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The Relationship between Teachers' Teaching Style and Junior High School Students' Academic Performance in Chinese and Mathmatics

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Abstract

Research on teachers' teaching styles mainly focuses on the investigation of the types of teachers' teaching styles and focuses on the research on teachers' teaching styles from the perspective of teachers. Therefore, this study investigates teachers' teaching styles and its relationship with students' specific learning. This research also aims to study the influence of teachers' teaching styles on students' Chinese and mathematics performance and the relationship between them. The study conducted a survey and analysis of 360 students in Yulin Na Lin junior high school by using the teacher's teaching style questionnaire to draw the following conclusions: 1) teachers' teaching styles are related to students' academic performance to a certain extent, 2) females' evaluation of teachers' teaching styles is generally higher compared to males, and 3) there are significant differences in some dimensions among teachers of different grades. Finally, the dimension of caring sharing has a predictive effect on students' Chinese performance, while rigorous logic has a certain correlation with mathematics performance.

Keywords : Junior High School Students, Teacher Teaching Style, Chinese And Mathematics Academic Performance

Introduction

With the continuous progress of society and the continuous advancement of education reform, modern education has put forward higher requirements for the professional level of teachers. As an important factor affecting the level and quality of teaching, teachers' teaching style has been given more and more attention by researchers. Teaching activity is an interactive process that combines teachers' teaching and students' learning, so our educational research should also pay attention to the two aspects of teachers and students, who are the main body of teaching activities. The teacher's teaching style is the individualized and consistent way and method that the teacher adopts in the teaching activities. After reviewing the domestic research literature on teaching style, it is found that most domestic research on teaching style is based on theoretical explanations, while relatively few empirical studies are carried out. There are many studies on teaching styles from the perspective of teachers themselves, but few studies on teachers' teaching styles from the two-dimensional perspective of teachers and students. There are many studies on the nature of teachers'

teaching styles and the overall situation of teachers' teaching styles, but few studies link them with students and discuss their influence on students' academic performance.

How to continuously optimize the school's teaching atmosphere and improve teachers' teaching styles in the classroom so as to improve students' academic performance more effectively has gradually become an important topic of research in the field of educational psychology. As one of the subjects of the school and the classroom and as the leader of teaching activities, teachers' teaching methods, emotions, tolerance, and other performances in the classroom situation will affect students' learning attitudes and behaviors. Among them, the teacher's teaching style is one of the important factors that play a role.

In China, junior high school is a critical stage of education where students prepare for higher education and future careers. Chinese and mathematics are the basic subjects taught in China. Academic performance in subjects such as Chinese and mathematics has been a challenge for many students. This study aims to explore the relationship between teachers' teaching style and junior high school students' academic performance in Chinese and mathematics. Therefore, aiming at the deficiencies in the current domestic research on teachers' teaching styles, this study intends to study teachers' teaching styles from a new and multi-dimensional perspective by determining effective teaching styles and their impact on academic performance. Designed to provide teachers, education policy makers, and other stakeholders with insights to improve teaching and learning outcomes in junior secondary.

Research Objectives

The specific objectives of this study are as follows:

ⅰ. Determine the dominant teaching styles used by teachers in teaching Chinese and mathematics.

ⅱ. Explore the relationship between teachers' teaching styles and students' academic performance in Chinese and mathematics.

iii. Assess the predictive effect of teachers' teaching styles on students' academic performance.

Through the realization of these goals, this study aims to contribute to the existing knowledge system of the relationship between teachers' teaching styles and students' language and mathematics academic performance. In addition, the study aims to provide practical impact for teachers, education policymakers and stakeholders to improve teaching practices in lower secondary schools and ultimately improve the academic performance of students.

Research Questions

Research questions were formulated to guide the process of this study, and the main research questions are as follows:

ⅰ. What are the dominant teaching styles employed by teachers in the instruction of Chinese and mathematics?

ⅱ. Is there a relationship between teachers' teaching styles and students' academic performance in Chinese and mathematics?

iii. To what extent do teachers' teaching styles predict students' academic performance in Chinese and mathematics?

Research Significance

The study examines the relationship between teacher teaching styles and academic performance from the perspective of students. Through the study of the relationship between the two, we can first understand the impact of the overall perception of teachers' teaching style on students' academic performance. Secondly, it helps to deepen and improve the research on teachers' teaching style. Teachers will be able to use this information to adjust their teaching styles to better meet the needs of students, thereby improving academic performance. Third, by investigating the impact of different teaching styles on academic performance, this study will help fill gaps in the existing literature and provide a more comprehensive understanding of the factors that influence academic performance.

Limitations of the Study

As with any study, there are some limitations to consider when interpreting the results of this one. First, this study only focuses on a middle school in Yulin City, Guangxi Province, China. Therefore, the findings of this study on teacher teaching styles and student achievement may not be applicable to other secondary schools. As this study was conducted only in secondary schools in Guangxi province, the results may not be generalizable to all categories of secondary schools or even to a broad range of regional public secondary schools.

Literature Review

Teaching style refers to the characteristics of teaching activities and is the unique, harmonious combination and regular expression of teachers' educational thoughts, personality characteristics, and educational skills in the educational process. The formation of a teaching style is a sign of a teacher's maturity in the art of teaching(RuMi, 2002).

(Smith, 1984) believe that teaching style refers to the teaching method preferred by teachers, which rarely changes due to changes in teaching content and teaching objects, showing consistent stability and distinctive personality traits. According to Katz, teaching style is the way that teachers use teaching methods to teach students in the classroom or how they show their roles in classroom situations(Katz, 1996).(Cooper, 2001) believes that teaching style is a comprehensive reflection of all teaching skills, teaching activities, and teaching methods that teachers use when teaching a certain subject in the classroom.

In 2004, based on analyzing the structure of teaching style, Evans investigated various factors that may have an impact on teaching style, studied the comprehensive-analysis dimension to measure teachers' teaching style, and found that age and gender have an impact on teaching style. significant impact. Older teachers showed a comprehensive style in the classroom, while younger teachers showed an analytical style. Male teachers exhibit a comprehensive style, while female teachers tend to have an analytical style(Evans, 2004).

(HeWen, 2014)inherited Sternberg's classification of teacher teaching styles, added emotional factors according to Chinese characteristics, changed the research perspective from teacher reports to students' perceptions, and formed a rigorous logical teacher teaching style, a caring and sharing teacher teaching style, an innovative and exploratory teacher teaching style, and a humorous and active teacher teaching style.

Methodology

Research Design

According to the purpose of the research, it is determined that the appropriate method for this investigation is the quantitative method. Quantitative methods are common in educational research, especially in descriptive and relational studies. This study adopted a quantitative correlation design. Correlation studies can examine the relationship between multiple variables, which is suitable for this study. A correlation study is a type of non-experimental research that investigates whether a relationship exists between two or more variables. In such investigations, researchers wish to measure two or more variables and examine the nature and importance of the relationship between these variables(Lodico, 2010).

In this study, the dependent variable was the academic performance of the students. The teacher's teaching style was considered an independent variable. In terms of demographic characteristics, the study included the gender of the students, the subjects taught by the teachers, and the grades of the students. The study employed a descriptive-correlational research design. Measure selected variables and then use correlation statistics to determine correlations between variables.

Location of the Study

This study was conducted at a public junior high school in Yulin, Guangxi Zhuang Autonomous Region, China. The selected junior high school is Yulin Nalin Junior High School, and 360 students randomly sampled from grades 7, 8, and 9 are the survey representatives. Yulin Nalin Junior High School is a complete middle school directly under the Yulin Education Bureau. There are 99 teaching classes and 5663 students. Therefore, the research conclusion of this representative middle school is credible.

Population and Sampling

The population of this study was 5,663 students from Yulin Nalin Junior High School. This includes Chinese and math students in grades 7, 8, and 9.

Instrumentation

The study used the following two tools for data collection and analysis:

ⅰ. Questionnaire survey: This study uses (HeWen, 2011) teacher teaching style questionnaire, which is applicable to students of all grades in universities and middle schools.

ⅱ. Statistical analysis of grades: In order to evaluate the students' Chinese and mathematics grades, the researchers collected the final exam score data of the 2022 fall semester of each class in grades 7, 8, and 9 of Yulin Nalin Junior high School.

Data Analysis

This study used SPSS 26.0 for data analysis. Descriptive statistical analysis was first applied to the teacher teaching style questionnaire and student performance data. Then, variance analysis examined differences in teaching styles. Correlation analysis explored the relationship between teaching styles and junior high students' Chinese and mathematics performance. Finally, multiple regression analysis assessed the impact of different teaching styles on student performance by comparing Chinese and mathematics scores across various teaching styles.

Findings and Discussions

Table 1

Descriptive statistics of mean values of each dimension of teacher teaching style Scale

Dimension	N	mean	SD	min	max
positive humor	360	5.97	1.07	1.00	7.00
Rigorous logic	360	5.94	1.19	1.00	7.00
Caring and sharing	360	5.96	1.23	1.00	7.00
Innovation and exploration	360	5.94	1.24	1.00	7.00

In each dimension, the minimum value is 1, the maximum value is 7, and the average value is between 5.94 and 5.97. The average value of positive humor dimension is the largest.
According to the descriptive statistical results in Table 1, it can be found that the average values of the four dimensions are between 5.94~5.97, indicating that the teaching style of these four dimensions is relatively high in the sample as a whole. Among them, the average value of the positive humor dimension is the highest, indicating that the teaching style of positive humor may be more common in teaching. In addition, the standard deviation of the four dimensions is between 1.07~1.24, indicating that teachers have certain differences in teaching styles.

Gender Differences in teachers' teaching styles

Table 2

Gender Ratio Table

Options	Subtotal	Proportion
Male	196	54.44%
Female	164	45.56%
Number of valid participants in this question	360	

The t-test was carried out on the gender differences in the teaching styles of junior high school students and teachers, as shown in Table 2.

Table 3

Gender differences in teachers' teaching styles

Dimension	Gender	N	Mean	Std Deviation	t	P
positive humor	Male	196	35.2194	6.91100	-2.067	0.039
	Female	164	36.5915	5.68262		
Rigorous logic	Male	196	28.9949	6.63441	-2.633	0.009
	Female	164	30.5915	4.84586		
Caring and sharing	Male	196	23.2194	5.40350	-2.752	0.006
	Female	164	24.6098	4.17341		
Innovation and exploration	Male	196	17.3265	4.06177	-2.805	0.005
	Female	164	18.4024	3.21179		

It can be seen from Table 3 that there are significant differences between male and female students in positive humorous type, rigorous logic type, caring sharing type, and innovation exploration type (t = -2.067, P=0.039<0.05), Specific to the average value, female's evaluation of teachers' teaching style is significantly higher than males.

This study investigated junior high school students' perceptions of teachers' teaching styles by gender and found significant differences. Female students rated styles such as positive humor, rigorous logic, caring, sharing, and innovation higher than male students. This suggests that females might seek more emotional support and prefer warm teaching styles, while males might focus more on logical rigor and teacher professionalism. These findings align with (Boring, 2017)and(Elliott, 1996), indicating gender bias in teaching evaluations. The study calls for considering potential bias in student assessments and suggests that anonymity could reduce this bias. Unlike previous research focusing on individual teacher evaluations, this paper emphasizes gender differences in the overall perception of teaching styles from the students' perspective, which may explain the observed differences.

Table 4
Grade Ratio Table

Options	Subtotal	Proportion
Grade 7	127	35.28%
Grade 7	120	33.33%
Grade 7	113	31.39%
Number of valid participants in this question	360	

Table 5
Differences in teachers' teaching styles in different grades

Dimension	Grade	N	Mean	Std Deviation	F	P
positive humor	7	127	36.2992	5.74085	3.639	0.027
	8	120	34.5833	7.66262		
	9	113	36.6726	5.43705		
Rigorous logic	7	127	30.4409	5.74270	2.579	0.077
	8	120	28.7667	6.56670		
	9	113	29.9292	5.32131		
Caring and sharing	7	127	24.6693	4.66166	4.622	0.010
	8	120	22.8083	5.50980		
	9	113	24.0442	4.36584		
Innovation and exploration	7	127	18.2205	3.50037	1.985	0.139
	8	120	17.2917	4.20163		
	9	113	17.9204	3.40992		

It can be seen from Table 5 that teachers of different grades have significant differences in positive humor, caring sharing (F = 3.639, P = 0.027 < 0.05; F = 4.622, P = 0.010 < 0.05). Teachers in grade 9 are the most positive humorous. Following the 7th grade teachers, the 8th grade teachers have the lowest degree of positive humor; There is no significant

difference in rigorous logic, innovation exploration among teachers of different grades (F = 2.579, P = 0.077>0.05; F = 1.985, P = 0.139>0.05). the 7th grade teachers have the highest degree of caring and sharing; followed by the 9th grade teachers, the 8th grade teachers have the lowest degree of caring and sharing for students.

According to the results of this study, teachers of different grades show significant variations in positive humor and caring sharing, but not in rigorous logic, innovation exploration, indicating diverse teaching styles. Teachers must adjust methods for various student ages, affecting academic performance. Educators should emphasize care, respect, positive tone, logic, theoretical depth to engage students. Innovations in teaching promote joint student exploration. Training teachers in varied styles aids in better student adaptation, task completion, urging method exploration to enhance quality(Marchant, 2001).

Table 6
Pearson correlation coefficient between junior high school students' Chinese and mathematics grades and various dimensions of teacher teaching style

correlation coefficient	positive humor	Rigorous logic	Caring and sharing	Innovation and exploration
Chinese	0.051	0.073	0.100	0.037
Mathematics	0.045	0.060	0.037	0.008

Judging from the correlation coefficient, although the correlation between the students' Chinese performance and the indicators of each dimension has not reached a significant level, it can still be seen that the dimension with a strong correlation with it, the Chinese performance, and the dimension of caring and sharing have the largest correlation coefficient, indicating that the correlation between Chinese performance and caring and sharing is stronger than other dimensions; the correlation coefficient between mathematics performance and rigorous logic is the largest, indicating that the correlation between mathematics performance and rigorous logic is the strongest.

From Table 6, it's evident that correlation coefficients between each dimension and students' Chinese and math performance are low, all below 0.1, some even < 0.05. This indicates a distant link between teachers' styles and student performance. However, Chinese achievement correlates slightly higher with caring and sharing, while math performance shows a higher link with rigorous logic, suggesting these aspects could impact learning. Yet, these coefficients aren't significant, preventing easy causality; further in-depth research is necessary to explore the relationship between teachers' styles and academic performance.

Table 7
Regression analysis results of junior high school students' Chinese performance and teachers' teaching style in each dimension

Independent variable	Unstandardized coefficient		Standardized coefficient	t	Sig.	R	R^2
	B	Std. Error	β				
positive humor	0.365	0.381	0.051	0.958	0.339	0.051	0.003
Rigorous logic	0.474	0.343	0.073	1.381	0.168	0.073	0.005
Caring and sharing	0.628	0.330	0.100	1.904	0.050	0.100	0.010
Innovation and exploration	0.228	0.328	0.037	0.697	0.487	0.037	0.001

The regression analysis was carried out with students' Chinese academic performance as the dependent variable and each dimension of teachers' teaching style as the predictive variable. As shown in the table above, only the caring sharing factors were significant, indicating that this dimension had a predictive effect on students' Chinese performance. The multivariate correlation coefficient (R) is 0.100, and the decision coefficient (R) is 0.01, which can effectively explain 1% of the variation in Chinese performance.

Analysis results in Table 7 reveal that among teachers' styles impacting students' Chinese performance, only caring and sharing significantly predict their achievement. The multivariate correlation coefficient (R = 0.100) indicates a correlation between these factors and Chinese performance. The decision coefficient (R^2 = 0.01) suggests these aspects explain just 1% of the variability, highlighting teaching style as a minor factor. These findings pertain specifically to junior high school students and may not generalize across other age groups or subjects.

This aligns with (RuMi, 2002)Li's discussion, emphasizing how teaching styles influence students' growth and behavior. (Wentzel, 1997)notes that adolescents' perception of teachers influences their goals, learning mastery, and academic interest. Studies indicate how teaching styles and leadership impact students significantly. In an intervention study, (HeWen, 2014)enhanced teaching style to boost student interest and academic performance, highlighting teachers' profound impact on academic outcomes.

Table 8
Regression analysis results of junior high school students' Mathematics performance and teachers' teaching style in each dimension

Independent variable	Unstandardized coefficient		Standardized coefficient	t	Sig.	R	R^2
	B	Std. Error	β				
positive humor	0.356	0.422	0.045	0.844	0.399	0.045	0.002
Rigorous logic	0.429	0.380	0.060	1.131	0.259	0.060	0.001
Caring and sharing	0.258	0.366	0.037	0.703	0.483	0.037	0.001
Innovation and exploration	0.056	0.363	0.008	0.154	0.877	0.008	0.000

Regression analysis was carried out with students' mathematics performance as the dependent variable and teachers' teaching styles as predictors. The results are shown in the table above, and it was found that none of the dimensions reached significance. However, judging from the t value, rigorous logic has the largest t value, and the larger the absolute value, the more meaningful the corresponding variable is, indicating that compared with other dimensions, rigorous logic can predict students' mathematics performance to a certain extent.

The results of the analysis in Table 8 show that after regression analysis with each dimension of the teacher's teaching style as the predictor variable, both the multiple correlation coefficient (R) and the decision coefficient (R2) indicate that the teacher's teaching style has a very limited predictive effect on students' mathematics performance. Moreover, none of the factors reached significance, indicating that there is no obvious correlation between teachers' teaching style factors and students' mathematics performance.

Although, from the perspective of t value, the t value of rigorous logic is the largest, because its sig value is much greater than 0.05, it cannot be explained that this factor has a significant predictive effect on students' mathematics performance. This result is contrary to the research of(Liu, 2022). Investigating the reason, this paper thinks that it may be that the focus of the research is inconsistent. The above research focuses on the impact of teachers' classroom teaching behavior on students' performance in various subjects. This paper focuses on the relationship between teachers' teaching styles and students' academic performance. Therefore, the results of this analysis do not show that rigorous logic can predict students' mathematics performance to a certain extent. This also reminds us that we cannot analyses and judge based on a single indicator, and it is more important to comprehensively consider the impact of students' personal learning ability, family environment, or other external teaching factors on students' performance. Further research is needed to delve deeper into the impact of these factors on students' academic performance.

Conclusion

This study explores teachers' impact on students' academic performance in Chinese and mathematics using data from 360 students at Nalin Junior High School in Yulin City, China, drawing the following conclusions:

i. Teachers' teaching styles show high average values ranging from 5.94 to 5.97, with positive humor rating highest.
ii. Gender differences reveal higher teacher evaluation by females, emphasizing emotional support and caring. Male students focus more on rigorous logic.
iii. Variations across grades show significant differences in positive humor and caring sharing, with different grades excelling in various dimensions.
iv. Correlation analysis links Chinese performance strongly to caring sharing and mathematics performance to rigorous logic.
v. Regression analysis highlights caring sharing's significant predictive effect on Chinese performance, not on math.

In summary, teaching styles influence academic performance. Females rate teachers higher, while grade-specific differences exist. Caring sharing predicts Chinese performance, and

rigorous logic correlates with math. These findings offer guidance for educators and institutions to enhance teaching quality and student success.

References

Boring, A. (2017). Gender biases in student evaluations of teaching. *Journal of public economics*, *145*, 27-41.

Cooper, T. C. (2001). Foreign language teaching style and personality. *Foreign Language Annals*, *34(4)*, 301-317.

Elliott, D., L. (1996). The teaching styles of adult educators at the buckeye leadership workshop as measured by the principles of adult learning scale.

Evans, C. (2004). Exploring the relationship between cognitive style and teaching style. *Educational psychology*, *24(4)*, 509-530.

HeWen. (2014). An experimental study on the change of teachers' teaching style and its relationship with students' learning. *Modern primary and secondary education*, 65-69

HeWen, Z., & LiWenjun. (2011). The structure of teachers' effective teaching style and the compilation of adjective evaluation questionnaire. *Shanghai Education and Research Institute*, （5）, 59-62.

Katz, A. (1996). Teaching style: A way to understand instruction in language classrooms. *Cambridge University Press*.

Liu, X. (2022). The influence of teachers' classroom teaching behavior on students' Achievement. *Research on Modern Basic Education*, *(02)*, 74-81. https://doi.org/CNKI:SUN:XCJJ.0.2022-02-011.

Lodico, M. G., Spaulding, D. T., & Voegtle, K. H. (2010). Methods in educational research: From theory to practice. *John Wiley & Sons*.

Marchant, G. J., Paulson, S. E., & Rothlisberg, B. A. (2001). Relations of middle school students' perceptions of family and school contexts with academic achievement. *Psychology in the Schools*, *38(6)*, 505-519.

RuMi, L. (2002). Teaching style theory. *People's Education Press*.

Smith, L. H., & Renzulli, J. S. . (1984). Learning style preferences: a practical approach for classroom teachers. *Learning style preferences: a practical approach for classroom teachers.*, *23(1)*, 44-50.

Wentzel, K. R. (1997). Student motivation in middle school: The role of perceived pedagogical caring. *Journal of Educational Psychology*, *89(3)*, 411.