

# ***Comparative Analysis of the Results of Hong Kong Students and Shanghai Students in the 2018 PISA Tests***

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**Abstract:** Educational exchange and cooperation between mainland China and Hong Kong have long been a hot issue, and PISA gives the opportunity to test the learning of students from both regions against the same set of international assessment standards. The theme of this paper is the comparative analysis of the results of Hong Kong students and Shanghai students in the 2018 PISA tests. Through the literature review method, this paper first presents the data related to the performance of B-S-J-Z (China) and Hong Kong in PISA and then compares and analyses the differences between Shanghai and Hong Kong in terms of education policies and culture, education resources, and student's well-being, and finds that there are similarities and difference between Shanghai and Hong Kong in these three areas. In terms of education policy and culture, Hong Kong schools have more autonomy to decide on school management and teaching content than Shanghai schools; in terms of education resources, both places suffer from regional disparities caused by uneven distribution of staff and materials; in terms of student well-being, both places suffer from excessive student pressure and long study hours, and the situation of bullying in schools in Hong Kong is more serious. The article concludes with suggestions on how Shanghai and Hong Kong can learn from each other, as well as providing ideas for optimising the education issues common to both places.

**Keywords:** PISA, education policy, educational resources, student well-being

## **1. Introduction**

In recent years, the ties between the Mainland and Hong Kong have become closer and closer, and exchanges and cooperation in education between the two places have formed a situation of complementary strengths and synergistic development. Whether in basic education or higher education, the Mainland and Hong Kong have formed a positive interaction model, with Hong Kong serving as a reference for the mainland's education development in certain aspects, and the mainland's education development serving as a transmission and attraction for Hong Kong's education development [1]. In the area of basic education, "Sister School" programme was implemented between Hong Kong and mainland China, and as of the end of 2016, more than 700 pairs of sister schools have been established between Mainland and Hong Kong, becoming an important platform for sharing resources and collaborative development of basic education between the two places [2].

It is challenging to compare the learning environments of kids in mainland China and Hong Kong using the same set of evaluation criteria, but the Programme for International Student Assessment (PISA) gives academics this opportunity. One of the most significant international student learning evaluation programs in the world, PISA is run by the OECD to measure the level of learning of 15-year-old students around the globe [3]. PISA conducts regular assessments using a widely accepted and internationally recognized framework to judge the effectiveness of the educational system in a wider context, influencing the creation of educational policies and reforms in various nations [4].

Many researchers have analysed the performance of either mainland China or Hong Kong in the PISA tests and have made some suggestions for educational reform in both regions. For example, there are many shortcomings in basic education in mainland China, such as overburdening students in and out of the classroom and a lack of focus on students' interest in learning [5]. It is also argued from the PISA results of Hong Kong that while PISA is a tool to drive educational reform, it can also put pressure on schools, teachers, and students [6]. However, there are fewer studies on the comparison between the performance of Hong Kong and Mainland China in the PISA test. This paper will therefore look at the PISA results of Hong Kong and mainland China to analyse the differences between the three factors that have an impact on PISA results, namely education policies, education resources, and student well-being in the two areas.

As there are four Chinese provinces and cities participating in PISA including Beijing, Shanghai, Jiangsu, and Zhejiang, and the educational policies of the regions are generally in the same direction but also differ in many ways, and educational resources vary from region to region, comparing the four provinces and cities with Hong Kong at the same time would result in a lack of relevance in the study. Shanghai, as the city with the largest number of participants in PISA, has outstanding educational reforms and is a leader in terms of educational resources and educational environment, so it is more reasonable to choose Shanghai and Hong Kong alone for comparative analysis. Therefore, the topic of this article is the Comparative analysis of Hong Kong students' and Shanghai students' performance in the 2018 PISA tests.

Using the literature review methodology, this paper will first compare and analyse the PISA results in B-S-J-Z (China) and Hong Kong, then review the literature on educational issues related to PISA results in order to compare and analyse the differences between Shanghai and Hong Kong regarding the three factors affecting PISA scores including education policies and culture, educational resources, and student well-being, then the paper will discuss and provide recommendations around these three areas, and finally, the paper will conclude and provide an outlook on the future development of education and research areas in the two regions. This study aims to promote the understanding of the current situation of education in the two places and to make recommendations that can help the development of education reform in both places, to better promote educational interaction as well as educational cooperation between the two places.

## 2. Results of Hong Kong and B-S-J-Z (China) in 2018 PISA Tests

### 2.1. Students' Scores in Reading, Mathematics, and Science

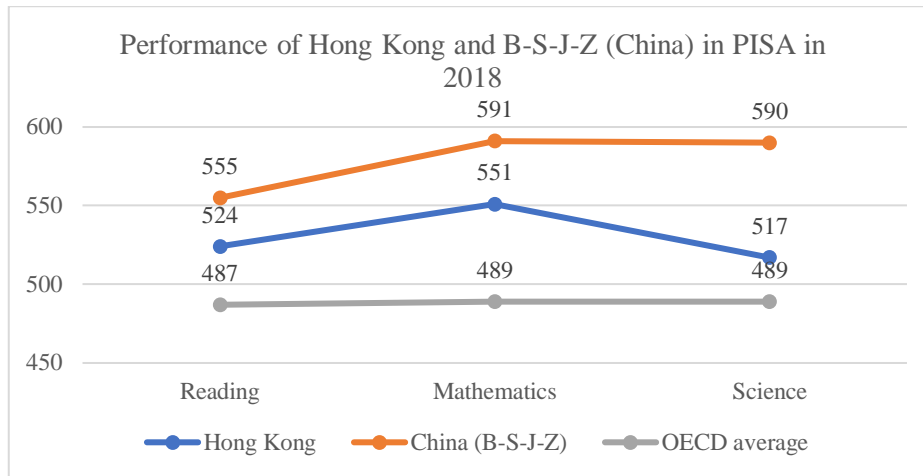


Figure 1: Performance of Hong Kong and B-S-J-Z (China) in PISA [7].

From the data in Figure 1, in reading, mathematics, and science, students in both two regions outperformed the OECD average, while children in B-S-J-Z (China) outperformed Hong Kong students in all three categories.

### 2.2. Educational Resources in Hong Kong and B-S-J-Z (China)

While school principals in Hong Kong reported a similar level of staff shortage and less material shortage compared to the OECD average, school principals in B-S-J-Z (China) reported more staff shortage and less material shortage than the OECD average, and school principals in disadvantaged schools in both two regions reported staff shortages more frequently than headmasters in advantaged schools, [8]. While the material shortage in schools of the two regions is less than the OECD average, this does not imply that schools in either B-S-J-Z (China) or Hong Kong have adequate supplies. Instead, it demonstrates that staff shortages in schools in B-S-J-Z (China) are more severe than in Hong Kong, and this is particularly prevalent in disadvantaged schools as opposed to privileged schools.

Principals in Hong Kong asserted that staff shortage somewhat limits the school's ability to conduct instruction attended by 40% of students in disadvantaged schools and 21% of students in advantaged schools [8]. In contrast, 48% of students in underprivileged schools and 27% of students in privileged schools attend such a school in B-S-J-Z (China), while on OECD average, 34% of students in underprivileged schools and 18% of students in privileged schools do so [8]. It is evident that many children attend schools in the two regions that have a staffing deficit; nevertheless, the situation is worse in B-S-J-Z (China).

### 2.3. Student Well-being in Hong Kong and B-S-J-Z (China)

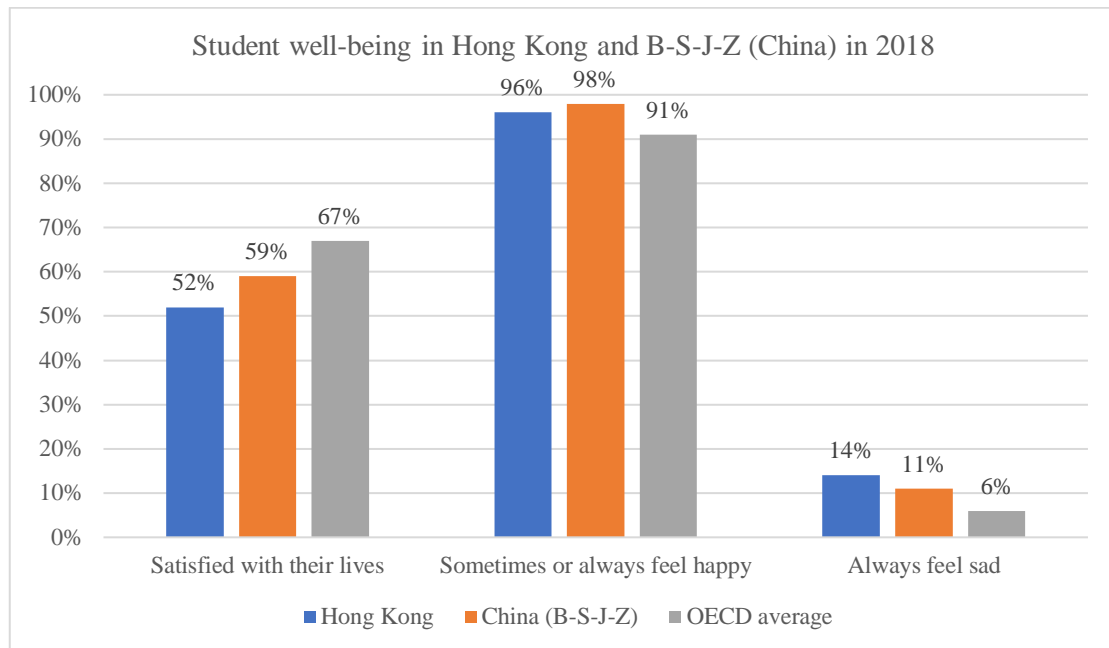


Figure 2: Student well-being in Hong Kong and B-S-J-Z (China) [9].

The data in Figure 2 demonstrate that the proportion of Hong Kong students who are satisfied with their lives is lower than that of B-S-J-Z (China) students, and both two places are lower than the OECD average. It also demonstrates that the proportion of Hong Kong students who occasionally or always feel happy is lower than that of B-S-J-Z (China) students, but two places are higher than the OECD average. Finally, it demonstrates that the proportion of Hong Kong students who always feel sad is higher than that of B-S-J-Z (China) students, and both two places are higher than the OECD average. This shows that in general, Hong Kong students have lower levels of well-being than B-S-J-Z (China) students.

### 3. Comparative Analysis of Factors Contributing to the Difference

The comparison of the above data shows that there is a difference in education between Shanghai and Hong Kong, and there are many reasons for this difference. For example, the impact of the economy on education, with Shanghai's GDP being higher than Hong Kong's and therefore leading the way in education in a more developed economy, while at the same time, Hong Kong also spends a large budget on education making the development of education in Hong Kong competitive [4]. This section examines three factors that affect the performance of students, including policy and culture, educational resources, and student well-being, and compares the differences between the two places, as shown in the previous section of the PISA data on these factors.

#### 3.1. Education Policy and Culture

Both Shanghai and Hong Kong are leading economies in China with similar traditions and cultures, but the two regions have different social structures and school governance [10]. The educational strategies of the various regions can be seen as a reflection of the efficiency of educational spending, major investment in education, competent Ministry of Education leadership, and effective educational governance [11]. Referencing other educational systems is a desirable tactic from the standpoint of policymakers since it provides a fact-based and externally validated justification for reform [12].

Therefore, analysing and comparing the policy differences between Shanghai and Hong Kong will help both sides to identify their strengths and weaknesses, and to learn from each other, and progress together.

### 3.1.1. Shanghai

Shanghai's success in PISA is the result of a combination of curriculum reform and cultural factors. As early as 1988, Shanghai began to explore a 'human-centred' approach to basic education curriculum reform, and in 2001, the basic education curriculum reform was based on the pursuit of healthy individual growth, focusing on meeting the needs of learners and fostering their lifelong development, innovation, and practical skills [3]. This reform is not limited to the repair of the original curriculum model but also includes innovations in curriculum objectives, curriculum structure and content, curriculum management and implementation, and curriculum evaluation [3]. The basic education reform in China, particularly in the area of balancing compulsory education, such as the renovation of underperforming schools, the standardization of schools, the twinning of schools in the city center with those in the suburbs, and the hosting of underperforming schools by prestigious schools, has resulted in a rapid improvement in the quality of education in underperforming schools and the development of a balanced and optimized quality of basic education as a whole [5]. In addition, Shanghai attaches great importance to the improvement of teachers' quality in this area of basic education reform [13].

On the one hand, the curriculum reform has contributed to promoting students' quality, but on the other hand, students still have the problem of a heavy school workload, about which this section will be developed in the section on students' well-being. Although Shanghai's elementary education is generally of good quality, there are notable internal variations. Students in general high schools perform better than students in vocational schools in reading, mathematics, and science, demonstrating that the quality of basic education in Shanghai is influenced by factors like family background and school type. Local students in Shanghai perform better than non-local students in reading, mathematics, and science [3].

### 3.1.2. Hong Kong

The PISA results show that the area of Hong Kong's basic education system is very balanced and equitable. Hong Kong launched a comprehensive education reform in the run-up to the handover in 1997, with learning to learn and whole-person development as its basic philosophy, and the basic education curriculum reform advocates a student-centred approach, focusing on individual student learning and the development of generic skills [6]. Besides, to deepen the curriculum reform and promote equity in education and implement the concept of whole-person development for every student, primary and secondary schools in Hong Kong also provide different curriculum models, pedagogies, teaching materials, and learning methods to support each student according to his or her learning ability. A Learning Support Grant is also available to provide individual support for students with learning difficulties [14]. Moreover, since 2004, Hong Kong has been implementing the Territory-wide Systematic Assessment for all students in Hong Kong, establishing a new curriculum and teaching assessment system to promote improvement in teaching and learning through monitoring students' basic competencies [6]. This kind of feedback on the assessment of schools, teachers, and students can help to improve teaching and learning in a targeted manner and help to raise the standard of teaching and learning management in schools so that the overall improvement of schools.

According to the OECD, students tend to perform better in assessments when schools have greater autonomy over the content and performance of their students [15]. Greater competitiveness and strong

performance in the PISA were made possible by Hong Kong's schools' increased autonomy. This rhetoric advocated three autonomy-related reforms: greater autonomy in school governance and management; giving schools the power to decide on the curriculum and the school calendar; and options for employing teachers and determining their compensation [15].

### **3.2. Educational Resources**

Educational resources are the sum of human, material, and financial resources. Specifically, educational resources are related to several aspects of education, such as educators, school infrastructure development, curriculum materials, and school education funding. Investment in school education resources is essential for the development of students and schools, and a real or inadequate investment in school education resources can have a negative impact on the quality of education [16]. This part will compare and analyse the differences in educational resources between Shanghai and Hong Kong and provide a reference for the governments and schools of the two places to further optimise the allocation of education resources, enhance the quality of educational procedures, and promote quality and balanced education resources.

#### **3.2.1. Shanghai**

In terms of teacher resources, the success of PISA reflects the progress of basic education in Shanghai, the key to which lies in the focus on teacher quality [13]. Shanghai is committed to cultivating the basic qualities of teachers who love students, teach well, and enjoy learning, and schools in Shanghai also advocate creating conditions for teachers to interact with each other and share experiences, specifically by conducting weekly teaching seminars in sub-teaching and research departments and year groups, but these are implemented in urban areas in priority and Urban teachers are better paid than rural teachers and have more opportunities for training and advancement, and educators tend to prefer to work in cities, resulting in a shortage of teachers in rural areas and lagging behind in teaching staff [17]. In terms of school equipment and facilities and the teaching environment, schools in urban areas have more advanced facilities and a better teaching environment than rural areas and are better able to support a rich range of teaching and learning activities, and urban areas are economically developed and have sufficient funding for education, while rural areas have relatively insufficient funding for education to support the development of basic education [18].

#### **3.2.2. Hong Kong**

PISA results for various nations and regions vary depending on how well their educational systems can self-update their curricula and pedagogies in time to address new issues, as well as whether they have well-developed teacher education programs and rigorous teacher and headmaster selection processes [8]. In terms of teacher resources, the high quality of Hong Kong's teachers is also a key factor in Hong Kong's success, with teachers in Hong Kong coming from the top 30% of graduates in each school. However, according to PISA data, there is a certain staff shortage in Hong Kong schools, and teacher resources are skewed towards the dominant schools, resulting in differences in teaching quality between schools [19]. In terms of learning materials, Hong Kong has high curriculum standards and teaching quality. For example, in terms of textbook writing frameworks, Hong Kong focuses on different elements and their integration, and on how different teaching models can be used to facilitate teaching and learning [20]. However, Hong Kong schools are highly competitive with each other, and educational resources are concentrated in the dominant schools, resulting in more students facing great competitive pressures to get into better schools, so Hong Kong needs further optimisation in the allocation of educational resources [12].

### 3.3. Student Well-being

The construction of virtues and the growth of creative thinking are all based on student well-being, which is a positive emotional attitude that incorporates crucial components of student development and is a key indicator of the quality of education [21]. Research has found that student well-being has a significant impact on student's academic achievement, students who have more positive feelings of being accepted and liked, experience more support, understanding, and encouragement, are exposed to a more collaborative learning environment, find schools more relevant to their future education and careers, feel safe in the classroom and believe in their ability to complete their studies [22]. This section will compare and analyse student well-being in Shanghai and Hong Kong and the educational issues underlying it, to inform the further optimisation of the education systems in both places.

#### 3.3.1. Shanghai

According to the PISA results, the happiness of Shanghai students is low, and many students in Shanghai have a low attitude toward learning, a weak self-concept, and low self-confidence [9]. Many Chinese students learn through exhaustion and pain, and the intensity and intensity of their learning are unmatched by students in many other countries [5]. 2018 PISA tests show that students in China, spend more time in school, with 31.8 hours of classroom instruction on average each week, students spend more time on their main subjects, with students spending around five hours a week on language, mathematics, and foreign studies [9]. Too much time is spent in the classroom to the detriment of students' participation in practical extension activities, and too much time is spent on the main subjects squeezing out time for students to study arts and physical education courses. However, under the pressure of further education, families in Shanghai still place special emphasis on the three subjects of Language, Mathematics, and English, and schools devote a great deal of time to teaching these subjects which adds to students' school workload [5].

#### 3.3.2. Hong Kong

According to the PISA results, Hong Kong students' happiness is low and lower than that of Shanghai students. According to one study, life satisfaction among Hong Kong teenagers is declining, while their level of despair is rising. This is because of the confusion and developmental difficulties they encounter because of overlearning, particularly the increased pressure to study and the problems brought on by their peers' future career decisions [22]. The excessive study time of Hong Kong students is also one of the major factors affecting their well-being in Hong Kong. In Hong Kong, secondary school pupils' study for 62.2 hours a week on average, in addition to the 5 hours they spend in class each day and the 2.2 hours they spend on homework, tutorials, and extracurricular activities [21]. Moreover, the survey data in PISA shows that 29% of Hong Kong students are bullied at school several times a month, which is more than the OECD average, and this is one of the reasons for the lower happiness of Hong Kong students [9].

## 4. Discussion and Suggestion

### 4.1. Discussion

This section will discuss the differences between Shanghai and Hong Kong and suggest improvements.

Firstly, in terms of education policy and culture, Shanghai has carried out curriculum reform in basic education, transforming and upgrading school construction, student development, curriculum improvement, and teacher quality training, but at the same time, students still have the problem of

heavy school workload and there are differences between students in different districts and schools [3]. Hong Kong has a more balanced and equitable basic education system, with different curriculum models for students of different abilities and a more comprehensive teaching and evaluation system [11]. Besides, unlike schools in Shanghai, Hong Kong schools have greater autonomy in determining school management and teaching content, which the OECD believes will enable students to perform better in international assessments.

Secondly, in terms of educational resources, both Shanghai and Hong Kong are endowed with relatively abundant resources, but there is a problem of uneven distribution of educational resources in both places, resulting in disparities in the quality of educational procedures between different districts and schools. In Shanghai, education funding, advanced teaching resources, and the application of educational facilities tend to favour developed regions, while education funding in backward regions is insufficient and education development lags [5]. Hong Kong possesses high curriculum standards and teaching quality, learning materials are up-to-date and attention is paid to the linkages and applications between different education models, but competition among schools in Hong Kong is high, and advanced education resources tend to be concentrated in advantaged schools [12,14]. In addition, both Shanghai and Hong Kong place great emphasis on the quality of teachers, with schools in Shanghai conducting various teaching seminars to promote cross-fertilisation between teachers, while schools in Hong Kong are strict in the recruitment of teachers [17,19].

Thirdly, in terms of student happiness, students in both Shanghai and Hong Kong have low levels of happiness. Although it has been argued that students' measures of happiness are related to different regional and cultural definitions of happiness and are not an objective indicator of students' happiness [23]. However, students in Shanghai and Hong Kong spend an inordinate amount of time on their studies and are under academic pressure. Students in Shanghai spend too much time on major subjects, have a high-class load, and have little time for practical outreach activities, while students in Hong Kong are under pressure to compete with their peers, spend too much time studying, and have a higher incidence of school bullying [5,9,21,22].

## 4.2. Suggestion

In three areas - education policy and culture, education resources and student well-being - there are areas where Shanghai and Hong Kong can learn from each other. In terms of education policy, Shanghai can learn from Hong Kong's practice of appropriately devolving power to the school level, allowing schools to manage teaching and learning according to their own circumstances, rather than rigidly enforcing uniformity, which helps education management talents and teachers to bring out their greater abilities. In terms of educational resources, Shanghai and Hong Kong have different ways of managing teacher resources and physical resources, and their strengths are different. Learning from each other can effectively promote further improvement and mutual progress in the education systems of the two places. In terms of student well-being, Shanghai has done better than Hong Kong, for example, in controlling the phenomenon of bullying in schools, a practice that Hong Kong can learn from.

In terms of education policies, both Hong Kong and Shanghai should adjust to reduce the academic burden of students, such as popularising the implementation of the "double reduction" policy, increasing the importance of quality education for students, and promoting their all-around development. Regarding the uneven distribution of education resources, it is important to strengthen teacher training and support, improve the strength of teachers in disadvantaged areas, improve education infrastructure, and optimise the distribution of education funds. Concrete measures are reflected in increasing funding for backward regions to secure sufficient materials to develop basic education, as well as encouraging outstanding educators to exchange and study in backward regions and introducing policies to attract more educational talents to join the education construction in



backward regions. To address the phenomenon of low student well-being, schools in Shanghai and Hong Kong should strengthen their well-being education-related curricula to help students gain a proper understanding of academic anxiety, in addition to assisting pupils in acquiring physical literacy and health literacy and concentrating on their requirements for physical, cognitive, psychological, and social well-being. It is also vital to build harmonious peer and teacher-student relationships to enhance students' well-being. It is also vital to develop activities to enable more communication and cooperation between students and teachers and meet students' emotional needs and gain a sense of security and belonging.

## 5. Conclusion

This article shows the performance of the B-S-J-Z (China) and Hong Kong regions in PISA 2018, comparing the results of student performance, educational resources, and student well-being surveys in the two regions. Then, the article reviews the relevant literature on education in Shanghai and Hong Kong and compares and analyses three factors that influence the performance of the two regions in PISA: education policy and culture, educational resources, and student well-being. Finally, the article concludes with a discussion of the differences in the different factors between the two regions, suggesting what can be learned from each other's education systems and suggesting suggestions for optimising the education problems common to both regions.

This study fills a gap in this area of research by linking the educational issues of Shanghai and Hong Kong and can facilitate the understanding of the current situation of education in both places. At the same time, through comparison, the two places can better identify the advantages and disadvantages of their education systems, which can facilitate educational exchanges between the two places and further promote cooperation and mutual progress. Besides, the improvement suggestions for common education issues in both regions will help to promote the development of education reform and optimise the education system in both regions.

The limitations of this study are that the focus is broad, involving three influencing factors: educational policy and culture, educational resources, and student well-being, so there is a lack of depth in the analysis of each factor, and future research directions hope to explore in greater depth a particular factor that influences student performance on international assessments. Furthermore, the criteria for student well-being can vary by region and culture, so there is a lack of objectivity in this part of the analysis. Future research will hopefully allow for more in-depth investigation and a more objective way of judging student well-being.

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