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Articles

The Influence of Sanquan Education on Students' Achievement

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Abstract

This study presents the final results of 15 classes conducted in Tianjin Instrument Radio Industry School following the adoption of the Sanquan Educational Model. I explored in this study the factors that influence students' performance in mathematics, English language, Chinese history, mechanical drawing, and electrical training using the Sanquan Educational Model. Also, I compared the performance of students who received Sanquan Education before and after using this approach for three years. Results show that factors such as type of subject, class size, time spent with teachers and students play a vital role in students' performance. Furthermore, the Sanquan Educational Model positively affected natural science courses than the social sciences. This model of instruction offers a constructive approach to improving students' academic performance. Thus, the middle-class teaching scale in natural science could benefit from this teaching and learning approach.

Keywords: management service, Sanquan Education, school status management, students' achievement.

1. Introduction

The process of building a teaching methodology for all academic courses on ideological and political theories is a newfangled idea. This approach is practiced in the Sanquan Educational Model (Yang et al., 2020). The Sanquan Educational Model refers to an all-employee, full-process, and all-round form of education (Aili, Li, 2020; Jiqing, 2020). Sanquan Education is an educational concept for educating people with comprehensive and systematic Chinese ideology and moral principles (Shi et al., 2020). Since the idea of Sanquan Education is mainly in slogans, scholars do not have a unified definition of Sanquan Education. Generally, they only interpret it from a certain angle occasionally. In September 2018, China's Ministry of Education formally started the educational pilot of the Sanquan Education (Xi, 2018). At the same period, the Tianjin Instrument Radio Industry School also started the implementation of the Sanquan Educational Model.

Sanquan Education helps in "turning theory into methods and morality" when teaching courses (Shunli, 2021, 209). Following a three-year implantation period, Shi (2020) and Yang (2018) share some experiences from the Sanquan Educational Model. To begin with, Sanquan Education offers an all-employee education. Thus, this type of educational model emphasises the necessity for everyone to educate others, establish a sense of responsibility for educating them, and

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play the function of educating people in their work. Shi (2020) also emphasised that cooperation and inter-relationships embedded in this model provide a powerful force for educating “everyone” through a complete, comprehensive, and harmonious ideological and political education system. “Everyone” in this sense refers mainly to all faculty and staff in colleges and universities.

Furthermore, the Sanquan Educational Model also provides a full-process education mainly regarding time (Shi, 2020; Yang, 2018). Sanquan Education emphasises that education should run through the whole process of college students’ learning and growth. It is necessary to carefully study the characteristics of college students from college entrance to graduation and the practical problems at each stage. Also, the model focuses on students’ mental and physical development through ideological and political education methods at different stages of education. It is noteworthy that lower grades to upper grades are planned in this educational system to promote the development of students’ ideological and political education before they start college.

A vital characteristic of the Sanquan Educational Model is its tendency to offer an all-round education, mainly by space. Sanquan Education emphasises that education should be reflected in all aspects of student development. Academic staff practising Sanquan Education combine explicit moral education with college students’ learning and living conditions (Shi, 2020). Integrating implicit moral education through tangible or intangible through Sanquan Education means fusing ideological and political education into all aspects of students’ academic and social lives. Additionally, it helps students form good ideological and moral personalities as they develop.

To explore the influence of the Sanquan Education System on students’ academic performance, I compared the final scores of 15 classes in Tianjin Instrument Radio Industry School across different courses before and after adopting this teaching model. Additionally, I examined the role of subject type, class size, time spent with teachers and students on students’ performance in Tianjin Instrument Radio Industry School.

2. Research design

Research data

The research data were obtained from the final results of each subject (mathematics, English language, Chinese history, mechanical drawing, and electrical training) taught in the 15 classes at Tianjin Instrument Radio Industry School within a three-year implementation period.

Variable statistics

The independent variables of this study include subject type, class size, time spent between teachers and students, while the dependent variable is students’ academic performance. According to the characteristics of the majors set up by Tianjin Instrument and Radio Industry School, I included the following relevant variables in the study.

Discipline type: Subjects were divided into social sciences and natural sciences. At the same time, social sciences were subdivided into different courses such as English language and Chinese history. Also, natural sciences were subdivided into mathematics, mechanical drawing, and electrical training.

Class size: According to different majors, different classes were classified according to class size (a small class with less than 20 students, a medium class with 20-30 students, and a large class with more than 30 students).

Quality of time spent with teachers and students: Students’ perceptions about the quality of time spent was measured using a questionnaire. A total of 1,200 questionnaires were distributed, while 1,156 were recovered. Out of this number, 1,143 were valid questionnaires.

In the meta-analysis of this research, I regarded these three variables as adjustment variables before carrying detailed analysis on them.

Research process

This study was conducted following all ethical requirements for human studies. Before data collection, I sought official permission from the school’s academic affairs office to conduct the study. Also, I took consent from the students to administer my questionnaire to students. Students were given a questionnaire on effective communication between teachers and students online. Additionally, I contacted the school’s academic affairs office to collect statistics on the final exam results of each semester of the students in the past three years.

3. Results

The relationship between subjects and grades

Figure 1 compares the previous results of the first-year students before the implementation of Sanquan Education and after its implementation in three years.

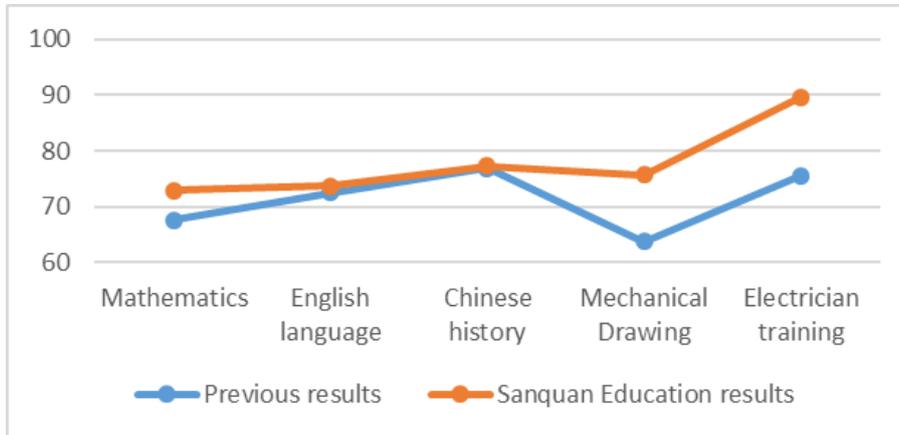


Fig. 1. The relationship between subjects and grades

It can be seen from Figure 1 that there exist significant differences across the different courses after the implementation of Sanquan Education. For practical lessons, students' academic performance significantly improved after the implementation of Sanquan Education. At the same time, a relatively small improvement could be observed in courses such as English language and Chinese history.

The relationship between class size and grades

Figure 2 shows the relationship between class size and students' performance before and after the implementation of Sanquan Education.

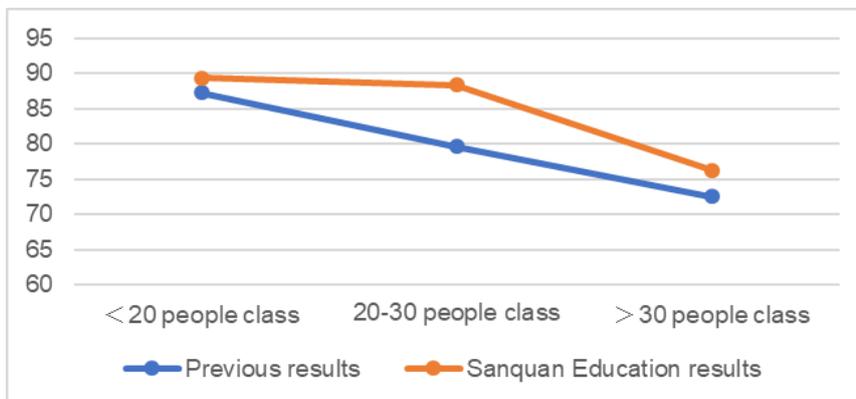


Fig. 2. The relationship between class size and grades

Figure 2 shows that as the class size increases, the average final exam score decreases in Sanquan and non-Sanquan Education classes. Although students who were instructed using the Sanquan Education Model performed better than their colleagues, increasing class size declines students' academic performance. The results showed that classes smaller number of students performed better academically than the rest. However, medium-sized classes in the Sanquan Educational Model did better than their colleagues. As the class size increases, academic performance shows a downward trend.

The relationship between teacher-student communication time and performance

The quality of teacher-student interaction classroom time is shown in [Figure 3](#).

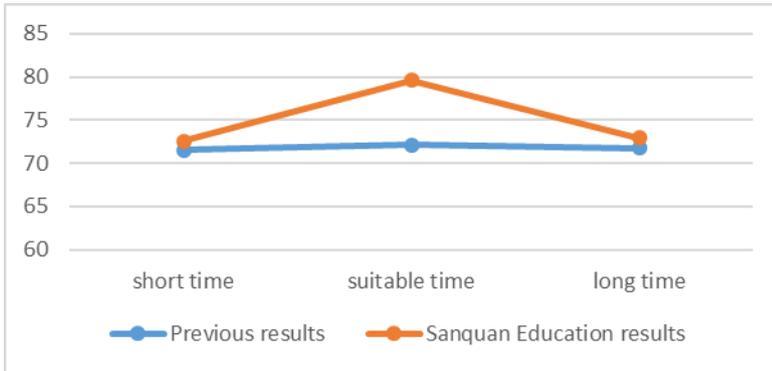


Fig. 3. The relationship between teacher-student communication time and performance

As evident in [Figure 3](#), the quality of teacher-student communication significantly improves students' academic performance. Notwithstanding this general picture, interactions in Sanquan instructed classes performed considerably higher than non-Sanquan Education classes. From the finding, a short time of teacher-student communication has little effect on students' performance. Similarly, a protracted teacher-student interaction time does not improve students' performance. Only required teacher-student communication time improves students' performance.

4. Discussion

The study results showed that the Sanquan Education policy improved students' academic performance after implementation ([Yang et al., 2020](#)). Although the results improved after implementing the Sanquan Education policy, the scoring standards differ between different subjects. The study's findings showed that although Sanquan Education improved their academic performance after its implantation in mathematics, electrical, and mechanical engineering courses, students failed to perform considerably in English language and Chinese history courses. The possible reason is that since courses like English require long-term accumulation, implementing a three-year education policy may be quite short. This case may not be so for practical and natural science courses like electrical and mechanical engineering ([Oloyede et al., 2017](#); [Zhang et al., 2019](#)).

In exploring the relationship between class size and students' grades before and after implementing the Sanquan Education Model, it was evident that the smaller the class, the higher the average score of the final exam. Conversely, after the implementation of the Sanquan Education policy, the medium class (20-30 students) rather than the smallest number of classes (<20 students) had the best performance. This finding contradicts the previous result by [Blatchford and Russell \(2019\)](#), where smaller classes enabled better class management. It is possible that since the Sanquan mode of teaching and learning embraced inter-relationships ([Aili, Li, 2020](#); [Jiqing, 202](#); [Shunli, 2021](#)), a medium class allowed for quality student-student and teacher-student interactions.

Although students during the implementation of Sanquan Education performed better than before, long periods of interaction affected them negatively. Generally, the relationship between teacher-student communication time and students' grades showed that brief and protracted time harmed students' performance. A brief period of instruction may be too short of achieving effective learning, while more prolonged classroom interactions may lead to tiredness, boredom and poor concentration ([Cattaneo et al., 2017](#); [Marcus et al., 2020](#)). Thus, a suitable time for instruction may help achieve education goals and increase students' interest in learning.

5. Conclusion

I used the Sanquan Education method to analyse the final results of 15 classes in Tianjin Instrument Radio Industry School. By analysing the subject type, class size, and the time spent between teachers and students, Sanquan Education was observed to improve students' academic performance. Furthermore, students performed better in the natural sciences than social science courses after implementing the new education model. Also, students' performance in the medium size class significantly improved and class lessons delivered in suitable instructional time enhanced students' academic performance.

6. Funding

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7. Conflicts of interest

The author declares no financial conflicts of interest.

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