

# Research on the Training Path of Junior Middle School Students' Innovative Ability Based on the Core Literacy of Science Subject under the Background of "Double Reduction"

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**Abstract:** The fundamental purpose of the policy of "double reduction" is to avoid increasing the burden on students in compulsory education, guide schools and teachers to be efficient in classroom teaching, improve the educational level of schools and create a good educational ecology. Classroom teaching under the policy of "double reduction" should focus on the subject core literacy and strengthen the cultivation of junior high school students' science core literacy, which is conducive to improving their scientific spirit of active exploration and seeking truth from facts, and also conducive to the cultivation of junior high school students' innovative ability, which is very beneficial to their future study and growth. Under the background of "double reduction", this study is based on several dimensions of the core literacy of science disciplines, and explores specific ways to improve junior high school students' innovative ability.

**Keywords:** "Double reduction" policy; Core literacy; Innovation; Cultivation path

## 1. Introduction

The 19th National Congress of the Communist Party of China and the Fifth Plenary Session of the 19th Central Committee of the Communist Party of China clearly pointed out that it is necessary to effectively improve the educational level in schools and create a good educational ecology. In October 2021, the National People's Congress (NPC) said: the double reduction plan should be explicitly incorporated into the law, so as to avoid increasing the burden of students in compulsory education. The classroom teaching under the "double reduction" policy should focus on the core literacy of the subject, highlight the main participation of students, and organize students to carry out in-depth learning. In China, junior high school students have a weak sense of innovation, a lack of innovative thinking, a weak foundation of innovative knowledge, and a lack of innovative achievements, etc. Strengthening the cultivation of junior high school students' core literacy in science is conducive to improving their scientific spirit of active exploration and seeking truth from facts, as well as the cultivation of junior high school students' innovative ability, which is beneficial to their future learning and growth.

## 2. The proposal of "double reduction" policy

In recent years, the most prominent problem of compulsory education is that the homework burden of primary and secondary school students is too heavy, while off-campus training is overheated and the problem of over-prevention and over-standard training has not yet been fundamentally solved, and the fees for off-campus training programs are high, and training institutions are "difficult to refund" and "run away with the money" and other illegal the problem has not yet been solved at all. Such problems have led to unbearable suffering for students and parents, seriously hedging the fruits of education reform and development, and social repercussions are very strong.

The Party Central Committee attaches great importance to this, on July 24, 2021, the General Office of the CPC Central Committee and the General Office of the State Council issued the "Opinions on

Further Reducing the Burden of Homework and Off-Campus Training for Students in Compulsory Education", or "Double Reduction", which opened a new stage in the history of compulsory education in China. The Party Central Committee has made an important decision on the "double reduction" from the strategic height of achieving the great rejuvenation of the Chinese nation.

The Director of the Department of Basic Education of the Ministry of Education of China emphasized that reducing the burden and improving the quality of education in schools is the fundamental strategy to implement the "double reduction" work. The Ministry of Education instructed schools to strengthen the "three improvements": improving the level of homework management, improving the level of after-school services and improving the quality of classroom teaching, and promoting the "double reduction" work to achieve significant results. The purpose of the "double reduction" is to completely change the crude, high-consumption learning methods of schools, teachers and parents, such as extending the learning time and increasing the intensity of learning, and to guide schools and teachers to be more efficient in the 45-minute classroom, so as to achieve efficient, low-consumption and refined teaching, and thus meet the rising demand of the general public for quality education, in a real sense Reduce the excessive burden of schoolwork on minors, thus repairing the educational ecosystem, truly implementing the fundamental task of establishing moral education, and thus promoting the overall development and healthy physical and mental development of students<sup>[1]</sup>.

### 3. Core literacy and discipline core literacy

At present, Core literacy is a hot topic in the field of international education, and it is also the key to the gradual deepening of new curriculum reform in China. The core literacy of Chinese students' development is centered on cultivating "all-round development people", which is divided into three aspects: cultural foundation, independent development and social participation. It is comprehensively manifested as six major literacy, such as humanistic heritage, scientific spirit, learning to learn, healthy life, responsibility, practice and innovation, and specifically refined into 18 basic points such as national identity. All qualities are interrelated, complementary and mutually promoting, and play an integral role in different situations.

Subject core literacy is the concretization of core literacy in a specific subject (or learning area), which is the key achievement with subject characteristics formed by students after learning a subject (or a specific learning area), and is the centralized embodiment of the value of subject education. Science subject core literacy refers to the essential character and key ability that students gradually formed in the process of receiving science education to meet the needs of personal lifelong development and social development. It is the quality with the characteristics of science disciplines internalized by students through scientific learning, and it is the concentrated embodiment of the educational value of science disciplines. With the continuous development of quality education, science is becoming a very important subject in our daily teaching with its rich content and teaching facts close to the reality of life. Due to students' different experiences and knowledge of new things, many students' acceptance of science subjects is uneven, so it is necessary to discuss the cultivation of scientific discipline literacy from the aspects of scientific concepts, scientific thinking, scientific inquiry, scientific attitudes and responsibilities, etc., as shown in the following chart.

The cultivation of junior high school students' core literacy in science is conducive to improving their scientific spirit of active exploration and seeking truth from facts, as well as the cultivation of junior high school students' innovative ability, which has a very beneficial effect on their future learning and growth. <sup>[2]</sup>

### 4. The current situation of junior high school students' innovation ability cultivation

Innovation ability of junior high school students refers to the ability of junior high school students to break through the shackles of backward concepts and old rules in the learning process, explore and discover problems independently, put forward their own new ideas and insights, and actively find ways to solve problems, and even create something new and unique with social or personal values <sup>[3]</sup>.

At present, the training of students' innovation ability in junior high school mainly relies on innovation platforms such as innovation centers and innovation labs at all levels, and the main status quo is as follows: ① Serious test taking and serious lack of innovation ability. ② Imitation production, lack of innovation. ③ The work of facade, passive coping. Cultivating students' innovation ability is a

hot topic of common concern for the society.

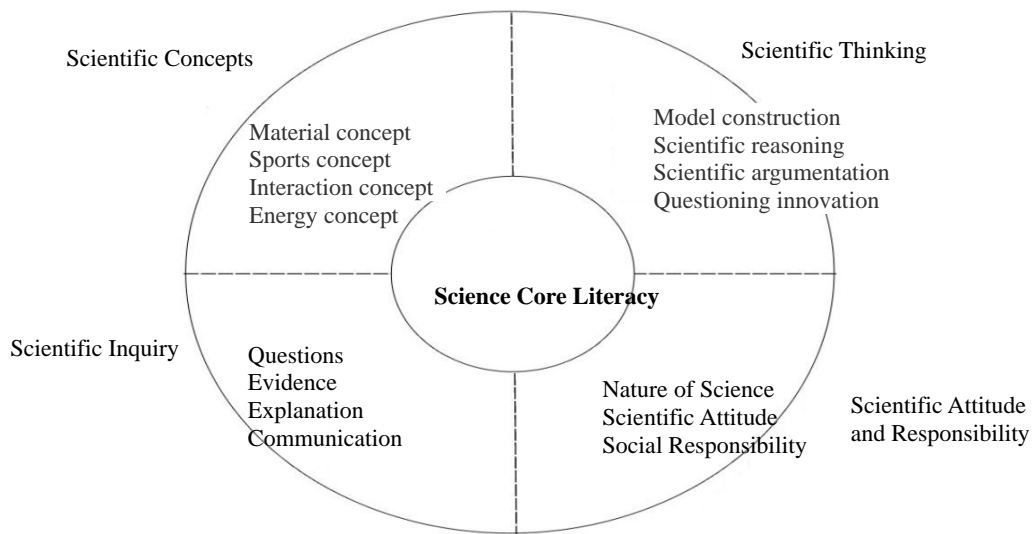


Figure 1

## 5. Research on the path to improve junior high school students' innovative ability.

Innovation ability is the need of junior high school students to adapt to the future society, and it is also the need of national strategy. The research focus of this paper is to realize the "double reduction", take root the core literacy and enhance the innovation ability of junior high school students. The specific lifting path includes the following points:

### 5.1. Based on the requirements of the core literacy of science disciplines, develop the innovation ability test index system to evaluate the innovation ability of junior high school students

Through literature analysis of the components of junior high school students' innovation ability, combined with the requirements of junior high school students' science discipline core literacy on the cultivation of innovation ability, the preliminary formation of junior high school students' innovation ability assessment index system. Develop the corresponding primary dimensions and secondary indicators of the innovation ability test index system for junior high school students in combination with the core literacy of science disciplines. At the same time, senior education experts were consulted to revise and form a developmental middle school students' innovative ability evaluation index system.

Under the guidance of the index system, a scientific method is applied to consider various factors such as students' physical and mental development level, teachers' innovative teaching ability, and schools' curriculum resources construction, etc., so as to finally form a systematic and comprehensive evaluation index system that effectively assesses students' innovative ability.

### 5.2. Through the investigation of the current situation of junior high school students' innovative ability, build a curriculum training system to cultivate junior high school students' innovative ability

Through the survey of junior high school students' innovation ability, according to the established evaluation index of junior high school students' innovative ability, we can understand the current situation of junior high school students' innovative ability, and combine the requirements of the core literacy of science disciplines, base on the relevant theories of school-based curriculum development, initially construct the curriculum training scheme, earnestly implement the "double reduction" policy, explore the ways of combining resources inside and outside the school through field research, formulate diversified curriculum resource construction plans, and combine the requirements of the core literacy of science disciplines to build a targeted curriculum training system for junior high school students' innovative ability<sup>[4]</sup>.

### **5.3. Exploring ways to combine internal and external resources, and formulating diversified curriculum resources construction plan**

In response to the problems of both content construction and external conditions creation in the middle school students' innovation ability curriculum itself, based on the development of creator education expansion area, create diversified innovation ability curriculum resource construction, improve the current situation of imperfect science education resources in school, take advantage of resources such as community, science and technology museums and scientific research institutions in colleges and universities to carry out education, explore ways and methods to combine with the in-school curriculum, make full use of resources outside school so as to establish We will explore ways and means to combine with the school curriculum and make full use of external resources to build up diversified curriculum resources for cultivating students' innovation ability<sup>[5]</sup>.

## **6. Conclusion**

Classroom teaching is the main channel for students to acquire knowledge, cultivate ability and form good quality. Classroom teaching under the policy of "double reduction" should focus on the core literacy of subjects, give more prominence to students' subjective participation and organize students to carry out in-depth study. At present, junior high school students have some shortcomings, such as weak sense of innovation, lack of innovation in thinking, weak knowledge base of innovation, and poor innovation achievements. Strengthening the cultivation of junior high school students' core literacy in science disciplines is conducive to improving their scientific spirit of active exploration and seeking truth from facts, and is also conducive to the cultivation of junior high school students' innovative ability, which is very beneficial to their future study and growth.

The cultivation of junior high school students' innovative ability has a great influence on people's life. It is an important duty of our educators to cultivate junior high school students' innovative consciousness and ability and actively guide them to become innovative talents. On the basis of literature analysis and field investigation, this paper puts forward an effective way to improve junior high school students' innovative ability, forms a developmental evaluation index system of junior high school students' innovative ability, formulates a diversified curriculum resource construction plan, and combines the requirements of core literacy of science disciplines to build a targeted curriculum training system to cultivate junior high school students' innovative ability. It is of great theoretical significance and practical value to explore the ways and methods of combining with the on-campus curriculum, effectively utilize off-campus resources to establish diversified curriculum resources to cultivate students' innovative ability, and further enhance junior high school students' innovative ability.

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