A STUDY ON THE CORRELATION BETWEEN PROJECT-BASED TEACHING SATISFACTION AND TEACHER SELF-EFFICACY IN PRIMARY SCHOOLS IN GUANGZHOU, GUANGDONG PROVINCE, CHINA

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Abstract: This study explores the correlation between project-based teaching satisfaction and teacher self-efficacy among primary school English teachers in Guangzhou, China. Adopting a quantitative research approach, a census survey was conducted with 200 English teachers from a primary school in Guangzhou, yielding 162 valid questionnaires (an 81.0% response rate). Data were analyzed using descriptive statistics, independent samples t-tests, one-way ANOVA, and correlation analysis, with research instruments including the "Project-Based Teaching Satisfaction Evaluation Questionnaire for Primary School English Teachers" and the "Teacher Self-Efficacy Scale." Results indicate significant differences in project-based teaching satisfaction across gender, age, educational level, and academic title. Furthermore, a statistically significant positive correlation was identified between teachers' satisfaction with project-based teaching and their self-efficacy. This study provides empirical insights for enhancing teacher self-efficacy and improving the quality of primary school English education.

Keywords: Project Teaching, Teaching Satisfaction, Teacher Efficacy, Correlational Studies

1. Introduction

Bandura (1977) proposed the Self-Efficacy Theory, emphasizing that individuals develop self-efficacy through mastery experiences, vicarious learning, verbal persuasion, and interpretations of physiological and emotional states, which in turn regulate cognitive processes, motivation, and decision-making. In primary school English education, traditional teacher-centered approaches overemphasize vocabulary and grammar drills, neglecting practical language application abilities and failing to meet diversified learning needs (Zhang et al., 2022). Project-Based Learning (PBL), as an innovative method, promotes collaborative inquiry and problem-solving in authentic contexts, fostering students' comprehensive competencies (Deng, 2020). Teachers' satisfaction with PBL implementation

and their self-efficacy are critical to its effectiveness, yet research on their relationship among primary school English teachers in Guangzhou—especially regarding demographic variables like gender, age, and educational background—remains limited. This study explores this relationship to provide insights for enhancing teaching quality.

2. Materials and Methods

2.1 Problem Statement

There is a close connection between primary school English teachers' project-based teaching satisfaction and self-efficacy, with evidence suggesting mutual influence (Cheng, 2022). While global research has explored project-based teaching and teacher self-efficacy separately, specific studies on their correlation remain limited (Toropova et al., 2020; Wang, 2024). Zhang et al. (2022) noted that teachers' professional attitudes, including satisfaction, are significantly shaped by self-efficacy. This study addresses the gap by examining how these two constructs interact among primary school English teachers in Guangzhou, particularly regarding demographic variables.

2.2 Research Hypotheses

Based on the above analysis, the following hypotheses guide statistical testing:

H1: Significant differences exist in project-based teaching satisfaction among primary school English teachers across different demographic background variables (gender, age, educational level, academic title).

H2: Significant differences exist in self-efficacy among primary school English teachers across different demographic background variables (gender, age, educational level, academic title).

H3: There is a significant positive correlation between project-based teaching satisfaction and self-efficacy among primary school English teachers in Guangzhou, China.

2.3 Research Methodology

This study adopts a quantitative approach, using questionnaire surveys to collect data from primary school English teachers in Guangzhou. Descriptive statistics (frequency, percentage, mean, standard deviation) are used to analyze demographic variables. Independent samples t-tests and one-way ANOVA compare differences in satisfaction and self-efficacy across demographic groups, followed by Pearson correlation analysis to explore their relationship.

2.4 Questionnaire Design

The "Project-Based Teaching Satisfaction Evaluation Questionnaire for Primary School English Teachers" is adapted from Feng (2021), covering three dimensions: knowledge and skills, process and methods, and emotional attitude. The "Teacher Self-Efficacy Scale" is revised from Tschannen-Moran and Hoy (2001), including three dimensions: student engagement, classroom management, and teaching strategies. Both questionnaires use a 5-point Likert scale and have undergone rigorous reliability and validity testing, ensuring suitability for this study.

2.5 Reliability and Validity Testing

2.5.1 Validity and reliability of project teaching satisfaction

The survey respondents in this study are primary school English teachers from a school in Area A, Guangzhou, who implement project-based teaching, with a total population of 200. According to Krejcie and Morgan (1970), the required sample size (S) for this population (P) should not be less than 60. The study ultimately collected 162 valid samples, meeting the sample size standard.

Table 1: Reliability of Teachers' Project-Based Teaching Satisfaction

	Knowledge and Skills	Process and Method	Emotional Attitude
Number of Items	5	8	5
Cronbach's α	0.845	0.879	0.849

The validity test of the project teaching satisfaction questionnaire showed that the KMO test value of the survey data was 0.87, which is greater than 0.70, indicating that the questionnaire is suitable for factor analysis. The Bartlett's test of fit revealed a chi-square value of 1285.816 with a significance probability of 0.000 (*Sig.* <0.01).

Table 2: Project-Based Teaching Satisfaction Scale KMO and Bartlett Test

KMO Sampling Suitability Measure		0.87
Bartlett's Test of Sphericity	Approximate Chi-Square	1285.82
	Df	153
	Significance (Sig.)	*Sig.*<0.001

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2.5.2 Reliability of Teacher Self-Efficacy Scale

This study developed 24 measurement items corresponding to three variables. As shown in the statistical results in the table above, the reliability coefficients of all variables involved in this research exceeded the general standard of 0.7. Therefore, it can be concluded that the self-efficacy questionnaire for primary school teachers designed in this study demonstrates relatively good reliability and consistency.

Table 3: Reliability of Teacher Self-Efficacy Scale

	Student Participation	Classroom Management	Instructional Strategies
Number of Items	8	8	8
Cronbach's α	0.96	0.96	0.96

The validity test of the teacher self-efficacy questionnaire showed that the KMO value of the survey data was 0.94, which is greater than 0.70, indicating that the questionnaire is suitable for factor analysis. The Bartlett's test of sphericity revealed an approximate chi-square value of 9116.51 with a significance probability of 0.00 (*Sig.* <0.01), thus confirming that the scale is appropriate for factor analysis.

Table 4: Teacher Self-Efficacy Scale KMO and Bartlett Test

KMO Sampling Adequacy Measure	0.93	
Bartlett's Test of Sphericity	Approximate chi-square	3940.95
	Df	276
	Significance (Sig.)	*Sig.*<0.001

3 Research Results and Discussion

3.1 Descriptive Statistical Analysis

This study distributed questionnaires to primary school English teachers in Guangzhou who implement project-based teaching. After screening invalid responses, 162 valid samples were obtained. In terms of gender distribution, there are 113 male teachers, accounting for 69.75%, and 49 female teachers, accounting for 30.25%. Regarding age, 48 teachers are under 30 years old, making up 29.63%; 52 teachers are aged 31-40, accounting for 32.10%; 46 teachers are aged 41-50, representing 28.40%; and 16 teachers are over 50, accounting for 9.88%. In terms of educational background, 10 teachers hold a junior college degree (6.17%); 82 have a bachelor's degree (50.62%); 66 have a master's degree (40.74%); and 4 have a doctoral degree (2.47%). For professional titles, 82 teachers are secondary-level teachers (50.62%); 53 are first-level secondary teachers (32.72%); and 27 are advanced-level teachers (16.67%). Descriptive statistics show that teachers' overall project-based teaching satisfaction scores are moderate, with the highest average in the "process and methods" dimension and the lowest in "emotional attitude". Their self-efficacy scores are relatively high, particularly in "teaching strategies".

3.2 Statistical Analysis of Project Teaching Satisfaction and Teacher Self-Efficacy

In project-based teaching, educators reported the highest satisfaction with instructional strategies, averaging 4.58 (SD 0.68), with strong ratings for student engagement (4.46, SD 0.75) and classroom management (4.43, SD 0.70), showing widespread approval and little variation. However,

their confidence in emotional attitude cultivation (2.94, SD 1.26) and knowledge/skill competencies (3.06, SD 1.28) was significantly lower, with notable individual differences. Similar variations appeared in self-efficacy for process and methodology (3.02, SD 1.25). Overall, teachers have considerable satisfaction with project-based teaching, but there is clear room for improvement, especially in enhancing self-efficacy in fostering emotional engagement and attitudes, which requires more support and training.

3.3 Analysis of Differences in Demographic Variables Across Various Study Variables

This paper selects four aspects: gender, age, education levels, and academic title, as demographic variables, to analyze their differences in project-based teaching satisfaction and self-efficacy. An independent samples t-test is used for the analysis of the gender variable, while one-way ANOVA (Analysis of Variance) is applied to demographic variables that include multiple group divisions (age, education levels, academic title).

3.3.1 Gender Differences in Various Study Variables

In terms of project-based teaching satisfaction, no significant gender differences were found across the dimensions of knowledge/skills ($p=0.11$), process/methods ($p=0.089$), and emotional attitudes ($p=0.83$),. However, reveals that male teachers reported significantly higher overall self-efficacy than female teachers ($p=0.01$), particularly in student engagement ($p=0.04$). While both genders exhibit similar satisfaction levels with project-based teaching, male teachers demonstrate greater confidence in managing student participation and overall instructional effectiveness, suggesting gender disparities in perceived competence rather than contentment.

3.3.2 Age-Related Differences in Study Variables

indicates that age significantly influences teaching satisfaction in knowledge/skills ($p<0.001$) and emotional attitudes ($p=0.02$), with younger teachers (<30) showing higher knowledge/skill satisfaction (0.83), while mid-career teachers (31–40) excel in emotional attitudes (0.79). Conversely, demonstrates that self-efficacy varies by age in student engagement ($p<0.001$) and teaching strategies ($p=0.02$), with teachers under 30 reporting the highest engagement confidence (1.39) and those aged 41–50 leading in strategy adaptability (1.42). These patterns highlight age-dependent strengths in satisfaction vs. efficacy.

3.3.3 Educational Level Differences in Study Variables

Emotional attitude satisfaction differs significantly by education ($p=0.04$), where junior college-educated teachers report the highest satisfaction (0.82), while doctoral holders score lowest (0.19). Further reveals classroom management self-efficacy is significantly higher among master's degree holders (1.29) compared to doctoral (0.62) or junior college (0.66) graduates ($p<0.001$). Notably, higher education correlates with reduced emotional satisfaction but enhanced classroom control, suggesting advanced degrees may prioritize structure over affective outcomes.

3.3.4 Academic Title Differences in Study Variables

Emotional attitude satisfaction as significantly lower among senior teachers (0.46) compared to first-level (0.78) and second-level (0.66) peers (p=0.01). Aligns with this, showing overall self-efficacy is highest among senior teachers (0.90) versus junior titles (0.69) (p=0.03), though specific dimensions (e.g., strategies) approach significance (p=0.07). These findings suggest senior teachers, despite higher efficacy, may experience diminished emotional rewards, possibly due to elevated expectations or burnout.

4 Correlation Analysis between Teachers' Project Teaching Satisfaction and Self-Efficacy

This study employs Pearson correlation analysis to examine the intercorrelations among the dimensions of project-based teaching satisfaction and teacher self-efficacy. As shown in Table 4.11, the correlation between overall teaching satisfaction and overall self-efficacy is 0.39 ($p<0.01$), indicating a significant positive relationship. Specifically, knowledge and skills satisfaction exhibits the strongest correlation with classroom management self-efficacy ($r=0.74$, $p<0.01$), suggesting that teachers who are more satisfied with their instructional content feel more confident in managing their classrooms.

The process and methods dimension of satisfaction shows a moderate correlation with student engagement self-efficacy ($r=0.54$, $p<0.01$), implying that effective instructional strategies enhance teachers' belief in motivating students. Meanwhile, emotional attitude satisfaction is moderately linked to overall self-efficacy ($r=0.43$, $p<0.01$), though its correlation with student engagement ($r=0.18$, $p<0.05$) is weaker.

Notably, classroom management self-efficacy demonstrates the highest correlation with overall self-efficacy ($r=0.81$, $p<0.01$), reinforcing that teachers' confidence in managing student behavior is a core predictor of their broader teaching competence. These findings collectively affirm that higher project-based teaching satisfaction significantly strengthens teachers' self-efficacy, particularly in classroom control and student engagement.

Table 5: Correlation between Project-Based Teaching Satisfaction and Self-Efficacy

	1	2	3	4	5	6	7	8
1. Knowledge and skills	1							
2. Process and method	0.42*	1						
3. Emotional attitude	0.40	0.33	1					
4. Overall satisfaction	0.66	0.80	0.72	1				
5. Students participation	0.72	0.54	0.18*	0.28	1			
6.Class management	0.74	0.31	0.51	0.46	0.18*	1		
7. Teaching strategies	0.59	0.05	0.35	0.06	0.45	0.49	1	
8. Overall self-efficacy	0.37	0.46	0.43	0.39	0.59	0.81	0.72	1

* $p<0.05$, $p<0.01$

5 Research Hypothesis Results

Based on the model of project-based teaching satisfaction and teacher self-efficacy, this study conducted a statistical analysis of 162 collected data points. The results indicate that out of the 5 hypotheses proposed, 3 were fully supported, 1 was partially supported, and 1 was not supported.

Table 6: Results of Hypothesis Verification

Research Hypotheses	Test Results
H1: There are differences in teachers 'project teaching satisfaction and teachers' self-efficacy among different background variables.	Support
H1.1: Are there differences in teachers' satisfaction with project-based teaching under different demographic background variables?	Support
H1.1.1: There are differences in the satisfaction of English teachers of different genders in carrying out project-based teaching.	Not supported
H1.1.2: There are differences in the satisfaction of English teachers of different ages with project-based teaching.	Partially Supported
H1.1.3: There are differences in the satisfaction of English teachers with different educational backgrounds in project-based teaching.	Partially Supported
H1.1.4: There are differences in the satisfaction of English teachers with different academic titles in project-based teaching.	Partially Supported
H1.2: Are there differences in self-efficacy of primary school English teachers under different demographic variables?	Support
H1.2.1: There are differences in self-efficacy between male and female English teachers.	Support
H1.2.2: There are differences in self-efficacy among English teachers of different ages.	Partially Supported
H1.2.3: There are differences in self-efficacy of English teachers with different educational backgrounds.	Partially Supported
H1.2.4: There are differences in self-efficacy of English teachers with different academic titles.	Support
H2: Is there a significant correlation between project-based teaching satisfaction and teachers' self-efficacy?	Support

6 Conclusion

6.1 Primary school English teachers report generally high levels of project-based teaching satisfaction and self-efficacy, yet emotional attitude satisfaction scores remain below average (M =

2.94). This suggests a need for targeted emotional-support programs and stress-management training to sustain teachers' affective engagement.

6.2 Male teachers demonstrate significantly higher overall self-efficacy than their female colleagues ($p = 0.01$), particularly in student engagement ($p = 0.04$). These differences may reflect traditional gender-role expectations and unequal access to career-advancement resources; mentoring and leadership initiatives for female teachers are therefore recommended.

6.3 Age exerts a curvilinear influence: teachers aged 31–40 attain the highest teaching-strategy efficacy ($M = 1.42$), whereas those under 30 report lower student-engagement efficacy ($M = 1.39$) and teachers over 50 experience declining satisfaction, likely due to accumulated stress. Differentiated professional-development tracks by career stage could mitigate these disparities.

6.4 Higher educational attainment (Master's or Doctoral) correlates with stronger classroom-management efficacy ($p < 0.001$); however, doctoral-holders show the lowest emotional attitude satisfaction ($M = 0.19$). Advanced-degree teachers may benefit from workload-reduction policies and specialized academic support to balance elevated expectations.

6.5 Senior-titled teachers exhibit the highest overall self-efficacy ($M = 0.90$) compared with intermediate-titled peers ($M = 0.69$), yet they also record the lowest emotional attitude satisfaction ($M = 0.46$). Recognition programs and renewal opportunities are needed to sustain veteran teachers' intrinsic motivation.

6.6 A significant positive correlation exists between project-based teaching satisfaction and teacher self-efficacy ($r = 0.39$, $p < 0.01$), with classroom-management efficacy most strongly linked to teaching-strategy satisfaction ($r = 0.74$). Schools should institutionalize collaborative project-based training, peer coaching, and timely positive feedback to create a virtuous cycle that simultaneously elevates satisfaction and self-efficacy.

References

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.

Cheng, H. (2022). The role transformation of teachers in project-based learning and its pathways. *China Teacher*, 3, 86-90.

Deng, Y. X. (2020). Theoretical research and teaching practice of project-based learning. *Teacher*, (4), 2.

Feng, H. (2021). *Construction and application of a diversified evaluation index system for project-based learning*. Doctoral dissertation, Beihua University.

Toropova, A., Myrberg, E., & Johansson, S. (2020). Teacher job satisfaction: The importance of school working conditions and teacher characteristics. *Educational Review*, 73, 71-97.

Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783-805.

Zhang, Z. N., Zhang, G. Y., Han, D., & Tao, F. (2022). Knowledge graph-based project-based learning management: A case study of undergraduate innovation and practice projects. *Journal of Higher Engineering Education*, 2, 58-62.