

Review on the Impact of Homework Amount on Chinese High School Students' Learning

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Abstract: In China, high schools often assign a large amount of homework. High school students, who are in a critical period of physical and mental growth, are easily affected by the amount of homework. This study focuses on homework amount and high school students' learning effectiveness. The results show that Chinese high school students generally have a large amount of homework with a single type, especially in key classes. There is an optimal amount of homework, and too much or too little homework may affect students' learning. Excessive homework leads to various negative outcomes. Insufficient homework cannot consolidate knowledge and improve abilities. Teachers should vary homework, manage time, address differences, and guide self-learning. Research can develop dynamic models and analyze exam reforms' impact on homework and learning. The study can expand to areas with weak educational resources, compare urban-rural differences, and improve homework feedback for effective tutoring and high-quality high school education.

1 INTRODUCTION

In the Chinese education system, high school education, as a crucial bridge connecting compulsory education and higher education, has always attracted much attention. However, behind this high level of attention, schools and teachers are under tremendous pressure. On the one hand, in order to stand out in the fierce National College Entrance Examination, schools strive to improve the enrollment rate to shape their own brand image. On the other hand, teachers face the pressure of performance assessment, and their teaching achievements are closely related to personal career development. In this context, many high schools tend to assign a large amount of homework, hoping to achieve "qualitative change" through "quantitative change". However, high school students are in a critical period of physical and mental growth. Under the pressure of a large amount of homework for a long time, they are extremely likely to feel tired and anxious, their learning enthusiasm is damaged, and they may even develop a negative attitude towards learning. Therefore, it is of great significance to deeply explore the internal relationship between the amount of homework and high school students' learning effects for optimizing educational practice, protecting students' physical and

mental health, and promoting their long-term development. This paper uses the literature review method to explore the impact of homework amount on Chinese high school students' learning.

2 INTRODUCTION OF RESEARCH OBJECTS

This study focuses on two key variables: the amount of homework and the learning effectiveness of high school students. The amount of homework refers to the total quantity of various learning tasks that teachers assign to high school students after class according to the teaching syllabus and course objectives. Its scope is extremely wide, including not only common written homework (such as exercise book questions and test papers of various subjects, which are used to consolidate the theoretical knowledge learned in class), but also various practical projects (to cultivate students' practical operation and problem-solving abilities). In the actual measurement process, the time students spend on these homework tasks is generally used as the main indicator. Further subdivision, the amount of homework can be divided into objective homework amount and subjective homework amount. The objective homework amount

refers to the actual quantity of assigned homework, while the subjective homework amount refers to the students' perceived homework burden, which is affected by factors such as individual learning ability, learning efficiency, and interest in homework. Learning effectiveness refers to a series of observable and measurable results achieved by students through activities such as knowledge acquisition, skill cultivation, and thinking development in the learning process (such as academic performance, knowledge mastery, thinking ability, autonomous learning ability). These results not only reflect the current learning state but also concern future development potential.

3 THE SITUATION OF HIGH SCHOOL HOMEWORK AMOUNT IN CHINA

Xie (2008) research shows that due to the pressure of college entrance examination, Chinese high school students generally face a large amount of homework and need to spend a lot of time on it. 78.53% of the students spend 3-4 hours completing extracurricular homework every day. In addition, the types of homework are relatively monotonous. As many as 66.34% of the students think that written homework accounts for 80 - 90% of all the homework assigned by teachers, and there is fewer practical homework. Chen et al. (2014) selected three high schools in Ningbo City by convenience sampling method, and then randomly selected 103 subjects from each grade of senior one, senior two, and senior three in each school. They collected data by questionnaire survey. The survey found that most high school students spend more than 1 hour on homework, and even 10.7% of high school students spend 4 hours on writing homework every day. 67% of high school students felt that they could complete the homework every day, but they needed to work hard. Only 5.8% of high school students could easily complete the daily homework. Chang & Guo (2011) selected 70 high school freshmen from a high school in Yongfeng County, Jiangxi Province, and conducted a questionnaire survey on the issue of homework amount. The survey results showed that 78.6% of high school students thought that the homework amount was too much or relatively large, 21.4% of high school students thought that the homework amount was moderate, and no high school student thought that the homework amount was small. Compared with the homework amount in the compulsory education stage, as many as 90% of high

school students thought that the high school homework amount had increased a lot, only 10% of high school students thought that the homework amount had not increased much, and no high school student thought that the high school homework amount had decreased compared with that in junior high school and primary school. Hou (2020) research investigated the freshmen in a key high school science competition experimental class during the first year of high school. The results showed that the students had to spend at least 4 hours and 30 minutes completing the homework from Monday to Friday, and at least 4 hours and 50 minutes on weekends. Most students needed 6 hours to complete all the homework.

In the research on subjective homework amount, Xie (2008) found that most students thought that compared with liberal arts homework, mathematics, physics, and chemistry homework were more difficult, took more time to complete, and were more difficult to finish. Among 673 high school students in Shenzhen, 78.75% of the students thought that mathematics was difficult, followed by chemistry (65%) and physics (30%), while the proportions of students who thought that politics, Chinese, history, and geography homework were difficult were only 11.25%, 10%, 6.25%, and 2.5% respectively. Through interviews with high school students, it was found that the reason why high school students generally thought that mathematics, physics, and chemistry homework were difficult was that these subjects combined many knowledge points, the knowledge system was relatively complex, and they needed to recall them one by one. Solving a problem often required careful consideration. In addition, mathematics, physics, and chemistry homework required a lot of calculations, and the question types were relatively flexible.

Through a series of related studies, a common phenomenon can be found. That is, regardless of the grade, students generally report that they need to deal with a large number of written homework with high difficulty when facing academic tasks. These homework tasks largely occupy students' a lot of after-school time and bring them considerable learning pressure. When further focusing on the homework amount of students in key classes for in-depth exploration, the research results show that the situation is worse. It can be inferred that compared with ordinary class students; key class students may indeed bear heavier homework tasks. The main reason behind this may be that the teaching mode of key classes is often guided by higher academic standards.

4 THE IMPACT OF HOMEWORK AMOUNT ON STUDENT LEARNING AND THRESHOLD EXPLORATION

Studies by Muhlenbruck et al. (2000), Pillana (2022), Xu (2008), Chang et al. (2014) and others have shown that there is an optimal amount of homework. When this amount is reached, students' learning effects are the best, and too much or too little homework may affect students' learning. Liu (2015) research explored the threshold of a reasonable amount of homework. She selected students from the high school department of a district school in Shenzhen to issue questionnaires. Statistical data analysis showed that the upper limit of the time when high school students felt that the total homework of all subjects was moderate every day was 3 hours. 45.3% of high school students thought that it was moderate to complete the homework within 1-2 hours, and 37.8% of high school students thought that it was moderate to complete the homework within 2-3 hours. When the amount of homework exceeded 3 hours, the proportion of students who felt that the homework was too much increased from 37% to 75.5%. Therefore, high school students should complete the homework of all subjects within 3 hours every day.

Excessive homework has a significant negative impact on students' learning. Chang et al. (2014) investigated and analyzed 2342 students and found that there was a negative correlation between the long time spent on homework and foreign language course performance. This negative correlation was consistent in different languages and performance measurement indicators (the GPA given by teachers in the six ordered parts of the course and the standardized ability test scores at the end of the course), and it was still significant after controlling for potential covariates (such as language learning talent, demographic variables, and emotional factors). This indicates that after considering other factors that may affect performance, the long time spent on foreign language homework still has a significant negative impact on performance. Excessive homework will encroach on students' individualized learning time. Taking language learning as an example, students need to participate in individualized activities, such as oral practice, but excessive homework may lead to students lacking enough time to carry out these activities, thus affecting their learning performance. In addition, excessive homework may also weaken students' autonomous learning ability, making students overly

dependent on the tasks assigned by teachers and lacking opportunities for autonomous learning, which is not conducive to cultivating autonomous learning ability. Too much homework will also compress students' extracurricular activity time, making them have no time to participate in extracurricular activities that can stimulate creativity or improve social and teamwork abilities. The learning channels are only limited to the classroom, resulting in their inability to acquire more extensive and diverse extracurricular knowledge, thus hindering students' all-round development. Hu (2001) compared the daily lives of middle school students in China, Japan, and the United States and found that nearly 70% of Chinese middle school students did not participate in any extracurricular group activities, and only 10.5% of Chinese high school students joined extracurricular sports activity groups (34.5% of Japanese high school students and 53.3% of American high school students). Chang & Guo (2011), Xie (2008) emphasized the adverse effects of excessive homework amount on the physical and mental health of high school students. A large amount of extracurricular homework encroaches on high school students' sleep time, and their bodies are in a state of fatigue for a long time, which is not conducive to the absorption of knowledge. When students are overburdened, they may develop a rebellious mentality, lose interest in learning, complete homework by copying from each other, and even have phenomena such as weariness of learning and dropping out of school.

Insufficient homework also has a negative impact on students' learning effectiveness. Zhang & Chen (2004) research pointed out that insufficient homework amount could not achieve the goal of consolidating, clarifying, deepening, and absorbing knowledge for students. In this case, students' knowledge acquisition only stays at the surface level, and it is difficult to deeply understand its essence, let alone use it flexibly. In addition, the knowledge forgetting rate will also increase significantly. Moreover, Pillana (2022) proposed that homework helped students to study learning resources more independently and cultivated students' self-discipline and sense of responsibility. Since homework is carried out regularly, students can choose a suitable time at home to complete the homework in a planned way. When students study at the same time every day and every week, learning will become a part of their lives. Too little homework amount may lead to students' lack of autonomous learning awareness and time management ability. When the amount of homework is too small, students do not need to

reasonably arrange the time to complete the homework, and it is difficult to develop autonomous learning awareness and good time management habits. They may waste the remaining time at will after completing a small amount of homework instead of using the time to preview, review, or expand learning. This may reduce students' learning interest and motivation. When students easily complete the homework, they cannot experience the joy of success through efforts to overcome difficulties, lack a sense of achievement, and then lose interest and motivation in learning, and their learning enthusiasm decreases.

5 CONCLUSION

Current research shows that there is a significant correlation between high school students' academic burden and their learning effectiveness. An appropriate amount of homework can positively promote learning effects and help students consolidate knowledge and improve skills. However, when the amount of homework exceeds a certain limit, the learning effectiveness will not increase but decline. Specifically, an excessive homework burden will occupy a large amount of students' after-school time, leading to physical and mental exhaustion, which may then trigger learning burnout, negative behaviors such as perfunctoriness and procrastination, and reduce the efficiency of knowledge absorption. On the other hand, it can be inferred from current research that excessive homework may compress the space for students' autonomous exploration and thinking, limit the development of their innovative and critical thinking, and is not conducive to the improvement of students' comprehensive qualities. When the amount of homework is too small, students lack sufficient practice opportunities, which limits the application and expansion of knowledge, making it difficult to achieve the goals of strengthening memory and deepening understanding. The mastery of knowledge only stays at the surface level, and the forgetting rate is high. Insufficient homework also makes students unable to experience the sense of achievement after overcoming difficulties in the learning process, affecting their learning enthusiasm.

In the assignment of homework, teachers should focus on diversifying the types of homework, increasing practical homework such as experiments and investigations, cultivating students' comprehensive abilities, and reducing the repetitive and mechanical content in written homework. The homework time should be controlled within 3 hours,

and the homework time of each subject should be reasonably allocated to avoid excessive homework in a certain subject. Teachers should pay attention to individual differences among students, understand their learning abilities, interests, and subject advantages, and make personalized adjustments to the difficulty and amount of homework. Teachers should guide students to reasonably arrange their homework time and cultivate their autonomous learning awareness and time management ability. For example, teachers teach students how to make a learning plan and encourage them to self-monitor and evaluate their learning effects to improve learning efficiency.

Future research can focus on constructing a precise homework amount model, comprehensively considering factors such as students' learning styles, subject characteristics, and psychological states to dynamically adjust the homework amount. At the same time, it can combine the dynamics of the college entrance examination reform to analyze the changes in homework amount and students' learning effectiveness under different subject combinations. In addition, the geographical scope of the research can be expanded to include more areas with weak educational resources and compare the differences between urban and rural areas. Deepen the research on the homework feedback mechanism to achieve rapid feedback and effective tutoring, so that homework can truly serve the growth of students and contribute to the high-quality development of high school education.

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