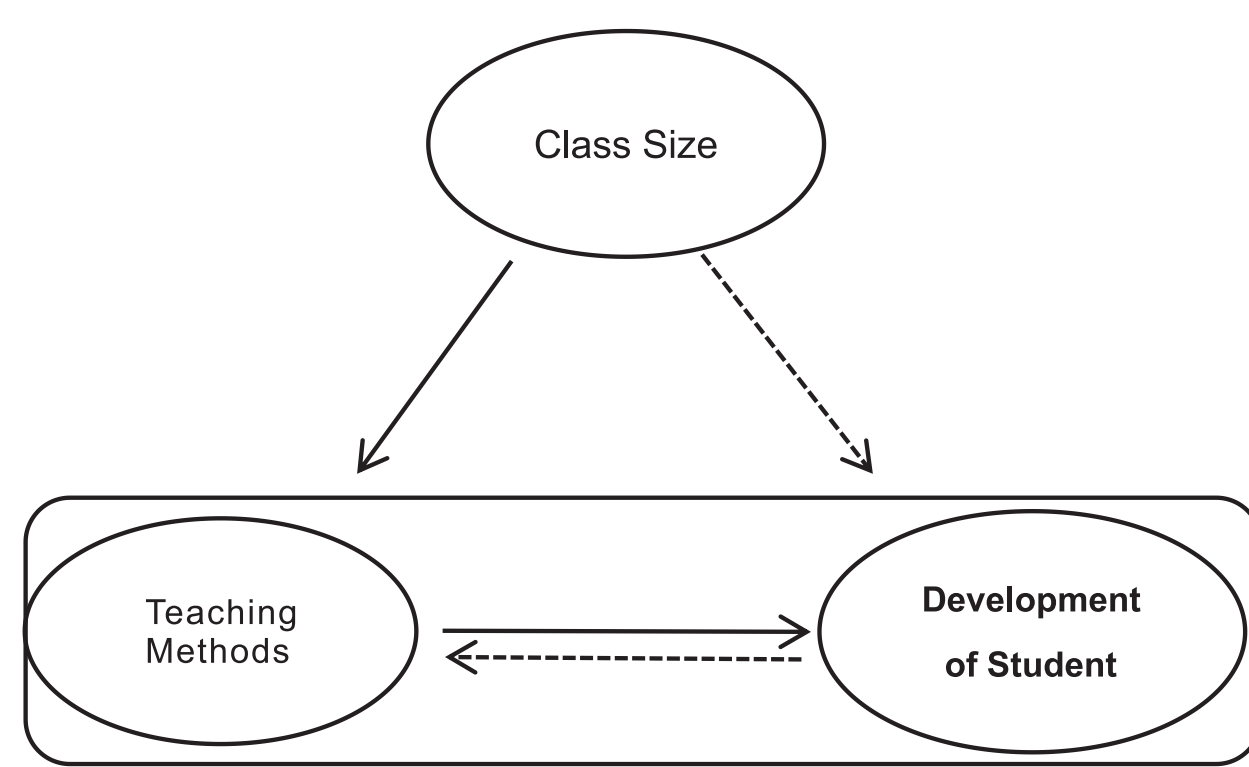




Study on the Influence of Class Size on the Teaching Effect of College Mathematics

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Pic 1: The Relationship between Class Size and Teaching Effect

Small class teaching is a key measure and a major challenge to improve the quality of undergraduate talent cultivation in China. Taking the linear algebra class of Sichuan University from 2015 to 2019 as the research object, "the same teacher teaches classes of students of the same major in many years", through investigation, comparative analysis, this paper studies the trend of influence of class size change on students' performance, and finds that the main reason causing the effect lies in teachers' teaching methods. Finally, the reasonable range of class size in small-class teaching is explored, and relevant suggestions are put forward.

Object of Study:

Year	2015	2016	2017	2018	2019
The Amount of Classes	72	71	63	59	58
the Average Number of Students	72.5	72.7	82.7	79.6	87
The Amount of Teachers	31	26	31	25	29



1 Trend Analysis of the Influence of Class Size Change on Student Achievement

With the increase of class size, the average score of students in the same class did not change significantly. Further, according to the t-test results of whether the average scores of students with the same teacher and major in different years have significant changes, it can be seen that:

- 1) Class size has different degrees of influence on students' performance, and there is no obvious rule on the whole.
- 2) There are 22 cases (accounting for 28.9%) with T-test P value less than 0.1, and there are significant differences in the average scores of students.

Class size → Teaching effect (student achievement)

When teaching students in the same major, there are two types of teachers with different teaching effects:

- 1) With the increase of class size, the average score of students in the class decreases significantly;
- 2) With the increase or decrease of the class size, the average score of the students in the class does not change significantly, or it may increase or decrease.

2 Cause Analysis of the Influence of Class Size Change on Student Achievement

Through investigation research, it is found that teachers' teaching ideas and methods are the key to small class teaching and the main reason that class size has an impact on students' performance. After the increase of class size, the average score all declined, mainly because these teachers are good at changing teaching methods.

3 The Reasonable Range Analysis of Class Size in Small Class Teaching

Taking the first type of teachers as the research object, further research shows that the average class size of these teachers is 56, and 95% of them are concentrated between 49 and 63, with the median of 59, which is only 3 more students than the mean, indicating that the population distribution is basically a symmetrical distribution centered on the mean. Increasing the class size by 21 to 37 students resulted in an average drop of 5.7 to 2.4 points in the effectiveness of those teachers. Therefore, this suggests that a class size between 49 and 63 is a reasonable range.

4 CONCLUSION

Firstly, the key to explaining the influence of class size on students' performance lies not only in the "number of students", but also in the "teaching method of teachers".

Secondly, there are differences in teachers' understanding and practice of small-class teaching reform, and not many teachers actively adapt to small-class teaching.

Thirdly, the class size of small-class teaching has a reasonable range, which is an important reference for optimizing the utilization of teaching resources and improving the effect of small-class teaching.

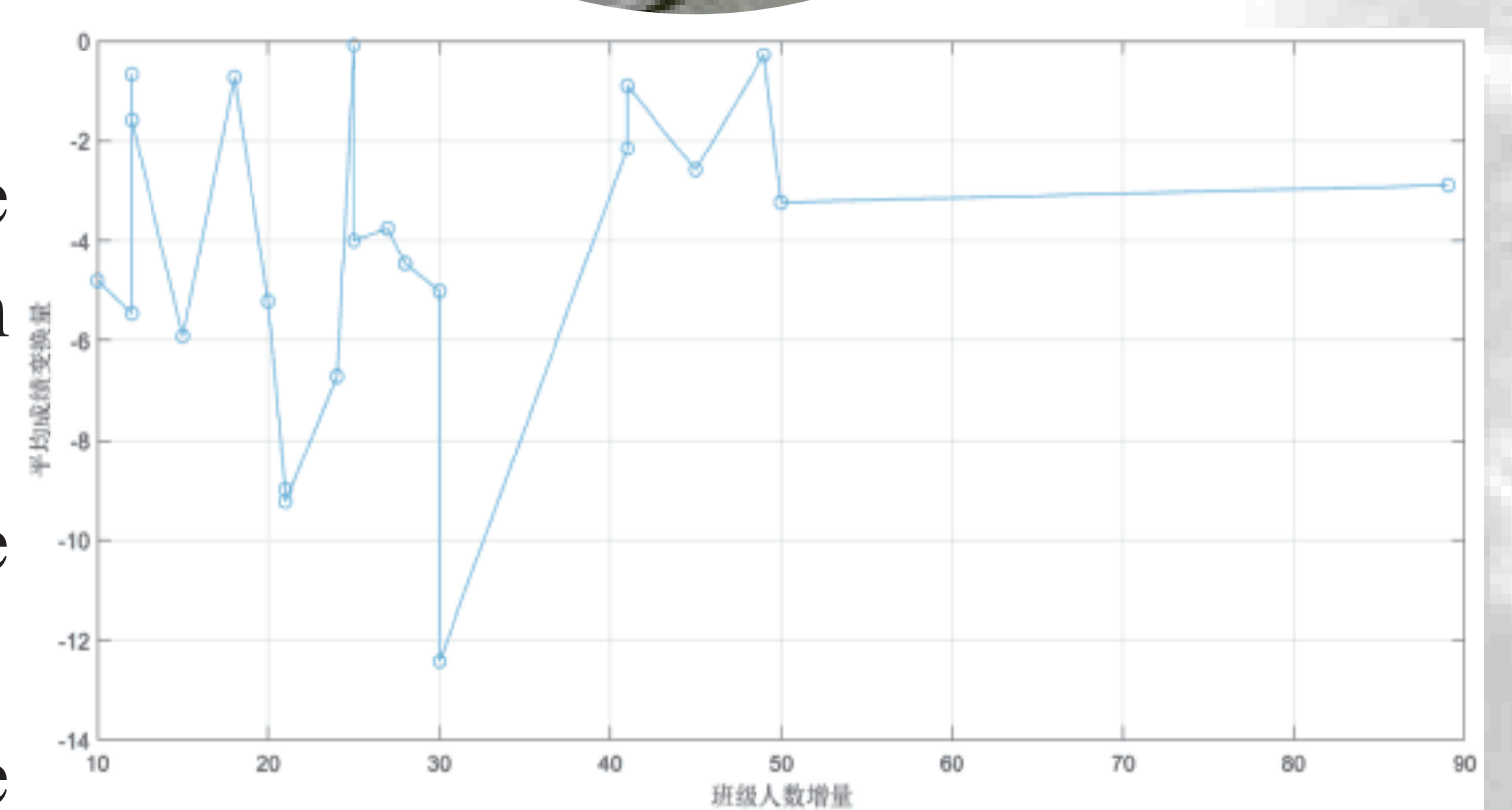


Figure 1: Line Chart of Class Size Increment and Change in Grade Point Average

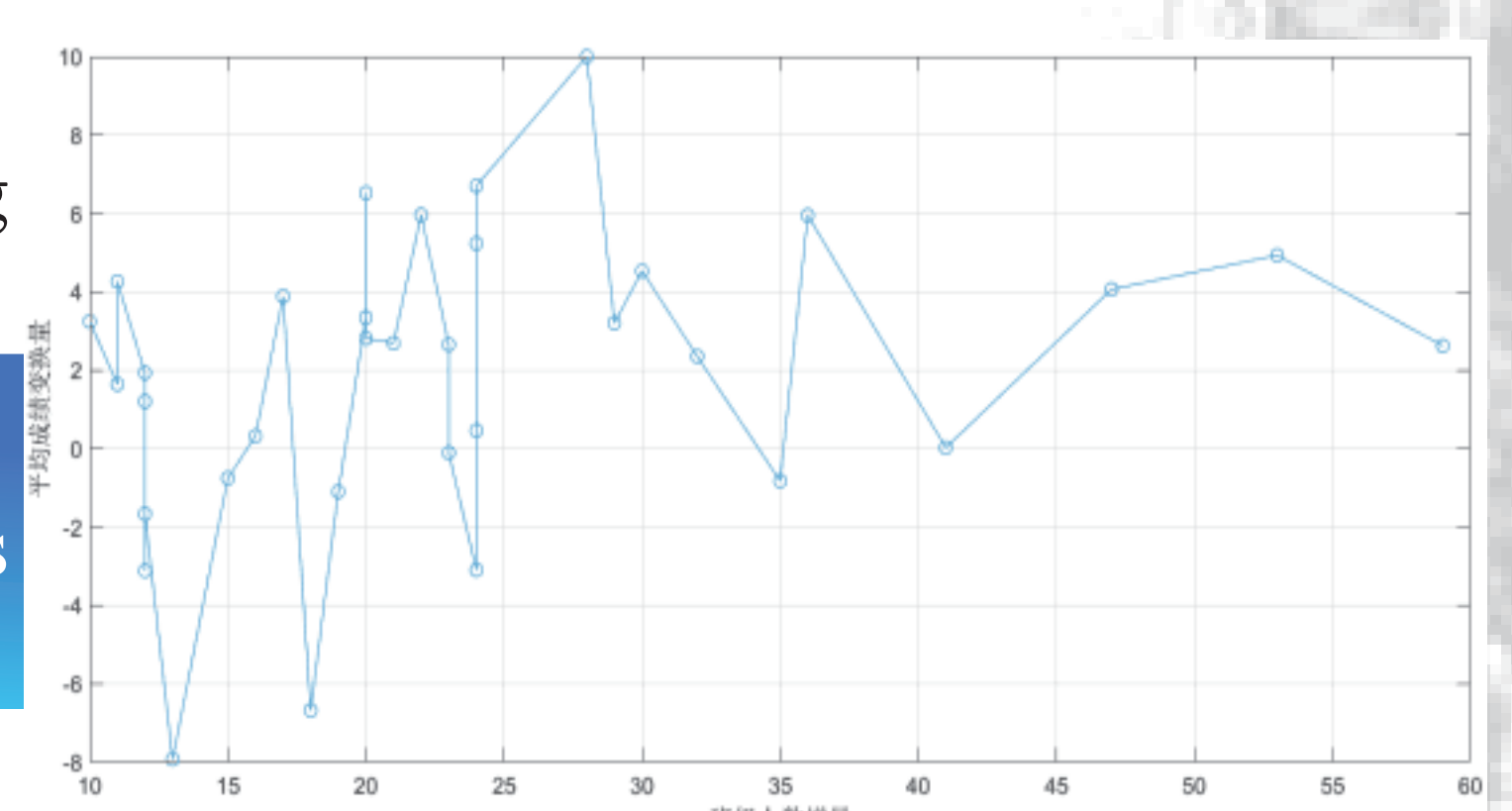


Figure 2: Line Chart of Class Size Increment and Average Grade Change of the First Type of Teachers

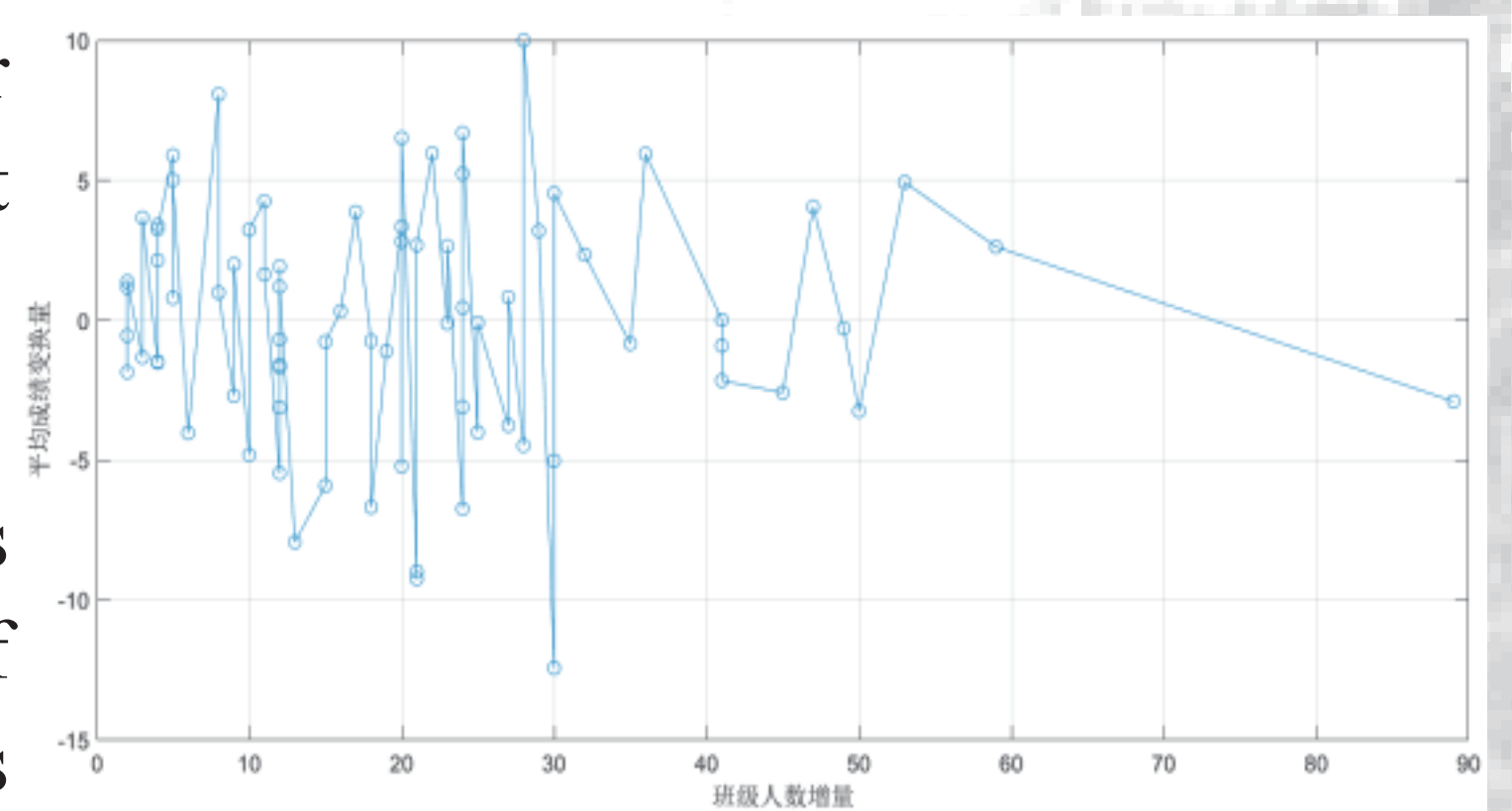


Figure 3: The Second Kind of Teacher Class Size Increment and Average Grade Change Amount Line Chart

