

# The influence of teachers' self-efficacy on students' academic performance among secondary schools in Chongqing City, China

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**Abstract:** This study aims to explore the impact of teacher self-efficacy on the academic performance of middle school students in Chongqing, to provide an implementation path for improving the academic performance of middle school students, and to provide theoretical and empirical evidence for promoting teachers to reflect on their educational philosophy, teaching attitudes and behaviors. The study used a teacher self-efficacy questionnaire and an academic performance questionnaire to investigate 30 Chinese teachers and 180 middle school students in a middle school of Chongqing. Based on the collected questionnaire data, correlation analysis and regression analysis methods were used to analyze the relationship between teacher self-efficacy and student academic performance. Results: 1) Teachers in Chongqing have a high sense of self-efficacy; 2) Middle school students in Chongqing have good academic performance; 3) Teacher self-efficacy is significantly correlated with student academic performance; 4) Among the various dimensions of teacher self-efficacy, teacher classroom management efficacy has the greatest impact on student academic performance. Overall, teacher self-efficacy has a significant positive impact on the academic performance of students in Chongqing, China.

**Key words:** teacher self-efficacy; student achievement; secondary school; pedagogical implications

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## 1 Introduction

Teachers' intentions and beliefs, as an inner psychological feeling, can have a certain impact on their educational behavior. When teachers are more confident in their abilities and knowledge, their speech and behavior will become more natural and smooth, making it easier for students to integrate into the classroom. Schunk defined the extent to which educators perceive their ability to influence students as teacher self-efficacy [2]. Previous research has shown that teacher efficacy is closely related to teaching attitudes, teaching behaviors, and students' learning outcomes [1]. Teacher self-efficacy may play different roles in different subjects and grades [4].

Although the link between teacher self-efficacy and student academic success has been widely studied, its specific mechanisms and impacts have not been fully elucidated in specific local educational contexts. Therefore, in such an environment, what is the level of teacher self-efficacy, what is the academic performance of students, what is the relationship between teacher self-efficacy and students' academic performance, and which dimension of teacher self-efficacy has a significant impact on students' academic performance have become issues worthy of in-depth study. The

main purpose of this study is to use the unique education system of Chongqing, China as the background, select a representative middle school in Chongqing as a case, conduct a specific investigation on the above issues, and draw conclusions to promote the professional development of educators and improve academic performance of middle school students in Chongqing.

## **2 Methodology**

In this study, an exploratory quantitative research method was adopted and a representative secondary school in Chongqing, China was selected as a case study. A stratified sampling method was used to survey 30 language teachers and 180 students, with the sample covering different grades and classes, and the total sample size was set at 210.

Data were collected using the Teacher Self-Efficacy Scale developed by Tschannen-Moran and Hoy [3], which consists of three latitudes, namely student engagement efficacy, efficacy of teaching strategies and classroom management efficacy, with a total of 24 questions. This was followed by the Student Academic Achievement Questionnaire, containing three different dimensions of Ontological Academic Achievement, Extended Academic Achievement and Developmental Academic Achievement, totalling 15 questions, as well as the average class language examination scores of the classes taught by the surveyed teachers in the most recent semester.

The collected data were analyzed using SPSS software and the reliability of the questionnaire was assessed by Cronbach's alpha coefficient, Kaiser-Meyer-Olkin (KMO) sampling measure, and Bartlett's Sphericity Test. Descriptive statistics were used to analyze the level of self-efficacy of the teachers and the level of academic achievement of the secondary school students, the Pearson product-difference correlation coefficient was used to measure the correlation between the two, and regression analyses was used to test which latitude had the most significant effect.

## **3 Result and discussion**

### **3.1 Self-efficacy level of middle school teachers in Chongqing**

The Cronbach's alpha coefficient of the teachers' self-efficacy scale was 0.969, and the KMO value calculated by KMO sample measurement and Bartlett's Sphericity test was 0.802, indicating that the reliability of the questionnaire was high. The descriptive statistical analysis showed that the current status of self-efficacy of secondary school language teachers was good. The mean value of language teachers' self-efficacy was 6.14, which was higher than the theoretical median of 5. The values of the dimensions ranged from 6.0 to 6.3, and the standard deviations were between 1.6 and 1.8. Specifically, student engagement efficacy had the highest mean (6.22), proving that teachers were most confident in their ability to do this; teaching strategy efficacy had a factor mean of 6.12; and classroom management efficacy had the lowest mean of 6.09.

### **3.2 Academic achievement level of middle school students in Chongqing, China**

The Cronbach alpha coefficient of the students' academic performance questionnaire was 0.877, and the KMO value was 0.877 in the KMO sample measurement and Bartlett's sphere test, making the questionnaire's reliability and validity high and suitable for factor analysis.

The descriptive statistical data analysis showed that the mean value of students' academic performance in the school was 3.83, and the standard deviation was 0.65, higher than the theoretical mean value of 3, indicating that the academic performance of students in the school was at a higher level; the average language performance of students in the school was 105.29, while the national average language performance in the year was around 105, which was already higher than the national average language performance, proving that the students' academic performance in the school was at a higher level.

### **3.3 Relationship between teacher self-efficacy and student academic performance**

Pearson's correlation coefficient was used in this study to quantitatively assess the magnitude and direction of the relationship between the variables. The correlation analysis showed that the correlation coefficient between the overall indicators of teacher self-efficacy and the overall indicators of academic achievement was 0.782\*\*. The correlation coefficients between the dimensions of teacher self-efficacy and the dimensions of academic achievement ranged from 0.193\*\* to 0.977\*\*, with two-tailed tests of significance less than 0.01. A strong positive correlation existed between teachers' overall self-efficacy and extended learning achievement ( $r = 0.636^{**}$ ). The correlations were, in descending order, Developmental Academic Achievement (0.570\*\*), Ontological Academic Achievement (0.550\*\*), and the values were in the range of moderately strong positive correlations. The correlation coefficient between teachers' self-efficacy and average language achievement was 0.615\*\*. Overall, there is a strong and positive correlation between secondary school teachers' self-efficacy level and students' academic achievement and average language achievement, and increasing teachers' self-efficacy has a positive impact on students' academic achievement.

### 3.4 Significant dimensions of teachers' self-efficacy that influence students' academic achievement

#### 3.4.1 Effect of teachers' efficacy on academic achievement

The independent factor in this study was the characteristics of teacher efficacy while the dependent variable was academic achievement. Based on the results of the stepwise regression analysis, it was found that excluding the factor of classroom management efficacy, teachers' student engagement efficacy was a significant positive predictor of students' academic achievement ( $\beta = 0.539, p < 0.001$ ), and learning strategy efficacy was a significant positive predictor of academic achievement ( $\beta = 0.264, p = 0.022$ ).

#### 3.4.2 Effect of teacher efficacy on average Chinese language achievement

Teacher efficacy characteristics were considered as independent variables in the study, while average language achievement was considered as the dependent variable. As a result of the stepwise regression analyses, teachers' efficacy in student engagement and teaching strategies were not included as predictors, while classroom management efficacy was a significant positive predictor of students' average language achievement ( $\beta = 0.631, p < 0.001$ ). By implementing a comparative study with the beneficial effects of teacher efficacy in promoting student engagement on student academic achievement ( $\beta = 0.539, p < 0.001$ ), it can be inferred that teacher efficacy in managing the classroom, as a component of teacher self-efficacy, has the greatest impact on student achievement.

## 4 Conclusion

Based on a review of existing studies, this study analyzed the relationship between teachers' self-efficacy and students' academic achievement in Chongqing junior high schools, and obtained the following four conclusions: the level of teachers' self-efficacy is high in Chongqing; the level of academic achievement is good in Chongqing secondary schools; there is a significant positive correlation between teachers' self-efficacy and students' academic achievement; and, among the dimensions of teachers' self-efficacy, classroom management efficacy is the factor with the greatest impact on students' academic success. These findings suggest that there is a deep-rooted link between teacher self-efficacy and students' academic achievement in the Chongqing secondary education system. The insights derived from this study provide a roadmap that will contribute to the improvement of teachers' teaching abilities and students' academic performance in Chongqing.

### Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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