The impact of the double reduction policy on the academic achievements of Chinese secondary school students in mathematics: A case study of Yuncheng city, Shanxi province

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Abstract: This paper discusses China's "double burden reduction" policy and its impact on student's academic performance, especially in mathematics this subject. The discussion covers the background of the specific policy, the controversies in its implementation, and previous research on its impact. The study aimed to explore the effect of policy on student performance in mathematics—the methodology involved semi-structured interviews with 26 participants, mainly conducted in Yuncheng City, Shanxi Province. The research result shows the implementation of the double reduction policy, especially in reducing homework, has largely been well received whereas the policy has had little impact on students' academic performance in mathematics. The interaction of this provision with the double reduction policy and its specific impact awaits further observation and research.

1. Introduction

Before the implementation of the “double reduction” policy, Chinese students usually had an excessive burden of extracurricular homework [1]. Exam-oriented education remained the main mode of Chinese education [2]. The widespread development of off-campus training has caused educational anxiety within families as well as in wider society, while also placing a significant burden on the family economy [3]. To alleviate the excessive burden placed on students and the resultant parental anxiety, on 24 July 2021, the Chinese Ministry of Education launched the “Opinions on Further Reducing the Homework and Off-campus Training Burden of Students in Compulsory Education” (also called the double reduction policy). This policy primarily addressed two burdens, namely, students’ extracurricular academic burden and their off-campus training burden [4].

In the past two years, there has been significant controversy in the academic community regarding the implementation of the double reduction policy. For example, some researchers believe that reducing burden is a systematic problem that is difficult to solve through policy reform. At present, the limitations of institutional arrangements, the competitiveness of regional education ecological environment, weak government preferences for public services, low teacher recognition and the shortage of educational resources are the main influencing factors that constrain the effectiveness of the double reduction policy in reducing burden. Zhou used the Smith model to analyse the practical difficulties involved in the implementation of the double reduction policy based on four aspects (i.e., the policy itself, the executing agency, the target group and the policy execution environment) and concluded that the execution process is single in form and cannot be tailored to local conditions; thus, the quality of the executing agency is poor, and the execution effect is poor [5]. Meanwhile, Wu and Wu believed that after the implementation of the double reduction policy, significant progress had been made in shadow education, and off-campus training institutions had been significantly reduced [6]. They found that the burden of students’ homework was effectively reduced, the quality of school homework design had significantly improved and overall satisfaction with after-school services was high. Therefore, they argue that this policy has gradually achieved the effect of reducing burden and improving education quality. However, the effectiveness of short-term governance was undermined by a significant rebound crisis. Under the exam and score system implemented in China, the deepening reform of the examination and enrolment system is hindered, the supply and demand of educational resources are difficult to balance, parents’ educational anxiety is difficult to reconcile and the transformation of off-campus training institutions lacks guidance. These are the main issues involved in determining whether shadow education governance can achieve substantial results in the long term.

Previous studies have also investigated the double reduction policy. For example, Tu and Tu argued that it has had a significant effect on students [7]. Since its implementation, the double reduction policy has been found to have the following positive impacts: reduced learning time, significantly improved learning outcomes, reduced homework volume, decreased difficulty for primary and secondary school students, improved after-
school services, increased parental care for primary and secondary school students. However, some primary and secondary school students were found to have an insufficient understanding of the policy, weak self-discipline and willpower to resist negative temptations, insufficient adaptability to the policy and low learning quality [7]. Meanwhile, from the perspective of teachers, Chen believed that some mathematics teachers had not made corresponding changes and were still using traditional teaching methods for “cramming” teaching, which made it difficult for students to master their relevant skills through limited classroom learning time, resulting in a learning effect that was not ideal [8].

While some existing studies have investigated the background, implementation and impact of the double reduction policy, few have focused on the academic performance of a specific subject. Studying how the double reduction policy affects students’ academic performance in a specific course enables us to better understand the effectiveness of the policy and evaluate whether it has achieved the expected results. In addition, while existing research has examined the factors that affect mathematical academic performance, but there is still a lack of research on whether and how much these factors have changed following the implementation of double reduction. Therefore, this study will use the case study of Yuncheng City, Shanxi Province, to attempt to explore the changes in students’ extracurricular homework and training after the implementation of the double reduction policy, as well as the actual impact of these changes on students’ mathematical performance, for the purpose of evaluating the effectiveness of the double reduction policy.

### 2. Methodology

This qualitative study aims to explore the impact of the double reduction policy on the mathematical performance of secondary school students. The purpose of this is to understand the factors that cause changes in mathematical performance after the implementation of the double reduction policy from different perspectives and the impact of these factors on secondary school students’ mathematical performance through descriptions of the changes in mathematical performance by various personnel. This study was conducted in the form of semistructured interviews with a total of 26 relevant personnel, primarily in Yuncheng City, Shanxi Province.

#### 2.1. Research participants

Schools are divided into three levels based on their enrolment rate in the middle school entrance examination. According to Table 1, it can be inferred from the basic information of the study participants that those with an enrolment rate above 80% are categorised as excellent, those with a 50–80% enrolment rate are average and those with an enrolment rate below 50% are below average. Students are divided into three groups based on their academic performance in the first half of 2022, with a maximum score of 120. Students with scores above 100 are considered excellent, those with scores of 70–100 are considered average and those with scores below 70 are considered below average. Parents of six students at each level of school were randomly selected. The table below presents the data regarding these research subjects.

<table>
<thead>
<tr>
<th>Research participants</th>
<th>Total</th>
<th>Good schools</th>
<th>Average schools</th>
<th>Poor schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Students</td>
<td>18</td>
<td>Excellent</td>
<td>Average</td>
<td>Below average</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
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<td>2</td>
</tr>
</tbody>
</table>

These participants were found through acquaintances’ networks and interviewed face to face or online via the popular Chinese online communication software WeChat.

#### 2.2. Data collection and analysis

Because the main content of the double reduction policy is aimed at reducing the burden of students’ extracurricular homework and training, this study is divided into two parts of analysis based on this content. The first part focuses on the impact of changes in students’ extracurricular homework on their mathematical performance following implementation of the double reduction policy, and the second part focuses on reducing the off-campus training burden and its impact on mathematical performance. To better study the impact of various changes on students’ mathematical performance, each section is divided into two subheadings; the first introduces the specific changes and their causes, while the second studies and explains the specific impact of these changes on students’ mathematical performance. The interview data were also collected within this framework.

In the data analysis stage, the researchers first transcribed interview records. Secondly, they listened to the recordings and arranged and modified the text several times to better understand the entire interview. Thirdly, they translated the transcripts into English. Fourthly, they began to analyse the interview data based on the research questions, extracted useful data from transcription and replicating them to each research question for further analysis. During this process, new keywords and themes emerged, and the researchers retained those that were relevant to this study as analysis points and removed those that were unrelated to it. Fifthly, they re-examined the keywords, themes and related data, and refined the data that may be used and cited in this study.

#### 2.3. Ethical considerations

Prior to their participation in the study, all interviewees were provided with information about the nature of the
research and were required to sign a consent form or provide verbal consensus. All interviewees were informed that they would in no way be required to participate if they did not wish to, and that they could leave the interview at any time. The research maintained the anonymity of all interviewees, schools visited and the quotes and data used in this research that may be traced to a specific individual or school.

2.4. Limitations

Although this paper makes several contributions in exploring the changes in middle school students’ mathematics scores and the impact of various factors following the implementation of the double reduction policy, it also contains certain limitations. Firstly, given the small sample size of this qualitative study, it may not be representative. Secondly, the authenticity of interviews in this study may be challenged. That is, the relationship between participants and the researcher can serve as a barrier, and respondents may not have expressed their true thoughts. In China, free speech is relatively limited, especially when commenting on policies and schools; consequently, parents may conceal certain opinions or ideas or be hesitant to express them. Similarly, due to their relative immaturity, some students may be worried that their parents and teachers will know their thoughts and therefore may not dare to reveal their most authentic thoughts, which may limit the effectiveness of the research results. In addition, some of the online interview methods used in this study may cause both interviewees and interviewees to feel suppressed, although the researchers attempted to alleviate any nervousness by chatting about their work and hobbies.

3. Findings

3.1. Changes in students’ homework and the impact on their mathematics performance

3.1.1. Changes in homework after the double reduction policy

This study found that after implementation of the double reduction policy, the nature and efficacy of extracurricular homework changed as follows.

Firstly, most students and parents interviewed (specifically, 72% of students and 66% of parents) believed that the amount of homework assigned to students had decreased since the implementation of the double reduction policy. It can be seen that since the promulgation of the double reduction policy, most schools have conscientiously implemented the double reduction policy and reduced students’ extracurricular workload.

Secondly, 17% of students and parents believed that there was no change in students’ homework following the implementation of the policy. This perspective may be attributable to the high speed of the policy’s implementation process as various supporting measures could not keep up with it. The policy communication and implementation standards were unclear, and teacher training had not been established. Consequently, some teachers did not attach importance to the double reduction policy and continued to use the previous method, meaning that the assigned homework remained unchanged.

Thirdly, some respondents expressed that the amount of homework assigned to students had indeed increased following implementation of the double reduction policy. Among the students and parents interviewed, 11% and 17%, respectively, believed that the amount of homework had increased. The reason for this was that the enrolment system in China had not changed. Some teachers, especially those in private schools, continued to adopt the previous exam-oriented education method, aiming to improve students’ examination grades and consequently achieve professional titles. These teachers prioritised paper assignments to improve high school admission rates when the high school entrance examination was imminent. The interview quote presented below demonstrates the impact of this approach on students.

I feel my child is very tired. She needs to finish much homework after class in the evening. After self-study in the evening, she still needs to absorb the knowledge learnt in the day because the teacher asks her to consolidate it. I even feel that my daughter is very tired in studying, especially in mathematics. (Parent E)

3.1.2. The impact of changes in homework after class on students’ mathematics grades

The table below presents the findings of this study regarding the perceptions of students and parents interviewed.

<table>
<thead>
<tr>
<th></th>
<th>A change in homework after class</th>
<th>No change in homework after class</th>
<th>Impact of homework changes on mathematics grades</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Improved grades</td>
<td>Decreased grades</td>
<td>Unchanged grades</td>
</tr>
<tr>
<td>Students</td>
<td>83%</td>
<td>17%</td>
<td>33%</td>
</tr>
<tr>
<td>Parents</td>
<td>83%</td>
<td>17%</td>
<td>33%</td>
</tr>
</tbody>
</table>

3.1.2.1 Improvement in mathematics scores

From Table 2, it can be seen that the attitudes of parents and students towards changes in homework after class, 33% of parents and students stated that the changes in homework after the double reduction policy had led to an improvement in math scores. This is mainly because assigning less homework to students provides them with more time to think, broaden their thinking, relax physically and mentally, and improve their learning efficiency. In addition, they have more time to work on extracurricular questions, review their work and receive
additional guidance from tutors, all of which can improve their grades. This perspective is reflected in the interviewee responses presented below.

After having more rest time, we have time to summarise some knowledge points. I have a lot of time to read the types of questions. I just passed the exam at the beginning and gradually improved my grade. I scored 80 points in this final exam. (Student B)

Possible factors include having more time to review on your own. The usual courses are too tight, and he doesn’t have time to study and review. He used to fail the exam, but now he can get a score of 78. (Parent C)

There isn’t so much homework, and there’s no need to keep attending tutoring classes now, so I am willing to learn happily. Because there won’t be so much mathematical pressure anymore, I am efficient in class. My grades are getting better and better. I was around 70 points before, but I scored 83 points in the final exam. (Student D)

3.1.2.2 Decline in mathematics scores

Secondly, 17% of students and parents believed that the changes in homework caused by the implementation of the double reduction policy had negatively impacted students’ mathematics grades. China’s deeply ingrained exam-oriented education system uses enrolment rate to evaluate teaching quality and academic performance. Some students are unable to adapt to the double reduction policy under the long-term impact of exam-oriented education. When homework is reduced, the learning content and efficiency also are decreased, which has a negative impact on grades. In addition, students with poor learning abilities may experience a decline in their grades despite, or indeed due to, the added burden of additional homework assigned by their parents. This perspective is reflected in the interviewee responses presented below.

Because of a lack of homework, many things are not well consolidated. I have calculated too few questions which I haven’t seen during the exam. My score dropped from over 100 points to over 80 points due to lack of homework, although I scored 111 points in the follow-up exam through other ways. (Student I)

His homework has decreased. Relatively speaking, he definitely does as much homework as before. It’s normal that the average child’s grades will be affected due to reducing homework. She has been studying poorly, and she used to get 50 points, but now she still keeps that grade. If she didn’t do extra homework at home, she probably wouldn’t even have this score. (Parent D)

3.1.2.3 No change in mathematics scores

However, some students also believed that the changes in homework caused by implementation of the double reduction policy had no impact on their grades, while some felt that their learning efficiency had improved as a result of the reduced extracurricular workload. The following interviewee response illustrates this point.

The teacher won’t assign too much homework after class and then will solve the problems we don’t understand in class. Free time is more abundant than before, but I don’t think it has [an] impact on me. (Student P)

3.2. Changes in off-campus training and the impact on students’ mathematical performance

3.2.1. Changes in off-campus training

According to the results of this study, before the double reduction policy, 94% of students participated in off-campus training. Meanwhile, after the implementation of the double reduction policy, the following changes in extracurricular training have occurred.

(1)78% of students and 66% of parents believed that there was a change in extracurricular tutoring after the double reduction.

Firstly, 44% of students and 33% of parents believed that students’ off-campus training time had decreased after the double reduction policy. Under the double reduction policy, schools require parents and students to reduce supplementary classes, and off-campus training institutions are prohibited from promoting and recruiting students; this has indirectly led to a reduction in students’ off-campus training time.

Secondly, 33% of students and 33% of parents believed that students’ off-campus training time had increased after the double reduction policy. Because of the reduction in homework, some students who rely on homework to consolidate their knowledge may be prevented from achieving high scores. To keep up with the curriculum and maintain their grades, some students participate increasingly in off-campus training. Although the country prohibits off-campus training, there are no clear legal penalties for training teachers and students; consequently, many institutions continue to operate, and many in-service teachers continue to take remedial classes, providing students with opportunities for extracurricular tutoring.

Finally, 22% of students and 33% of parents believed that students’ off-campus training time had not changed. Although the double reduction policy has been in effect for a certain amount of time, some schools have poor execution ability, and some parents have limited or no awareness of the double reduction policy; as a result, many students and parents are continuing to use the same tutoring methods as before.

(2) Reducing the burden of off-campus training means that schools at all levels require teachers to change their teaching methods. A total of 61% of students and 33% of parents believed that the teaching methods of teachers had changed after the double reduction policy, while 33% of students and 67% of parents believed that the teaching attitude of teachers had changed after the double reduction policy (some parents believed that both teaching attitude and methods had changed). The specific changes identified were as follows.

Firstly, teachers communicate more with students. Due to the decrease in homework and off-campus training, teachers can gain a better understanding of students’
learning conditions and make reasonable arrangements for their own teaching by maintaining consistent communication with students. This perspective is reflected in the interviewee response presented below.

The classroom is no longer as rigid as before, now [the] teacher will allow us to communicate more with classmates and solve problems together. Sometimes, some extracurricular content will be added, and then class content will be more interesting. I used to often fail exams, but now I can get 78 points. (Student C)

Secondly, teaching quality has improved. After the implementation of the double reduction policy, it was explicitly requested that students' homework burden was reduced, and that off-campus training during compulsory education was prohibited; these changes enabled school to reassume a dominant role in student growth and development. This perspective is reflected in the interviewee response presented below.

The teacher has a high efficiency in teaching. The teacher helps us to solve after-class assignments in class and uses many examples to explain difficult problems. (Student G)

Thirdly, teachers pay more attention to and demonstrate more responsibility for students. Because the double reduction policy has reduced students' extracurricular burden, it is necessary to propose higher requirements for classroom efficiency, requiring teachers to pay more attention to students, accurately understand their actual learning situation and formulate teaching plans based on the teaching objectives. On the other hand, double reduction does not refer to the random reduction of content; rather, teachers should accurately grasp the curriculum standards of the subject and provide precise lectures in the teaching process, after which they can promptly review and provide feedback on students' performance.

Finally, the school provides additional guidance to some students as the double reduction policy has reduced the amount of homework assigned to students and prohibited off-campus training institutions from providing guidance. In addition, to ensure that high-performing students who used to participate in off-campus training continue to attain high examination scores, some schools offer additional Sunday tutoring courses for such students. This is reflected in the following interviewee response.

Some students will take part in a private session in school, which may be a preview session. It seems that the school neglects the below-average and average students. Then, they will select outstanding students to attend classes every Saturday. (Parent E)

### 3.2.2. The impact on students' mathematical performance

The table below presents the findings of the statistical analysis of the data collected in this study.

<table>
<thead>
<tr>
<th></th>
<th>Progression</th>
<th>Decline</th>
<th>No change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parents</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes in students’</td>
<td>66%</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>mathematical performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Students</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes in students’</td>
<td>72%</td>
<td>17%</td>
<td>11%</td>
</tr>
<tr>
<td>mathematical performance</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 3.2.2.1 Improvement in mathematics scores

According to Table 3 the impact of changes in homework on math grades between parents and students, 72% of students and 66% of parents believed that the reduction in the burden of off-campus training has improved students’ mathematics scores, mainly due to the following reasons.

Firstly, the teaching methods implemented by teachers have enhanced students’ interest and understanding because improving learning interest and self-efficacy can promote students’ academic performance [10]. According to the results of the present study, 50% of students and 33%
of parents believed that changes in teachers’ teaching methods had facilitated improvement in grades. This point is reflected in the views of students and parents who have made progress, as exemplified below.

Teachers encourage me to think and understand. The teacher will divide the questions into small groups and ask us to discuss them. After the discussion, everyone will raise the questions, and the teacher will answer them one by one. I scored 80 points in the final exam. (Student B)

Secondly, 33% of parents and 22% of students believed that changes in teachers’ teaching attitudes promoted progress in academic performance (these parents also believed that there have been changes in the teaching methods implemented by teachers). Teachers pay more attention to and take responsibility for students, which positively impacts student performance. In addition, students who lack self-discipline and feel academically inferior will become more motivated and confident when the teacher pays attention to them and addresses their needs, as expressed in the following interviewee responses.

The students with below-average math grades are treated equally, and we are all very close to each other. Some of the methods [the teacher] taught are quite applicable. Although our math performance is not ideal every time, he didn’t blame us. My performance has improved from more than 60 to more than 90. These characteristics of the teacher are helpful. (Student K)

Thirdly, 50% of parents and 34% of students believed that improving the quality of after-school services would improve grades, as exemplified in the following responses.

After class, there is an hour of after-school service. You do your own things and ask the teacher questions. The child’s score has increased from 85 points to 94 points. (Parent A)

Every Saturday and Sunday, school classes that I attended last for approximately two hours. These classes help me to figure out what I don’t understand during regular classes, and then my grades have improved by about 10%. (Student E)

The views of these students and parents indicate that after-school services can help students to complete their homework efficiently and can positively impact students’ grades.

Fourthly, 34% of parents and 45% of students believed that changes in extracurricular tutoring had led to improved grades. Some students have reduced their off-campus training due to the double reduction policy but have instead improved their grades by enhancing their learning efficiency or alternately by increasing their off-campus training. This perspective is reflected in the interviewee responses presented below.

I think the effect of tutoring will definitely be there. The free time after double reduction is more. I think the off-campus training time is longer, and my daughter improved in her grades about 10 points. (Parent C)

If I don’t go to take part in the extracurricular tutoring, my grades don’t improve quickly. My math grades were not very good at first, with a score of around 90. Then I scored 111 in this high school entrance exam. (Student F)

3.2.2.2 No change in mathematics scores

Firstly, 17% of parents and 11% of students believed that although teachers’ teaching methods and attitudes had changed after the double reduction policy, students’ grades had not changed. The factors affecting students’ academic performance include not only teachers’ teaching attitudes and methods, but also students’ own attributes and attitudes and the degree of parental attention. Some students improve their efficiency in class, but their acceptance ability is poor. If they do not have enough homework to consolidate and practice after class, they may be unable to absorb the content taught by the teacher. Some students may have a heavy psychological burden if they are anxious in class. Therefore, even if the teacher improves the quality of teaching, students’ grades may remain unchanged. The interviewee responses presented below reflect this viewpoint.

After the double reduction policy, the math teacher will give more detailed lectures during class. On the one hand, it can also improve my learning efficiency and improve my grades. On the other hand, it will definitely bring me pressure. But my grades are still the same as before. (Student P)

I believe that teaching methods have a significant impact on academic performance, especially in terms of communication with students. However, my children’s grades haven’t changed because they can’t understand the knowledge well that has become more difficult in the second year of secondary school. (Parent A)

Secondly, 17% of parents and 11% of students believed that although after-school services had changed, students’ grades had not. Each student has different physical and mental characteristics, and some may have poor self-discipline and learning arrangement abilities. Such students will not arrange their free after-school time reasonably, regardless of the amount they receive. Therefore, the increase in after-class time stipulated by the double reduction policy is not helpful for learning. In addition, some students are usually very relaxed, so more after-school recreation time will have little effect on their mood and grade. The interviewee responses presented below reflect this perspective.

In the first and second years of secondary school, the school environment was relatively relaxing. Our school gave us some space to learn on our own, in order to improve our self-control abilities and encourage us to innovate. It must have a positive impact on excellent students rather than the below-average and average students like me, who don’t know how to organise [our schedules]. (Student K)

Extracurricular activities, such as participating in music or rap, have no impact on learning. (Parent C)

Thirdly, 11% of students believed that they had reduced their off-campus training time, but their grades had not changed. Students previously relied excessively on off-campus training to improve and fill knowledge gaps, so reducing off-campus training time would have a certain negative impact on their grades. Therefore, schools have placed more emphasis on the changes in teaching and teachers’ attitudes after the double reduction policy to help these students solve problems that they may have solved.
3.2.2.3 Decline in mathematics scores

Among the participants, 17% of parents and students believed that students’ final exam scores decreased after the double reduction. Regarding the changes in off-campus training, homework and the teacher’s teaching attitude and teaching method, some changes have promoted students’ academic performance, while others have led to a decline in performance; however, the latter comprises only a small proportion of the changes. The following paragraphs primarily analyse factors that have led to a decrease in students’ mathematics grades.

Firstly, 34% of parents and 11% of students believed that the change in teachers’ teaching attitude led to a decline in grades. A portion of below-average students are ignored by teachers, which negatively affects their grades. Following implementation of the double reduction policy, some teachers introduced policies to reduce the amount of homework assigned to students but failed to take the differences in learning abilities between average or below-average students and high-performing students into consideration. Due to this lack of consolidation, the average and below-average students experienced a decline in their grades. In addition, parents believed that changes in teaching attitudes led to a decrease in their children’s grades despite their children having made improved their grades during the final examinations[11]. These parents thought that self-discipline and off-campus training played a critical role in improving their children’s grades, as exemplified in the interviewee response presented below.

The teacher didn't take into account [the] learning abilities of every student, especially the below-average and average students, so their teacher teaches quickly. My child couldn't keep up with the math exam and even dropped from over 80 to over 50 points. I made progress through off-campus training and other methods. (Parent E)

Secondly, 6% of students experienced a decrease in academic performance due to differentiated treatment of after-school services and increased number of tasks assigned. For example, as the following students said:

Due to the delay after class in the evening, I was particularly tired. The teacher still gave lectures, and I couldn't listen at all. The next day, I was still sleepy. My grades dropped from over 90 to over 50. (Student D)

Thirdly, 34% of parents and 11% of students believed that a decrease in off-campus training time led to a decrease in academic performance. Some students with poor understanding abilities and weak foundation were unable to keep up with the teacher’s ideas and understand some questions posed in class. In addition, some parents do not provide guidance after class. Therefore, these students can only rely on off-campus training institutions to solve problems. After the double reduction, these students’ problems could not be solved, resulting in a decrease in grades. Furthermore, the reasons why some of these students improved in their final examination include off-campus training and other factors rather than the double reduction policy. This is reflected in the interviewee response presented below.

I spend money on tutoring. As long as I can keep up with courses, I am still equal to others. Even if we learn slowly and prepare in advance, we can still keep up with the teacher’s pace in class through off-campus training. My child dropped from 80 to 50 points and then increased to 78 points. (Parent E)

4. Conclusion

The double reduction policy aims to alleviate the burden of excessive homework and off-campus tutoring for students. This paper is mainly divided into two parts. The first part analyses the changes in students’ homework and its influence on their performance in mathematics. The second part examines the changes in students’ extracurricular training, the alterations in after-school services and the impact on teachers caused by the reduction in extracurricular training. Finally, it assesses the influence of these changes on students’ mathematics scores.

This study reveals that the majority of students and parents believed that homework has decreased, while a small minority felt that it has increased or remained unchanged. As for changes in grades, one-third of parents and students attributed improvements to changes in extracurricular workload, particularly the decrease in the amount of homework assigned. This is mainly because students consequently have more time for studying, practicing, relaxation and rest. However, nearly one-third of students and parents believed that due to student resistance, although homework has changed, grades have not. Without sufficient homework to reinforce their learning, students fail to absorb classroom knowledge efficiently[12]. The remaining students and parents believed that students’ mathematics scores have declined since the implementation of the double reduction policy. This is attributed to the increase in homework implemented in some schools in pursuit of higher enrolment rates, resulting in overburdening and insufficient rest among students.

Meanwhile, the results of this study also indicate that over one-third of students and parents believed that extracurricular training time has been reduced. Another one-third of students and parents believed that there has been no change in extracurricular tutoring time, while the remainder students felt that the availability of make-up lessons has increased (as some institutions still provide make-up lessons). Judging from grade changes, over half of parents interviewed believed that changes in off-campus training have led to improvements in their children’s grades. Among the students who had achieved progress in mathematics, about half attributed this to
changes in teachers and after-school services, as well as certain personal and parental factors. Meanwhile, some students who excelled in mathematics credited this to the addition of extracurricular training. In addition, most below-average students, and a few high-performing students who conduct many exercises, believed that reducing off-campus training has caused a decline in academic performance. This is mainly due to the reduction in off-campus training, which makes it difficult for high-performing students to find or understand some difficult problems, while below-average students are unable to detect and fill gaps, resulting in a decrease in their grades.

In summary, firstly, the implementation of the double reduction policy, especially in reducing homework, has largely been well received. Most students and parents reported a reduction in homework. However, the effectiveness of reducing off-campus training is moderate, with only one-third of students and parents feeling that it has reduced the burden of off-campus training. Secondly, the policy has had little impact on students’ academic performance in mathematics. Only one-third of parents and students believed that reducing homework and extracurricular training has improved their mathematics scores. Finally, in terms of reducing off-campus training, China will be enforcing the Interim Measures for Administrative Penalties for Off-campus Training from 15 October 2023 to address the current mediocre effect. The purpose of this regulation is to penalise off-campus training institutions and individuals. For minor offenses, institutions and individuals will be required to rectify the situation, refund any fees charged and receive an official warning or criticism. For more serious cases, fines of up to 50,000 yuan shall be imposed, while especially severe cases could incur fines of 50,000–100,000 yuan. The interaction of this provision with the double reduction policy and its specific impact awaits further observation and research.

References