

Early Selection of Top Innovative Talents: Legislative Experience and Implications of Gifted Education in the United States

Yan Qin, Yinan Hou, Manli Xu, Zhengfeng Lü, Shuang Wu*

Taishan Nursing Vocational College, Taian, Shandong, China

*Corresponding Author

Abstract: The legislation of gifted education in the United States is a set of distinctive laws and regulations specifically formulated to cultivate and select top innovative talents across all educational stages—elementary, secondary, and higher education—nationwide. A historical review reveals that the legislative development of gifted education in the U.S. has progressed through several key phases: the foundational period, rapid development, gradual improvement, and comprehensive advancement. Throughout this legislative process, the U.S. has demonstrated a clear legislative philosophy, strengthened national-level legal guarantees, promoted coordinated strategies on gifted education, and established extensive support services. These characteristics—targeted strategies, continuous updates, and systemic refinement—constitute the valuable experience of U.S. gifted education legislation. Drawing on this experience, China's cultivation and selection of top innovative talents should seek to build a sound legislative philosophy, reinforce national legislation, formulate supporting strategies, mobilize multi-party support, ensure clear strategy orientation, and improve the institutional framework.

Keywords: Gifted Education; Legislative Experience; Top Innovative Talents; Cultivation and Selection

1. Introduction

With the increasingly fierce international competition, the cultivation and selection of top innovative talents have become strategic priorities in the educational development of many countries. The United States has consistently attached great importance to this endeavor. Guided by national development strategies, the U.S. has established a series of

laws and regulations to provide reliable legal guarantees and support for the cultivation and selection of top innovative talents. The legislation of gifted education in the United States stands as a valuable experience in this regard and offers practical reference for China's current efforts in cultivating and selecting top innovative talents.

2. A Historical Review of Gifted Education Legislation in the United States

A review of the development of gifted education legislation in the United States reveals a progressive and continuously improving trajectory, which can be divided into the following stages: the foundational period, the period of rapid development, the period of gradual improvement, and the period of comprehensive development.

2.1 The Foundational Period of Gifted Education Legislation in the United States (Late 19th Century to Early 20th Century)

Since gifted education legislation in the U.S. originated from the development of gifted education itself, the foundational period of such legislation is inherently tied to the early development of gifted education. The history of American gifted education can be traced back to 1868, when the St. Louis Public Schools issued the "St. Louis Plan," which proposed: "allowing students with exceptional talents to accelerate their learning and complete their studies in a shorter period of time"¹. In 1901, Massachusetts established the first school for gifted children in the United States. By 1920, most major cities in the country had developed gifted education programs. At the same time, numerous training institutions for gifted education emerged across the nation. Between 1921 and 1923, American psychologist Lewis Terman revised the Stanford-Binet Intelligence Scale, which sparked widespread interest in research on

high-IQ children in the U.S. For this reason, Terman is often referred to as "the father of gifted education in the United States." The vigorous development of early gifted education laid a solid foundation for subsequent legislative efforts.

2.2 The Period of Rapid Development (1950s to 1960s)

Following the devastation of World War II, especially in response to the Soviet Union's launch of the first artificial satellite, the U.S. became acutely aware of its lack of top-tier innovative talent compared to the Soviet Union. As a result, the expansion and strengthening of gifted education became an inevitable trend. Compared to any previous era, the United States placed greater emphasis on gifted education, enacting a series of legislative acts such as the National Science Foundation Act, the National Defense Education Act, and the Elementary Education Act ^[1] This marked the beginning of a rapid development period in gifted education legislation. The National Science Foundation Act, passed by Congress in 1950, stated: "Federal funding shall be provided to support research and education in mathematics, natural sciences, and engineering, to encourage talented students to complete secondary education and pursue higher education, from which outstanding individuals shall be selected. The National Science Foundation shall be established"^[2]. The National Science Foundation played a vital role in promoting education in science and engineering in the U.S. Its core philosophy was to ensure America's international competitiveness and to meet the educational needs of high-potential students.^[3] Although the act did not explicitly mention "gifted education," its principles aligned perfectly with those of gifted education, thus ushering in the rapid development of relevant legislation.

The 1958 National Defense Education Act stipulated: "It is necessary to promptly revise current programs to provide a limited number of individuals with education in science, mathematics, modern foreign languages, and technical training"^[4]. This act not only proposed the selection of gifted children but also clearly allocated funds to develop students' potential in science, mathematics, and foreign languages. Therefore, the 1958 National Defense Education Act marked the

strategic beginning of true emphasis on gifted education"^[5].

In 1965, Congress passed the Elementary and Secondary Education Act, which included a "gifted talent search" project and established a dedicated administrative body—the White House Task Force on the Gifted and Talented—to oversee and guide the development of gifted education.^[6] These legislative acts provided conceptual, financial, and programmatic support for the development of gifted education, marking the formal onset of its rapid legislative expansion.

2.3 The Period of Gradual Improvement (1970s to 1980s)

During the 1970s and 1980s, the U.S. essentially established a systematic framework for gifted education. The 1978 revision of the Elementary and Secondary Education Act incorporated the Gifted and Talented Children's Education Act, which acknowledged the importance of gifted children for societal and national development and emphasized attention to underrepresented gifted students. Additionally, the act specified expanded financial support for the special services required by gifted children, thereby providing legal backing for gifted education. In 1988, Congress passed the Javits Gifted and Talented Students Education Act, which emphasized that teachers should recognize the individual differences and unique characteristics of each student and provide personalized learning experiences based on their interests, abilities, and needs. It was "the only federal program specifically targeted at gifted students". These acts signified that legislation was beginning to focus on the needs of individual gifted students, further refining and improving the framework for gifted education in the United States.

2.4 The Period of Comprehensive Development (1990s to Present)

Although the U.S. federal government enacted legislation for gifted education, discrepancies in implementation at the state and local levels led to significant variability. In response, the U.S. made corresponding adjustments. For instance, in 1994, Congress revised the Javits Gifted and Talented Students Education Act, which provided "coordinated support for gifted research projects, demonstration projects,

innovative strategies, and similar activities to develop and strengthen students' capabilities in elementary and secondary schools"^[7].

The 2002 revision of the Elementary and Secondary Education Act, renamed the No Child Left Behind Act, aimed to help the lowest-performing students and promote equity in academic achievement^[8]. However, research found that "academic achievement gains for gifted students were minimal"^[9].

In 2008, the Bush administration enacted the Higher Education Opportunity Act, which emphasized improving teacher training for gifted children and enhancing the preparation of gifted education personnel. In 2015, the U.S. replaced the No Child Left Behind Act with the Every Student Succeeds Act. These developments all reflect the comprehensive development period of gifted education legislation in the United States^[10].

3. Experiences of Gifted Education Legislation in the United States

By reviewing the legislative history of gifted education in the United States as discussed above, Identify several valuable experiences: the presence of a clear legislative philosophy, the strengthening of federal legislative guarantees, the coordinated advancement of gifted education policies, the inclusion of multi-faceted support services, strong specificity, and continuous updates and improvements. These constitute the core of the United States' legislative experience in gifted education.

3.1 Clear Legislative Philosophy as Support

A philosophy guides action, and legislative philosophy determines the effectiveness of laws; it is a concentrated expression of legislative thinking and direction. In fact, the series of laws enacted for gifted education in the U.S. have all been supported by a clear legislative philosophy. Tracing back to their roots, all these laws were fundamentally aimed at ensuring the United States' international competitiveness. In other words, safeguarding America's global competitiveness has been the core legislative rationale behind all gifted education laws.

Although the National Science Foundation Act passed by Congress in 1950 explicitly introduced this core philosophy, the idea is not confined to that act alone. Subsequent laws

such as the National Defense Education Act, the Elementary and Secondary Education Act, the No Child Left Behind Act, and the Javits Gifted and Talented Students Education Act may differ in their legislative focus depending on the international context and domestic needs of the time, but their foundational philosophy remains unchanged. All were grounded in the belief that maintaining the nation's global edge was paramount. This idea is particularly evident in legislative initiatives such as the National Defense Education Act and the No Child Left Behind Act.

In summary, under the overarching philosophy of maintaining U.S. international competitiveness, the country has enacted a series of gifted education laws tailored to the realities of different times, thus providing reliable legal guarantees for the cultivation and selection of top-tier innovative talent. Therefore, having a clear legislative philosophy is one of the valuable experiences of gifted education legislation in the U.S.

3.2 Strengthening Federal Legislative Guarantees

A review of the legislative evolution in American gifted education reveals the valuable experience of reinforcing legal guarantees at the federal level. The National Science Foundation Act of 1950 already reflected this. Although not specifically designed for gifted education, the act's encouragement of talented students to complete secondary education, advance to higher education, and the selection of outstanding individuals laid the groundwork for gifted education legislation. Since it was enacted by Congress, it clearly showed a tradition of federal involvement from the beginning.

The 1958 National Defense Education Act was another example of this federal-level guarantee. It not only proposed identifying and educating gifted children but also allocated special funding to support the development of their abilities in science, mathematics, and foreign languages. The act was passed by Congress and named in the context of national defense, reinforcing its strategic importance. Similarly, the 1965 Elementary and Secondary Education Act demonstrated federal-level legislative commitment. It included a "talent search" initiative and established a dedicated administrative agency—the White House Task

Force on the Gifted and Talented. Again, being a Congressional act, it underscored the federal government's role. Other legislation, such as the Javits Gifted and Talented Students Education Act and the No Child Left Behind Act, were also enacted at the federal level. Thus, strengthening legal guarantees at the national level is a hallmark of the U.S. experience in gifted education legislation.

3.3 Inclusion of Multi-Faceted Support Services

A survey of the gifted education laws enacted in the United States reveals that they encompass a broad range of supportive services, including funding, programs, talent development, subject areas, and institutional structures. In terms of funding, the National Defense Education Act allocated special funds to support the development of children's potential; the Gifted and Talented Children's Education Act proposed expanded financial support for special services needed by gifted students; and the Gifted and Talented Students Assistance Act regulated funding in gifted education—all representing legal support related to financial resources.

In terms of programs, the Elementary and Secondary Education Act introduced the "talent search" initiative; the revised Javits Gifted and Talented Students Education Act included demonstration projects—both examples of legislative support for programmatic services. In terms of talent development, the Javits Act emphasized offering personalized learning experiences tailored to students' interests, abilities, and needs; the Higher Education Opportunity Act aimed to enhance the training of gifted education professionals—representing support for human resources development.

In terms of subject areas, the National Defense Education Act highlighted the importance of cultivating children's potential in science, mathematics, and foreign languages, reflecting the role of academic subjects in the legislation. In terms of institutional structures, the Elementary and Secondary Education Act established a dedicated gifted education management body—the White House Task Force on the Gifted and Talented—demonstrating institutional support in legislation. In conclusion, the integration of multi-faceted support services is a notable and

valuable experience in U.S. gifted education legislation.

3.4 Coordinated Advancement of Gifted Education Policies in the United States

An overview of the development of gifted education legislation in the United States reveals that the coordinated advancement of gifted education policies has also been a valuable legislative experience. To promote the enactment of gifted education laws, the U.S. government successively issued a series of related policy documents. For example, the Marland Report of 1972, based on a nationwide survey of the status of gifted education, led to strong federal support and encouragement for the planning of gifted education. At the same time, the federal government established institutions such as the Office of Gifted and Talented.

Moreover, the Gifted and Talented Children's Education Act passed by Congress in 1978, which called for tailored programs for children with special talents, was clearly influenced by the transformation in educational approaches proposed in the Marland Report. Similarly, the 1983 report *A Nation at Risk: The Imperative for Educational Reform* emphasized the need to develop policies and standards for gifted education, including academic benchmarks and advanced curricula for gifted students. These measures collectively contributed to the enactment of the Javits Gifted and Talented Students Education Act in 1988. In other words, related policy formulation directly triggered the passage of the Javits Act.

In fact, many of the gifted education laws in the U.S. were more or less influenced by prior policy initiatives. Furthermore, while these policies influenced legislative development, the feedback from the implementation of legislation, in turn, influenced subsequent policy formulation. This mutual influence demonstrates that gifted education legislation and related policy-making in the United States are in a state of coordinated advancement. Thus, coordinated policy development is a valuable experience in U.S. gifted education legislation.

3.5 Strong Specificity

A retrospective view of the series of gifted education laws enacted in the U.S. shows that another valuable experience lies in their strong

specificity. This feature can be seen as early as the 1950 National Science Foundation Act, which clearly supported research in mathematics, natural sciences, and engineering—an example of legislative specificity. Similarly, the 1958 National Defense Education Act specifically targeted education in science, mathematics, and modern foreign languages, again reflecting legislative specificity.

The 1965 Elementary and Secondary Education Act introduced the "talent search" initiative and the establishment of the White House Task Force on the Gifted and Talented—further examples of focused and targeted legislative content. The 1988 Javits Gifted and Talented Students Education Act specifically emphasized recognizing the individual differences among gifted children, further underscoring legislative specificity. In addition to these, many other gifted education laws in the U.S. also exhibit strong specificity. This shows that although the U.S. has enacted multiple gifted education laws over time, these laws are not homogenous but vary in focus and emphasis. The reason for this lies fundamentally in the national context and legislative priorities of each era. In other words, the legislative differences reflect the varying needs of gifted education across different stages of societal development in the United States.

At the same time, such specificity also demonstrates the scientific nature of U.S. gifted education legislation. Therefore, strong specificity is a valuable experience in the legislative practice of American gifted education.

3.6 Continuous Updating and Improvement

A comprehensive review of the history of gifted education legislation in the United States shows that continuous updating and improvement is a significant and valuable experience. This trait is evident not only throughout the entire legislative history but also in the revision of specific laws.

Looking at the legislative timeline as a whole, That the development of U.S. gifted education legislation can be broadly divided into four stages: the foundational period, the period of rapid development, the period of gradual improvement, and the period of comprehensive development. Although each phase had

different focal points, a review of the laws passed in each stage reveals that the characteristics of later periods were built on the foundations laid by earlier ones—reflecting a continuous process of enhancement.

From the perspective of specific legislation revisions, This in the 1978 amendment to the Elementary and Secondary Education Act, which added the Gifted and Talented Children's Education Act, or the 2002 revision of the Elementary and Secondary Education Act, renamed the No Child Left Behind Act. These revisions represent ongoing refinements based on existing legislative frameworks.

No law is ever permanently fixed; rather, it must be revised and updated in response to the evolving needs of the times in order to maintain its relevance and effectiveness. Therefore, continuous updating and improvement align with the requirements of adapting legislation to changing societal conditions. This makes the capacity for ongoing refinement another hallmark of U.S. gifted education legislation and a valuable experience worth learning from

4. Implications of U.S. Gifted Education Legislation for the Cultivation and Selection of Top Innovative Talents in China

Drawing lessons from the legislative experience of gifted education in the United States, the current efforts in cultivating and selecting top innovative talents in China should aim to: establish a clear legislative philosophy, strengthen national-level legislation, formulate supporting policies, seek multi-party support, ensure targeted legislative direction, and improve and refine relevant mechanisms.

4.1 Establishing a Legislative Philosophy

Inspired by the U.S. experience in forming legislation with a clear philosophical foundation, China should explore a guiding legislative philosophy for cultivating and selecting top innovative talents. The legislative philosophy serves as the driving force behind lawmaking activities. As the saying goes, "demand determines supply"^[10], and the need to cultivate and select top innovative talents essentially determines the orientation and content of relevant legislation. Therefore, the legislative philosophy must align with the current practical needs of talent development.

Fundamentally, the legislative push for top talent development arises from the urgent need to fully build Policy in China, which ultimately aims at realizing the great rejuvenation of the Chinese nation. In other words, the realization of national rejuvenation requires the legislative support for the cultivation and selection of exceptional talents.

As the overarching goal of all undertakings under Policy with, the rejuvenation of the Chinese nation can be integrated into every aspect of national development, including legislation. Consequently, this goal should organically merge with the legislative activities related to cultivating and selecting top talents. In conclusion, achieving the great rejuvenation of the Chinese nation should serve as the fundamental legislative philosophy for China's efforts in top talent development and selection.

4.2 Strengthening National Legislation

Drawing on the U.S. experience in reinforcing federal-level legislative guarantees, China should place emphasis on strengthening national legislation in this field. Although in 2022 several National People's Congress deputies jointly proposed the enactment of the Law on the Promotion of Top Innovative Talent Education, no such law has yet been officially promulgated and implemented. In other words, China currently lacks a specialized law dedicated to the education of top innovative talents. While the importance of such talent has gained widespread recognition in society, the importance of legislating their cultivation and selection has not received comparable attention.

Therefore, strengthening national legislation should begin with improving awareness through targeted media campaigns that inform government institutions and the public about the strategic necessity of legislating top talent development. Next, strategies for national legislation must be formulated. Once awareness is raised, relevant governmental agencies should evaluate the current national context and draw on U.S. experiences, while consulting with experts and frontline practitioners, to develop legislative strategies tailored to China's needs. Finally, such strategies should be implemented in practice. By applying these strategies in real legislative efforts, China can continuously reinforce national legislation and provide robust legal

support for the cultivation and selection of top innovative talents.

4.3 Seeking Multi-Party Support

Learning from the U.S. legislative experience of involving multi-faceted service support, China should seek multi-party support in its efforts to develop and select exceptional innovative talents. First, it is necessary to clarify why such support is needed. Although talent development appears to be an educational issue, it in fact involves various stakeholders, including the government, society, families, and schools. As the cultivation of top talents is crucial to national development and the future of the nation, it is imperative to mobilize support from multiple sectors. Second, it is important to determine what kind of support should be sought. This should be based on a precise analysis of the current needs in top talent development and selection. Drawing from the U.S. experience, this includes support in terms of funding, institutions, human resources, programs, and subject expertise. Lastly, support must be sought based on actual needs. Since different needs require different forms of support, strategies should be designed accordingly. Once this support is secured, it can significantly advance China's legislative efforts in this area, thereby providing a reliable legal foundation for the selection and training of top innovative talents.

4.4 Formulating Supporting Policies

Drawing from the U.S. experience in the coordinated advancement of gifted education policies alongside legislation, China should formulate supporting policies to accompany the cultivation and selection of top innovative talents.

First, it is essential to clarify which supporting policies need to be developed. The formulation of such policies is not only driven by the legislative development of specialized regulations on top innovative talents in China but also by the practical needs of supporting such talent cultivation and selection. Therefore, a thorough and accurate analysis of both the ongoing legislative efforts and the practical challenges of top talent cultivation should guide the identification of specific supporting policies. Second, select appropriate strategies for policy formulation. Different types of

supporting policies require different strategies, and even the same policy may need to be adapted based on differing personnel or institutional conditions. Thus, a comprehensive and precise analysis is necessary to determine the most suitable strategies for drafting these policies. Lastly, implement policy formulation based on strategic planning. The chosen strategies should be applied in practice, and as implementation is a dynamic process, the strategies themselves should be continuously adjusted to optimize the outcome. Once supporting policies that align with both legislative efforts and practical needs are developed, they will serve as strong drivers for the effective advancement of top innovative talent cultivation and selection in China.

4.5 Ensuring Clear Directionality

Inspired by the U.S. experience of targeted and specific gifted education legislation, China should ensure a clear and purposeful direction in the cultivation and selection of top innovative talents.

First, the importance of clear directionality must be recognized. Clear legislative and strategic direction is not only necessary to meet practical demands, but also essential for upholding scientific principles in talent development. More importantly, it is crucial for addressing the current challenges in China's talent development landscape. Although several policies have been issued across regions in China, analysis shows a high degree of uniformity and lack of differentiation among them. These policies mostly focus on higher education, with little mention of foundational education. This highlights the urgent need to clarify the directionality of top talent cultivation and selection efforts. Second, strategies for achieving clear directionality must be explored. Talent cultivation is a systematic and holistic process in which schools and relevant institutions are integral components. To achieve clear directionality, each entity must identify its specific role and mission within the larger system. By discovering unique approaches to contribute to talent development, stakeholders can formulate targeted strategies that reflect their specific strengths.

Finally, such strategies should be applied to define clear institutional roles. Implementing these strategies will help clarify the positioning

of each school or institution within the overall system, enabling them to highlight their distinct contributions to the cultivation and selection of top talents. This practical implementation marks the achievement of true and effective directionality.

4.6 Improving and Refining Mechanisms

Drawing from the U.S. experience of continuous legislative updates and improvements, China should focus on improving and refining mechanisms for the cultivation and selection of top innovative talents.

First, the importance of mechanism refinement should be fully recognized. The development of top talents is not a one-time task but a long-term and complex systemic project. Given its systematic nature, talent development requires integrated thinking and continuous improvement in practice. Moreover, as China is still in the early stages of establishing robust systems for cultivating top talents, it is even more important to prioritize mechanism building.

There should be clarity on which mechanisms need improvement. Talent development is inherently future-oriented. Therefore, the refinement of mechanisms should not only be grounded in current needs but should also consider future national strategies. This requires balancing realistic, step-by-step implementation ("looking down at our feet") with strategic foresight ("gazing at the stars"), in order to identify the mechanisms that must be improved.

Mechanisms should be improved based on identified needs. Once the necessary mechanisms are defined, suitable strategies should be explored and implemented based on current conditions. As both mechanisms and the target groups they serve are dynamic and subject to change, it is crucial to update and improve systems continuously. Only through this process can China achieve the ideal outcomes in cultivating and selecting its top innovative talents.

5. Conclusion

Gifted education legislation not only reflects the United States' emphasis on cultivating and selecting top innovative talents, but also serves as a key reason why the country continues to lead the world in scientific research and

innovation. This paper has reviewed the historical development and legislative experiences of gifted education in the United States and, based on this foundation, proposed several implications for China's current efforts in cultivating and selecting top-tier innovative talents. By drawing on the legislative experience of the U.S., and by placing greater emphasis on talent development across all educational stages, while reinforcing national legislative safeguards, China will be better positioned to promote the cultivation and selection of exceptional talents. Ultimately, these efforts will contribute not only to the advancement of construction, but also to the realization of the great rejuvenation of the Chinese nation.

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