

THE RELATIONSHIP BETWEEN TEACHER TEACHING STYLE AND STUDENTS' DEEP LEARNING OF GUANGXI TALENT INTERNATIONAL COLLEGE AFFILIATED HIGH SCHOOL *

Yan Rong¹, Wichian Intarasompun² and Nuttamon Puchatree³

¹⁻³Bansomdejchaopraya Rajabhat University, Thailand

Corresponding Author's Email: wichian.in@bsru.ac.th

Received 3 March 2026; Revised 8 March 2026; Accepted 10 March 2026

Abstract

The objectives of this research were: 1) to examine the overall level of teacher teaching style of Guangxi Talent International College Affiliated High School, 2) to investigate the current level of students' deep learning of Guangxi Talent International College Affiliated High School and 3) to analyze the relationship between teacher teaching style and students' deep learning of Guangxi Talent International College Affiliated High School. This study adopts a quantitative method to explore the relationship between teacher teaching style and students' deep learning of Guangxi Talent International College Affiliated High School. The sample consisted of 316 students selected according to the Krejcie and Morgan (1970) table using convenience sampling. A self-designed questionnaire was employed for data collection. Data were analyzed using frequency, percentage, mean, standard deviation, and Pearson product-moment correlation.

Citation:



* Yan Rong, Wichian Intarasompun and Nuttamon Puchatree. (2026). The Relationship Between Teacher Teaching Style And Students' Deep Learning Of Guangxi Talent International College Affiliated High School.

Journal of Interdisciplinary Social Development, 4(2), 324-342.;

DOI: <https://doi.org/10.>

Website: <https://so12.tci-thaijo.org/index.php/JISDIADP/>

The research results were:

1. Teacher teaching style at Guangxi Talent International College Affiliated High School. 10 aspects were at a high level ($\bar{x}$ =3.84, S.D. = 0.94). Considering the results of these 10 research aspects were as follows: the highest rank was “Hybrid Style” ($\bar{x}$ =4.07, S.D. = 0.87), indicating a high level, followed by “Inquiry-Based Style” ($\bar{x}$ =3.92, S.D.=0.91) and “Differentiated Instruction” ($\bar{x}$ = 3.88, S.D. = 0.95). In contrast, “Delegator Style” was ranked the lowest among the ten aspects ($\bar{x}$ =3.63, S.D. = 0.95).

2. Students' deep learning at Guangxi Talent International College Affiliated High School in 7 aspects were at a high level ($\bar{x}$ =3.91, S.D. = 0.95). Considering the results of these 7 research aspects were as follows: the highest rank was “Critical Thinking” ($\bar{x}$ =4.09, S.D. = 0.92), indicating a high level, followed by “Technology Integration” ($\bar{x}$ =4.03, S.D. = 0.93), whereas “Reflection” was the lowest rank ($\bar{x}$ =3.80, S.D. = 0.98).

3. It was found that the overall relationship between teacher teaching style and students' deep learning has a weak negative correlation with no statistical significance ($r = -0.007$).

Keywords: Teacher Teaching Style, Students' Deep Learning, Guangxi Talent International College Affiliated High School

Introduction

Learning problems in schools rarely stem from teachers' failure to “cover the content.” Rather, they emerge when learning does not transfer—when knowledge remains bound to worksheets, unit tests, and familiar prompts, and students struggle to explain, connect, or apply ideas in unfamiliar situations. Even within the same classroom, some students construct organized conceptual networks that support reasoning and transfer, whereas others retain fragmented

pieces of knowledge that are difficult to mobilize beyond the immediate lesson. This divergence often reflects differences in instructional conditions rather than fixed ability, especially the recurrent ways teachers present knowledge, structure learning activities, and guide students' participation. In many Chinese senior high schools, learning is often strongly driven by examination performance and curriculum coverage. Although students achieve high scores in standardized tests, many still experience difficulties in transferring knowledge, integrating concepts, or reflecting on their own learning processes. These challenges highlight the need to examine whether classroom teaching styles support deeper forms of learning beyond memorization.

Teacher teaching style can be defined as relatively stable patterns through which teachers organize instruction, classroom interaction, authority, and feedback. These patterns are consequential because deep learning entails conceptual understanding, coherent organization of knowledge, metacognitive monitoring, and the capacity to transfer learning across contexts (Bransford et al., 2000). Students are more likely to adopt deep approaches when classroom tasks and assessments emphasize explanation, integration, and application rather than simple reproduction (Biggs & Tang, 2011). Moreover, deep learning is more sustainable when instructional routines support cycles of planning, monitoring, and reflection through explicit prompts, feedback loops, and psychologically safe learning environments (Zimmerman, 2000; Panadero, 2017).

Existing research suggests that deep learning is most likely when instructional structure and learner autonomy are aligned within a coherent pedagogical system. Structured instruction—characterized by clear goals, sequenced teaching, guided practice, and timely feedback—has been shown to produce reliable learning benefits (Stockard et al., 2018). At the same time, supportive classroom regulation and appropriately scaffolded inquiry tend to yield more consistent outcomes than overly controlling approaches or minimally guided exploration (Clark et al., 2023; Lazonder & Harmsen, 2016). Likewise,

evidence on flipped learning indicates generally positive effects, yet outcomes depend strongly on implementation quality and the extent to which class time is devoted to application and feedback rather than passive review (Strelan et al., 2020).

Despite these insights, mechanism-focused evidence linking teaching style to deep learning remains insufficient in senior high school settings marked by heterogeneous learning needs and academic backgrounds. The same instructional practices may enhance understanding for some learners while constraining engagement or meaning construction for others. In addition, although there is growing agreement that deep learning should be examined through measurable dimensions—such as engagement, critical thinking, reflection/metacognition, and transfer—many studies continue to rely on isolated interventions or relatively homogeneous samples. Differentiated instruction, often proposed to address learner diversity, also shows mixed effects and entails substantial implementation demands in secondary education (Smale-Jacobse et al., 2019).

Therefore, examining the relationship between teacher teaching style and students' deep learning in Guangxi Talent International College Affiliated High School is both theoretically warranted and practically important. A context-sensitive analysis can identify which teaching-style configurations—such as structured support, guided inquiry, autonomy with accountability, and feedback-rich routines—are most consistently associated with key dimensions of deep learning, and where misalignments may occur. Such evidence can provide a stronger empirical basis for targeted instructional improvement aimed at fostering deep learning in senior high school classrooms. Teaching style influences the structure of classroom activities, the degree of autonomy of learners, and the types of cognitive tasks students engage in. These instructional conditions shape

whether students adopt surface learning strategies focused on memorization or deeper approaches involving analysis, reflection, and knowledge integration.

Overall, the literature indicates that teacher teaching style and students' deep learning are theoretically connected through classroom learning conditions. Teaching styles emphasizing guidance, inquiry, and feedback are expected to promote higher levels of cognitive engagement, reflection, and knowledge integration. Based on this theoretical relationship, the present study employs Pearson correlation analysis to examine whether variations in teacher teaching style are associated with differences in students' deep learning in the selected high school context.

Objectives

1. To examine the overall level of teacher teaching style of Guangxi Talent International College Affiliated High School.
2. To investigate the current level of students' deep learning of Guangxi Talent International College Affiliated High School.
3. To analyze the relationship between teacher teaching style and students' deep learning of Guangxi Talent International College Affiliated High School.

Literature Review

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

1. Teacher teaching style

In educational research, teacher teaching style refers to the habitual ways teachers organize instruction and interact with students in the classroom (Altet, 1994; Conti, 2004; Grasha, 1996). Rather than a simple “toolbox” of methods, it reflects a relatively stable orientation toward knowledge, learning, and teacher–student interaction across teaching situations. Teacher teaching style can be

conceptualized through ten dimensions—Authoritative, Facilitator, Demonstrator, Delegator, Hybrid, Inquiry-Based, Personal Model, Flipped Classroom, Differentiated Instruction, and Socratic Method—capturing both teacher-centered and student-centered tendencies within a unified framework (Mosston & Ashworth, 2002; Pratt, 2002). The literature indicates that facilitation- and inquiry-oriented approaches are generally more conducive to engagement, autonomy, and higher-order thinking, particularly when students are positioned as active participants in learning (Yoshida et al., 2024; Reeve, 2016). However, teacher-centered approaches are not inherently ineffective, as they offer structure, clarity, and efficient content delivery when explicit explanation and sequencing are required (Biggs & Tang, 2011). Concerns arise primarily when such approaches dominate classroom interaction and limit opportunities for independent meaning-making and knowledge construction. Overall, teacher teaching style is best understood as an adaptive configuration, flexibly combined in response to instructional goals, learner diversity, and contextual constraints, rather than as a single fixed method applied uniformly across situations (Pratt, 2002; Tomlinson, 2014).

2. Students' deep learning

Students' deep learning is commonly defined as learning that moves beyond memorization toward conceptual understanding, critical analysis, integration of ideas, and the application of knowledge in new contexts (Marton & Säljö, 1976; Biggs & Collis, 1982). The emphasis is therefore placed not on the quantity of content covered, but on how learners process, connect, and apply what they learn. Deep learning can be represented through seven interrelated dimensions: Active Engagement, Critical Thinking, Reflection, Real-world Connections, Interdisciplinary Learning, Technology Integration, and Scaffolding.

Within literature, Active Engagement and Critical Thinking are widely regarded as core indicators, as they involve sustained cognitive effort and

purposeful participation rather than superficial task completion. Reflection further supports metacognitive regulation by enabling learners to monitor understanding, evaluate progress, and adjust strategies (Dahlgren & Marton, 1978). At the same time, deep learning is not limited to internal cognition; connecting knowledge to real-world contexts and integrating ideas across disciplines enhances transfer and coherent understanding. In contemporary educational settings, Technology Integration expands access to authentic tasks and resources, while Scaffolding provides structured support that gradually shifts responsibility from teacher guidance to learner independence (Vygotsky, 1978; Wood, Bruner, & Ross, 1976; Dillenbourg, 1999; Means et al., 2014).

3. Research Framework

This study examines the relationship between teacher teaching style and students' deep learning at Guangxi Talent International College Affiliated High School. The independent variable is teacher teaching style, conceptualized as a relatively stable pattern of instructional behaviors, classroom roles, and pedagogical orientations reflecting teachers' beliefs about teaching and learning (Grasha, 1996). Drawing on established teaching style frameworks and student-centered learning perspectives, teacher teaching style in this study consists of ten dimensions: Authoritative Style, Facilitator Style, Demonstrator Style, Delegator Style, Hybrid Style, Inquiry-Based Style, Personal Model Style, Flipped Classroom, Differentiated Instruction, and Socratic Method, representing varying degrees of teacher-centered and student-centered instruction. The dependent variable is students' deep learning, defined as a learning approach emphasizing meaningful understanding, critical thinking, knowledge integration, and the application of knowledge to new and complex contexts (Marton & Säljö, 1976). Based on theoretical perspectives of deep learning and higher-order cognition, students' deep learning comprises seven dimensions: Active Engagement, Critical Thinking, Reflection, Real-world Connections, Interdisciplinary Learning, Technology Integration, and Scaffolding, which reflect students' cognitive,

metacognitive, and contextual learning processes (Biggs & Collis, 1982; Dahlgren & Marton, 1978). The research framework can be illustrated in the following figure:

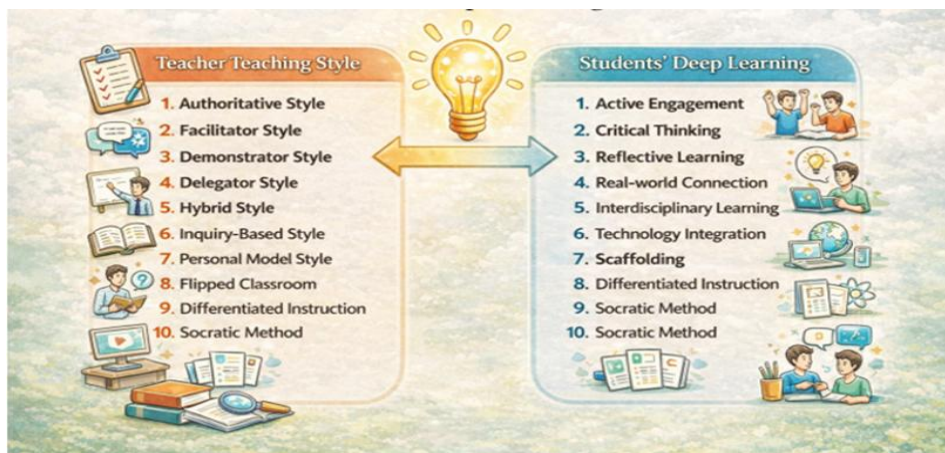


Figure 1 Research Framework

Methodology

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 1,400 students of Guangxi Talent International College Affiliated High School.

The Sample Group

The sample group is 316 students in Guangxi Talent International College Affiliated High School according to Krejcie and Morgan table (1970) sample size table.

2. Research Instrument

The research instrument is a questionnaire with three sections:

Part 1: General Information. This section has 4 questions to gather background information on the respondent's gender, year, grade, grades

Part 2: it has 5 rating Scales. This main section has Teacher teaching style

This section is the main content and focuses on statements related to teacher teaching style, measured using a 5-point Likert scale ranging from 10 dimensions. The section is divided into 10 dimensions: 1) Authoritative Style; 2) Facilitator Style; 3) Demonstrator Style; 4) Delegator Style; 5) Hybrid Style; 6) Inquiry-Based Style; 7) Personal Model Style; 8) Flipped Classroom; 9) Differentiated Instruction; 10) Socratic Method.

Part 3: it is 5 rating Scales. This main section has Students' deep learning

This section is the main content and focuses on statements related to deep learning, measured using a 5-point Likert scale ranging from 7 dimensions. The section is divided into 7 dimensions: 1) Active Engagement; 2) Critical Thinking; 3) Reflection; 4) Real-world Connection; 5) Interdisciplinary Learning; 6) Technology Integration; 7) Scaffolding.

The validity of the questionnaire was evaluated using the Item–Objective Congruence (IOC) index by three educational experts, with IOC values ranging from 0.67 to 1.00, indicating acceptable content validity. A pilot test involving 30 students was conducted prior to the main survey to examine reliability. The reliability of the instrument was assessed using the Cronbach's alpha, yielding an overall coefficient of $\alpha=0.81$, which indicates good internal consistency among the 85 items.

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 Guangxi Talent International College Affiliated High School via digital channels.

Each respondent was informed of the research objectives, confidentiality, and their voluntary participation.

Platform Utilization: Data was 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 was 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 teacher teaching style at Guangxi Talent International College Affiliated High School data analysis uses mean and stand deviation.

Part 2 To students' deep learning of Guangxi Talent International College Affiliated High School data analysis uses mean and stand deviation.

Part 3 The between teacher teaching style and students' deep learning of Guangxi Talent International College Affiliated High School was analyzed by using the Pearson Product Moment Correlation Coefficient (r).

Results

Part 1: teacher teaching style

Table 1 The mean ($\bar{x}$) and standard deviation (S.D.) of teacher teaching style at Guangxi Talent International College Affiliated High School in 10 aspects (n=316)

Teacher teaching style	$\bar{x}$	S.D.	Level	Ranking
1. Authoritative Style	3.72	0.91	High	9
2. Facilitator Style	3.86	0.93	High	5
3. Demonstrator Style	3.81	0.95	High	7

4. Delegator Style	3.63	0.95	High	10
5. Hybrid Style	4.07	0.87	High	1
6. Inquiry-Based Style	3.92	0.91	High	2
7. Personal Model Style	3.87	0.97	High	4
8. Flipped Classroom	3.85	0.93	High	6
9. Differentiated Instruction	3.88	0.95	High	3
10. Socratic Method	3.76	0.97	High	8
Total	3.84	0.94	High	

From Table 1 considering, the overall average of teacher teaching style at Guangxi Talent International College Affiliated High School was at a high level ($\bar{x}$ =3.84, S.D.=0.94). Considering the results of these 10 research aspects were as follows: the highest rank was “Hybrid Style” ($\bar{x}$ =4.07, S.D.= 0.87), indicates a high level, followed by “Inquiry-Based Style” ($\bar{x}$ =3.92, S.D.=0.91), whereas “Delegator Style” was the lowest rank ($\bar{x}$ =3.63, S.D.=0.95).

Part 2: Students' deep learning

Table 2 The means ($\bar{x}$) and standard deviation (S.D.) of students' deep learning at Guangxi Talent International College Affiliated High School in 7 aspects (n=316)

Students' deep learning	$\bar{x}$	S.D.	Level	Ranking
1. Active Engagement	3.87	0.96	High	5
2. Critical Thinking	4.09	0.92	High	1
3. Reflection	3.80	0.98	High	7
4. Real-world Connections	3.83	0.95	High	6
5. Interdisciplinary Learning	3.89	0.92	High	3
6. Technology Integration	4.03	0.93	High	2
7. Scaffolding	3.87	0.94	High	4

Total	3.91	0.95	High
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From Table 2 consideration, the overall average of students' deep learning of Guangxi Talent International College Affiliated High School in 7 aspects was at a high level ($\bar{x}=3.91$, S.D.=0.95). Considering the results of these 7 research aspects were as follows: the highest rank was "Critical Thinking" ($\bar{x}=4.09$, S.D.=0.92), indicates a high level, followed by "Technology Integration" ($\bar{x}=4.03$, S.D.=0.93), whereas "Reflection" was the lowest rank ($\bar{x}=3.80$, S.D.=0.98).

Part 3: The relationship between Teacher teaching style and Students' deep learning of Guangxi Talent International College Affiliated High School

Table 3 The relationship between teacher teaching style and students' deep learning of Guangxi Talent International College Affiliated High School

Students' deep learning(Y_{tt})	Teacher teaching style (X_{tt})										
	X1	X 2	X3	X 4	X 5	X 6	X 7	X8	X9	X10	X tt
Y1	0.061	-0.013	0.012	0.174**	0.052	0.002	0.003	0.051	0.092	-0.024	0.134*
Y2	-0.092	0.052	0.013	0.053	0.031	0.084	-0.072	0.073	0.003	-0.023	0.032
Y3	0.061	-0.061	-0.074	-0.012	-0.024	-0.064	0.034	-0.034	0.093	-0.025	-0.033
Y4	0.043	-0.061	0.134*	-0.021	-0.023	-0.003	0.052	-0.064	0.052	-0.091	0.014
Y5	0.034	-0.102	0.072	-0.073	0.014	0.034	0.041	-0.017	-0.124**	-0.072	0.065
Y6	-0.092	0.063	-0.044	0.034	-0.016	-0.052	0.074	-0.025	-0.016	0.024	0.014
Y7	-0.054	-0.031	-0.061	-0.084	0.047	-0.054	0.021	0.024	-0.084	0.005	-0.095
Y_{tt}	-0.025	-0.054	0.026	0.034	0.035	-0.027	0.046	0.015	0.018	-0.082	-0.007

* refers to statistics significant at .05 level

** refers to statistics significant at .01 level

From Table 3, it is shown that the relationship between Teacher teaching style and Students' deep learning of Guangxi Talent International College Affiliated High School has a negligible and statistically insignificant correlation with ($r = -0.007$) indicates that there is essentially no linear relationship between teacher teaching style and students' deep learning in this sample.

Discussion

The relationship between teacher teaching style and students' deep learning of Guangxi Talent International College Affiliated High School is discussed as follows:

1. Considering the ten research dimensions, the overall level of Teacher Teaching Style at Guangxi Talent International College Affiliated High School was high, with Hybrid Style ranking highest, followed by Inquiry-Based Style, while Delegator Style, though comparatively lower, also remained at a high level. This pattern indicates a diversified and balanced teaching-style ecology in which teachers integrate structured instruction with inquiry, interaction, modeling, and differentiated support rather than relying on a single dominant approach. Such an orientation suggests that classroom practice emphasizes strong instructional structure alongside bounded learner autonomy, enabling both instructional coherence and active engagement, which is well aligned with the instructional demands of the senior high school context. In practice, cognitively demanding tasks are supported through clear goals, systematic guidance, modeling, and timely feedback, whereas tasks emphasizing transfer and higher-order thinking allow space for discussion, inquiry, and appropriately constrained choice, indicating that structure and autonomy function as complementary pedagogical orientations serving different learning purposes. From a theoretical perspective, these findings support the view that teaching style constitutes a relatively stable pedagogical orientation rooted in teachers' beliefs and role relations and is

commonly enacted through the complementary coexistence of multiple styles. The absence of a significant correlation may also reflect the strong influence of examination-oriented learning environments. In Guangxi Talent International College Affiliated High School, teachers have increasingly adopted diversified instructional strategies; however, it remains unclear whether these teaching styles effectively support students' deep learning (Altet, 1994; Grasha, 1996; Pratt, 2002; Conti, 2004). Effective teaching therefore involves adaptive adjustment along the structure–autonomy continuum in response to instructional objectives and learner readiness (Mosston & Ashworth, 2002; Mercer & Howe, 2012).

2. The students' deep learning of Guangxi Talent International College Affiliated High School is at a high level. Among the two dimensions, "Critical Thinking" ranked the highest, whereas "Reflection" ranked the lowest, indicating stronger performance in analysis, evaluation, and reasoning than in sustained self-monitoring. This pattern may be explained by instructional conditions: critical thinking is frequently activated through routine classroom tasks such as problem analysis and evidence-based judgment, whereas reflection relies on stable metacognitive routines (e.g., self-assessment, reflection prompts, and feedback loops) that are less consistently embedded in instruction and assessment. As a result, even with a high overall level of deep learning, reflection tends to lag and show greater variability. These findings align with prior research showing that deep learning emphasizes higher-order cognitive processing supported by constructive alignment and inquiry-oriented tasks, while reflection requires explicit strategy instruction and sustained formative feedback to develop consistently. In many examination-driven systems, students are frequently trained to analyze and solve structured problems, which may strengthen critical thinking skills. However, opportunities for metacognitive reflection such as evaluating one's own learning strategies are less systematically incorporated into classroom routines (Daming,

H. et to all. 2023, Peihao, X. et to all., 2023, Xiang Hui, J. et to all., 2023, Yanting, C. et to all., 2023, Intarasompun, W., et to all. 2022).

3. The correlation between teacher teaching style and students' deep learning at Guangxi Talent International College Affiliated High School was weak and not statistically significant ($r = -0.007$), indicating no clear linear association at the aggregated level. This suggests that teaching style influences deep learning in an indirect and context-dependent manner rather than as a direct effect, as deep learning outcomes are mediated by factors such as task design, scaffolding, feedback routines, and students' self-regulation. When these elements vary across classrooms or when key components of deep learning—particularly reflection—are not systematically embedded in instruction and assessment, the overall impact of teaching style may be diluted in correlational analysis. This finding is consistent with research viewing teaching style as a blended pedagogical orientation rather than a direct determinant of learning outcomes, while deep learning depends on constructive alignment and explicit support for higher-order processes such as reflection and autonomy (Meng, C. et to all., 2023; Zimin, Z., et to all., 2023; Zhonghua. et to all., 2023).

Recommendation

The implementation of the research results is as follows:

1. Schools should provide professional development programs that help teachers integrate inquiry-based instruction with structured opportunities for student reflection and metacognitive learning.

2. Teachers should design classroom activities that explicitly encourage reflection, explanation, and knowledge transfer, such as reflective journals, peer discussions, and problem-based learning tasks.

3. Schools should conduct a constructive alignment review to ensure that teaching approaches, classroom activities, and assessment methods consistently support the development of deep learning.

4. Future research should adopt qualitative approaches, such as classroom observation or student interviews, to explore additional factors influencing students' deep learning that may not be captured through questionnaire surveys.

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