

Determinants for Secondary School Students' Academic Achievement in Japan

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Abstract. Like most Asian countries, Japan attaches great importance elementary education. Secondary education in Japan is a critical stage in the educational journey of students. It plays a significant role in shaping their academic and personal development, as well as preparing them for future career opportunities. This literature review aims to examine the factors that impact secondary education in Japan from two aspects, the macro level and micro level. The macro level includes the national investment in education. While the micro level includes factors such as family investment, student motivation, and teacher's well-being about their work and their career development. Through analyzing the data from PISA and the previous researches, the writer of this paper finds that the performance of secondary education in Japan is affected by both the macro factors and micro factors.

Keywords: determinants, secondary education, performance, Japan.

1. Introduction

As the education system continues to evolve, the roles of economic investment, teachers and their impact on students' performance have become increasingly significant. The influence of teachers goes beyond imparting knowledge and skills, they also play a crucial role in shaping and nurturing students' character and motivation. Besides, how students think about themselves and their studies can also influence students' performance at school.

In the following sections, we will explore roles of economic investment, students' attribution styles, teachers in the education system, their professional development opportunities, the impact of appraisal and feedback on their teaching practices, and the link between teacher well-being, job satisfaction, and students' academic success. Additionally, we will examine the societal status of teachers and its implications on the educational landscape. Through this comprehensive analysis, this paper aims to gain a deeper understanding of how teachers significantly influence students' performance. Moreover, in the last part some further discussion is presented. In this part, I'll give my opinion about the the determinants that affects Japanese students' performance in secondary schools. At the same time, from my perspective, I would offer some possible ways to improve their performance.

2. Economic investment in Japan's education system

According to the data from PISA, secondary school students' performance in mathematics is much better than the OECD average. And it is higher than the other Asian countries like Korea, Vietnam and Thailand in OECD's data base, which can be clearly reflected in Fig.1. Japanese students' mean score is 536 while the OECD average is 472. Beside the mean score, students in Japan perform better in other specific aspects about mathematics too. They also have better performance in reading and science than the OECD average. This suggests that Japan's secondary education system is highly effective in equipping students with and knowledge in these subjects.

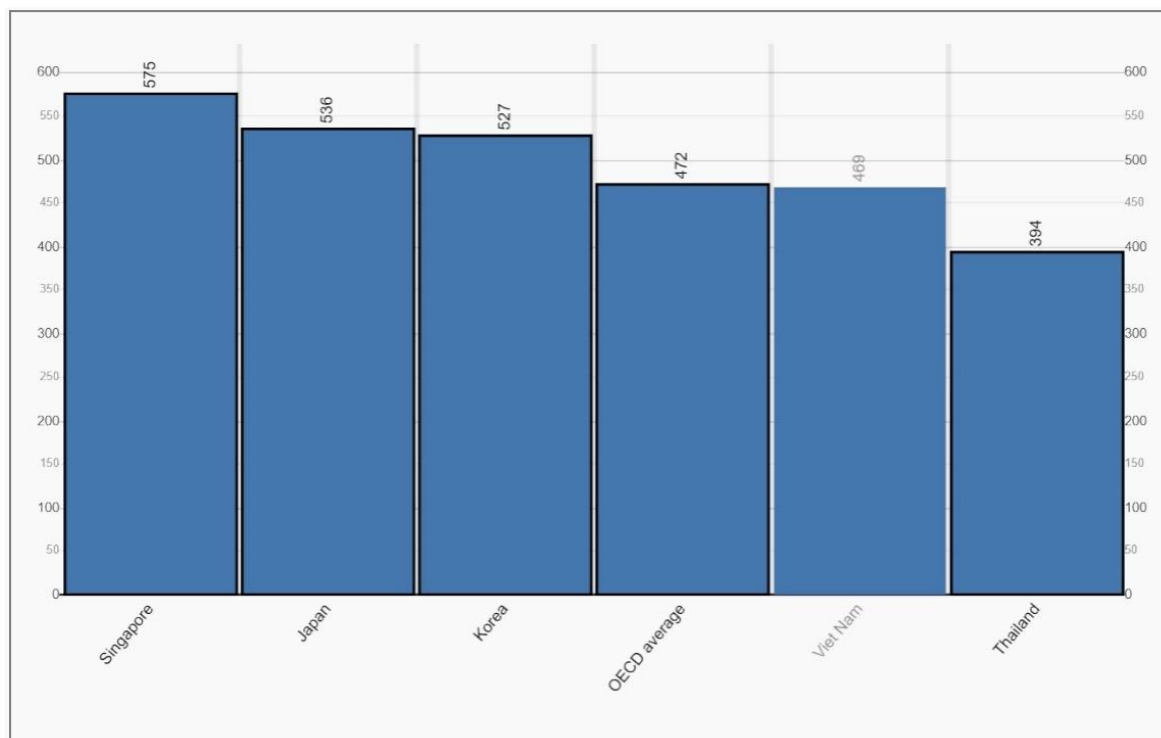


Figure 1. Student performance in maths (mean score)

Why they can do better than most other countries? Takashi Oshio and Wataru Seno (2007) find that students' performance in education is highly related to the economy. Their findings still work today. Data in PISA 2022 also shows Japanese students' performance have some relation with their economic and social status. According to Fig. 2, those students who got the highest score have the top 10% of the international economic, social and cultural status index. They got 590 points. Then the second higher score 569 goes to students who fall between 80% to 90% on the international economic, social and cultural status index. The students who fall in the middle of the international economic, social and cultural status index got 509 points. While the students who fall between 10% to 20% on the international economic, social and cultural status index got the lowest score of 409. These findings suggest that students' performance in Japan's secondary education system is influenced by socioeconomic factors, highlighting the importance of financial support of government for students with poor economic background.

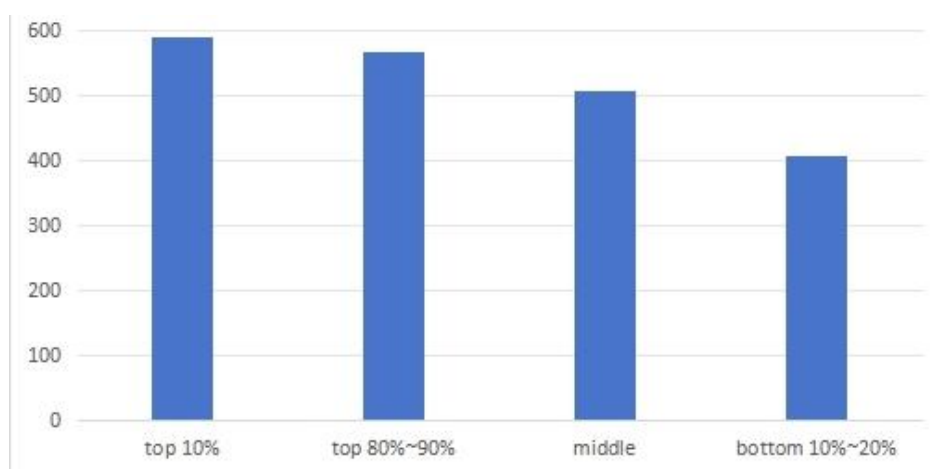


Figure 2. Social-economic status and students' performance

For a country, the expenditure in education can influence the education in that country. The more a country invests in education, the more likely it is to have better performance outcomes in its education system. Research has shown that countries with higher levels of education expenditure tend

to have better performance outcomes in their education systems. However, the data in PISA shows Japan spend less money on its education than OCED average. The data presents that the difference value between Japan and OCED average in secondary education is higher than the difference value of pre-primary educations and primary educations. Therefore, if the government spend more in them, the education can be better.

Apart from the macro factors, there are still some micro factors which influence the performance of education in secondary school.

3. Family income as another economic factor

After discussing government investment in education, this section talks about the family income as an economic factor that affect students' performance in secondary schools. Family income is one of the most significant economic determinants of academic achievement. In a family, family income is a form of economic capital. Rich families are more likely to invest the education of their children. They are willing to afford more. Students from wealthier families generally have access to more learning resources, including private tutoring, extracurricular activities, and advanced learning materials, which can enhance their academic performance (OECD, 2019). Conversely, students from lower-income families often face financial constraints that limit their ability to participate in these expensive activities. Therefore, students in rich families usually have better performance in school than students in poor families, and students in rich families are more likely to attend good university.

4. Socioeconomic Status and Educational Opportunities

Besides, Socioeconomic status and educational opportunities are always important factors that influence students' performance. Socioeconomic status, which encompasses not only income but also factors such as parental education level and occupation, plays a crucial role in shaping educational opportunities in Japan. Children from higher socioeconomic backgrounds are more likely to attend prestigious schools and universities, where they have access to better facilities and more experienced teachers (Hashimoto & Kobayashi, 2016). This segregation based on socioeconomic status can perpetuate educational inequality and hinder social mobility. This is also true in Japan. Chioma Henrietta Machebe, Bernedeth N. Ezegbe, Joseph Onuoha (2017) evaluated the effect of socioeconomic status, specifically parents income and parents-child relationship on student's academic performance in Senior high school. They claim greater academic achievement for a student is attained by those students from financially buoyant families. But some parents who are not willing to invest their children's education is not due to their family income. Some of parents ignore the importance of education. Some other parents may be willing to support their children, but they may know little about how to help their children to improve their education.

Economy is an external factor that influences education performance. It is a factor that cannot be changed easily. Performance in secondary school is influenced by a variety of factors. There are many other concerned factors, such as, student well-being, student motivation and so on.

5. Student well-being affect their performance in school

According to a study by DeWit, Karioja, Rye and Shain (2011), student well-being and mental health difficulties have a significant impact on academic achievement. This study suggests that students' well-being and mental health difficulties have a direct influence on their academic performance in secondary school. Additionally, a study conducted by Farmer, Hamm, Leung, Lambert and Gravelle (2011) found that bullying and overall student well-being also play a role in students' performance in secondary school.

According to data from PISA 2018, students in Japan cannot reach the average level of OECD countries. The number of students who feel sad frequently is 11.3%, while the average level of OECD countries is 6.5% (Figure 3). At the same time, the index of being afraid of failure is 0.38 which is

0.39 higher than the average point (Figure 4). In the data of 2022, the index of students who are anxious about their mathematics study is larger than the average index. These indexes suggest that student well-being in study is not enough. In such condition, their interest about study may decrease, since they are afraid of mistakes and failure.

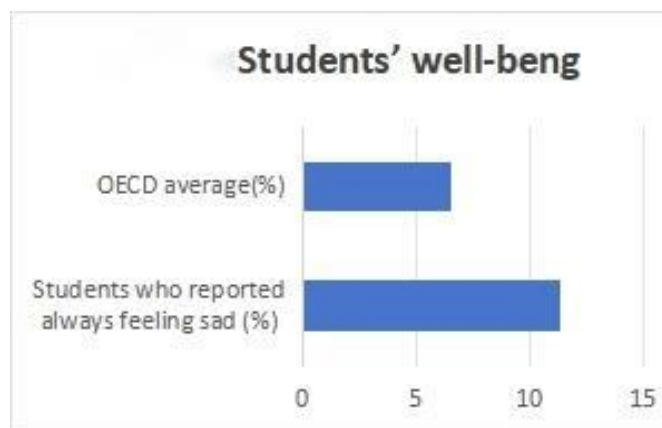


Figure 3. Prevalence of Frequent Sadness Among Students in Japan Compared to OECD Countries

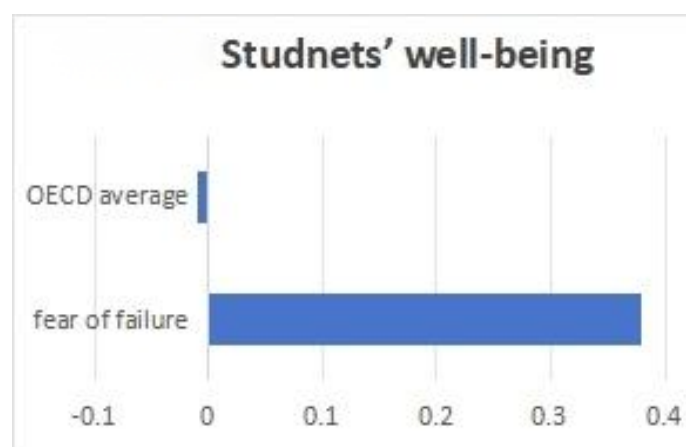


Figure 4. Fear of Failure Index Among Japanese Students Relative to OECD Countries

Student well-being in study is an important factor that influences their performance in school. However, their well-being at home is also a critical point that can affect their performance in school. The two kinds of well-being can reflect their feeling about life. In 2022, the index about life satisfaction of Japanese students was approaching the average index. However, there is no latest data about students who are very satisfied with their life and students who are not satisfied with their life. The data presented is still the data in 2015. The data in 2015 (table 1) shows the number of students who are satisfied with their life is 23.8% which is 10.3% lower than the average level. The number of students who are not satisfied with their life is 4.3% higher than the average index. Moreover, the students who have lower achievement in science face even worse about their life. The data suggests that the satisfaction of life influence students' performance in school. At the same time, the writer of this paper believes their performance can also influences their satisfaction of their life inversely.

Table 1. Students' life satisfaction

Student's life satisfaction	Japan	OECD average
Students who are very satisfied with life (%)	23.8	34.1
Students who are not satisfied with life (%)	16.1	11.8

As the factors influence student well-being, the sense of belonging in school, bullying and schoolwork-related anxiety also affect student performance in school. Among OECD countries, Students in Japan have relative strong sense of belonging in school. As for bullying, it does affect

students' well-being in school and then their academic performance in school. The data from PISA 2022 shows the relation between bullying and students math performance. Difference in mathematics performance associated with a one-unit increase in the index of exposure to bullying (before accounting for students' and schools' socio-economic profile) is 12 points higher than the average level. Like students in many other Asian countries, students in Japan are stressful about their test and other schoolwork. Data shows that Japanese students are anxious about their schoolwork, while 62.1% students feel anxious even, they have prepared for school tests well. And girls feel more anxious than boys about their tests even they have prepared well. Seda Aybuke Sar, Gunal Bilek and Ekrem Clikc (2018) found test anxiety has close relationship with students' self-esteem and gender. They found test creates anxiety on students and reduces self-esteem, especially in female students. Therefore, in countries like Japan which emphasizes the importance of tests, students with high self-esteem feel much more stress than other students.

The student well-being is a critical factor that influences students' performance in school. At the same time there are many factors which influences student well-being. Increasing student well-being can help them to do better in school. Parents can support more and care more about children's life and increase their well-being in family, and teachers need to help to lead students to deal with their anxiety in schoolwork and test. Although anxiety and self-esteem help to improve students' performance, but too much anxiety and negative influence self-esteem can make their academic performance worse and do harm to their psychological health.

6. Students' self-belief and style of attribution

The economic problems and student well-being are factors caused by external environment. However, students' self-belief and ways of attribution also influence their performance in school.

One of the key factors that influences students' academic performance and overall success is their self-belief. Marsh and Hattie defined self-belief as "a person's perception formed through experience with and interpretation of his or her environment" (Marsh, Hattie, 1996). Harris Cooper claimed that one's belief is about his or her attributes and abilities as a person (Harris, 2004). Students' self-belief refers to their confidence in their own abilities and skills. Self-belief plays a critical role in determining how students approach challenges and overcome obstacles. Therefore, positive self-belief gives students confidence to deal with their schoolwork and even other tasks out of school. This is in accord with Harris' examination result.

In his "Mathematics Beliefs and Achievement of Elementary School Students in Japan and the United States: Results from the Third International Mathematics and Science Study", J. Daniel House (2006) claims that students who attribute success in mathematics to controllable factors, such as hard work and studying at home, tend to achieve higher test scores. On the other hand, students who attribute success in mathematics at school to external factors like good luck tend to earn lower scores on math tests. This research result shows that Students' style of attribution, whether they attribute their failures in mathematics to controllable factors or external factors, also play a significant role in their motivation and future performance. On this occasion, teachers and parents need to lead students to attribute their failure to the efforts they put into their study instead of good luck, so that they could perform better in school. This is quite important for students who have low achievement in study. Proper ways of attribution help students to do better at school.

7. Teachers and their profession

Apart from students themselves, as the leaders for students in school, teachers are quite important factor that influences students' performance. In Japan, teachers are considered not only educators but also moral and character instructors. The role of teachers extends beyond imparting knowledge and skills; they are also responsible for nurturing the students' character. Japanese educators are known

for their dedication to their profession and their commitment to fostering a supportive and conducive learning environment for their students.

Teachers in Japan receive regular appraisal and feedback from their administrators. This frequent evaluation is also common for educators in many other countries, as it serves to support teachers in monitoring and enhancing their teaching practices. The data from PISA (table 2) shows that 80.1% teachers in secondary school in Japan claimed they received appraisal and feedback helped them to improve their teaching. Compared with the average OECD number (71.4%), Japan is higher than it. This suggests Japan's education system pays attention to teachers' growth and self-improvement in their teaching. Besides, the methods of giving appraisal and feed back to teachers are diverse. 58.5% teachers said they received feedback based on at least four methods. Japan got higher score than the average in the two investigation items. Comprehensive feedback and evaluation systems are crucial in ensuring the continuous improvement of teaching standards. The emphasis on regular appraisal and feedback in Japan's education system not only highlights the value placed on teachers' professional development but also indicates a commitment to maintaining high-quality education. By actively supporting teachers in monitoring and enhancing their teaching practices, Japan's education system fosters an environment where educators can continually strive for excellence. This focus on teacher development ultimately contributes to the overall academic achievement of students in Japan. In addition to the regular appraisal and feedback, the professional development opportunities for teachers in Japan are extensive. There are continuous training programs and workshops designed to help educators improve their pedagogical skills and stay updated with the latest teaching methodologies. However, if the appraisal and feedback can be connected more to their salary, the appraisal and feedback can be even more effective. According to data from PISA 2018, only 19.2% claimed that their appraisal and feedback resulted in their salary increase. Moreover, not so many schools have the right to decide the salary increase of teachers. Only 13% principals said their schools have right to decide the salary increase of their teachers. It is 20.4% lower than the average level. This suggests that the ability to determine salary increases for teachers is not a common practice in Japan's education system, indicating a potential determinant for academic achievement.

Table 2. Teacher's appraisal and feedback

Teacher's appraisal and feedback	Japan	OECD
feedback they received has postive impact (%)	80.1	74.1
Received feedback at least based on at least 4 methods (%)	58.8	52.1
appraisal can result in salary increases and management has no responsibility over salary (%)	19.2	30.3
school have the right to decide the salary increase of teachers (%)	13	33.4

In addition to salary determination, another important determinant for academic achievement for secondary students in Japan is teachers' well-being and job satisfaction. They are closely linked to teachers' teaching performance, which in turn can have a significant impact on students' academic success. Therefore, it is crucial for the education system to prioritize and support the well-being of teachers to enhance the overall academic achievement of students in Japan. PISA's data shows that 81.8% teachers are very satisfied with their work. Although it does not reach the average level of OECD, 81.8% is relatively very high number.

Teachers hold a high status in Japanese culture. In traditional society, educators are highly respected for their knowledge and wisdom, and they play a crucial role in shaping the future generations of Japan. This deep respect for teachers is deeply ingrained in Japanese culture and continues to be reflected in various aspects of daily life. According to the survey conducted by PISA, 34.4% of teachers believe they are valued in society, highlighting the ongoing importance placed on educators within Japan's society. 41.8% teachers are satisfied with their salary, though appraisal and feedback don't bring the increase of income.

Therefore, as one of the main roles in education, teacher is an important factor that influences students' performance in school. Their well-being, their career development like appraisal and

feedback, and the social status are all factors that may influence their teaching, and in turn influence students' performance at school.

8. Conclusion and discussion

In conclusion, except economic investment, self-belief and attribution also play a critical role in determining student achievement and motivation. The research findings highlighted the importance of attributing success to controllable factors such as hard work and effort. Teachers also emerged as a key factor influencing student performance, with a focus on their professional development and well-being being crucial for fostering a conducive learning environment. The high regard and respect for teachers in Japanese culture further underscores their impact on students' academic success. As such, prioritizing and supporting teachers' well-being and career development is essential for enhancing the overall academic achievement of students in Japan.

Based on the factors influencing Japanese students' academic performance, several recommendations can be proposed for the Japanese government, educators, and parents. Compared to other Asian countries, Japan has made significant investments in secondary education; however, further enhancement is needed as current investments fall below the OECD average. Moreover, attention should be directed towards improving teacher well-being, potentially through regular teacher questionnaires to assess their needs and concerns. The feedback gathered from these surveys should inform policy decisions to address pressing issues effectively.

Schools should be granted autonomy in determining teacher salaries, although an independent evaluation body should oversee this process to ensure fairness and equity. This approach aims to motivate teachers while maintaining transparency and accountability in compensation decisions.

Addressing school bullying is crucial as it significantly impacts students' academic performance. Teachers must vigilantly monitor student behavior, intervene promptly in instances of bullying, and provide emotional support to affected students. Prioritizing students' psychological well-being and fostering a supportive learning environment are essential strategies. Encouraging struggling students and demonstrating patience are vital, as these students often perceive themselves as different from their peers and benefit greatly from positive reinforcement.

Parents play a pivotal role in their children's academic success. Maintaining regular communication with schools enables parents to stay informed about their children's progress and provides opportunities to offer necessary support at home. Additionally, parents should actively communicate any concerns or challenges their children face in school to facilitate collaborative problem-solving between home and school environments.

Given the complexity of education, these recommendations serve as a starting point for ongoing efforts to enhance educational outcomes in Japan. Continuous exploration and collective effort are essential in advancing educational quality and equity.

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