimensions, with strong collaboration and teamwork, and weak communication skills due to insufficient soft skill cultivation. Students' Comprehensive Ability: Students' comprehensive ability is also high, with "collaboration and teamwork" prominent and "communication skills" weakest. Group projects foster collaboration (Pang, 2020), and interdisciplinary courses enhance knowledge integration (Zhong, 2022). The weakness in communication skills reflects application-oriented universities' focus on hard skills over soft skills, due to insufficient practical teaching scenarios (Zhao, 2022).

Integrated teaching strategies have a significant high positive correlation with students' comprehensive ability, proving their effectiveness in promoting holistic development. Correlation Between the Two Variables: A high positive correlation ($r=0.90$, $p<0.01$) confirms integrated teaching aligns with ability development needs. This supports Lin's (2019) view that scientific teaching models cultivate core literacy and the Ministry of Education's (2021) conclusion on teaching reform and ability improvement. The lag in communication skills is linked to inadequate practical design in teaching strategies.

Recommendation

The implementation of the research results is as follows.

1. Strengthen Active Learning: Design tiered workshops for teachers, assign "active learning mentors", and launch monthly demonstration classes to promote interactive methods.

2. Enhance Communication Skills: Clarify communication assessment in group tasks, set up "communication coordinators", and hold speech contests or project defenses to provide practical expression scenarios.

3. Improve Self-Learning and Adaptability: Develop personalized learning templates on the campus platform, assign "learning advisors", and organize quarterly adaptability challenge camps for independent learning practice.

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