

Research on the dynamic mechanism and practical strategy of young scientists and technicians to carry forward the spirit of scientists

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Abstract

This paper deeply discusses the connotation and value of the spirit of scientists, including its definition, composition and its important role in the cause of science and technology. The spirit of scientists has been refined into patriotism spirit, innovation spirit, realistic spirit, dedication spirit, collaborative spirit and education spirit and other aspects, which are the inexhaustible driving force for the development of science and technology. This paper further analyzes the dynamic mechanism of young scientists and scientists to carry forward the spirit of scientists, including the internal dynamic factors and external factors such as national policy, social atmosphere and teamwork, and discusses the discussion on the comprehensive effect of the dynamic mechanism. Based on these analyses, the paper puts forward practical strategies for young scientists to promote the spirit of scientists, such as strengthening education and training, setting examples and examples, providing resources and support, and promoting exchanges and cooperation. Finally, the paper summarizes the research conclusions and prospects the future research directions.

Keywords

Scientist spirit; young scientific and technological personnel; dynamic mechanism; practice strategy; science and technology career

1. Foreword

The spirit of scientists is the precious spiritual wealth in the long-term practice of scientific and technological workers, which is crucial to the progress of science and technology and talent training. It encourages scientific and technological workers to climb new heights, such as the "two bombs and one Star" Yuan Xun, Yuan Longping, Nan Rendong, Tu Youyou and others have all made great achievements. At the same time, the spirit of scientists provides the correct value orientation for scientific and technological talents, and is the key in the national development strategy. As the main force of scientific and technological innovation, young scientific and technological personnel are active in thinking, creative, sensitive to emerging technologies,

and are an important force to promote the development of science and technology. Young scientific and technological breakthroughs have been made in the fields of artificial intelligence, big data and aerospace. Their innovative vitality and creativity have injected new impetus into the development of science and technology, and are also related to the future of national science and technology. Promoting the spirit of scientists is of great significance to personal growth, scientific and technological development and national progress. It can help young people to establish correct professional values and life goals, overcome scientific research difficulties, promote the sustainable development of science and technology innovation, stimulate innovation potential and ensure the quality of innovation; and also realize the strategic goal of national science and technology power.

2. The connotation and value of the scientist spirit

2.1. The Definition and composition of the scientist's spirit

The spirit of scientists is a precious spiritual wealth formed by scientific and technological workers in the long-term scientific practice. It covers many aspects of patriotism, innovation, pragmatism, dedication, coordination, education and other aspects, and is a powerful spiritual driving force to promote scientific and technological progress and social development. This spirit not only reflects the love and pursuit of science, but also reflects their responsibility and responsibility to the country and society.

2.1.1 Patriotism: mind the motherland, to serve the people

Patriotism is the core and soul of the spirit of scientists, and is the concentrated embodiment of the deep feelings of scientists to the motherland. It inspires scientists and scientists to closely link their personal pursuit of scientific research with the development needs of the country, and contribute to the realization of the prosperity of the country and the great rejuvenation of the nation. Qian Xuesen is an outstanding representative of patriotism. He went to the United States to study in the 1930s. With his outstanding academic ability, he made remarkable achievements in the field of aerospace and became a world-renowned aerodynamicist and rocket expert. However, when the news of the founding of new China came, Qian Xuesen resolutely gave up the favorable treatment and superior scientific research conditions in the United States, broke through the heavy resistance, and returned to the embrace of the motherland. He is well aware that the space industry of China has just started, and he is in urgent need of professionals like him. He wants to use what he has learned to lay the foundation for the space industry of the motherland. After returning to China, Qian Xuesen devoted himself to scientific research work, led the team to overcome a series of key technical problems, made indelible contributions to the development of China's "two bombs and one star" cause, made a major breakthrough in the field of national defense science and technology, and greatly enhanced the country's international status and national defense strength.

In the new era, patriotism is still an important cornerstone of the spirit of scientists. With the continuous improvement of China's comprehensive national strength, the strategic position of science and technology in the national development has become increasingly prominent. Young scientific and technological personnel should be deeply aware of their historical mission and integrate their personal career ideals into the national science and technology development strategy. In the face of scientific research problems, we should put national interests first, brave difficulties and obstacles, and have the courage to take responsibility. In some key core technology areas, such as chip research and development and artificial intelligence, young scientific and technological personnel should dare to challenge foreign technology blockade, actively carry out independent innovation research, strive to achieve technological breakthroughs, and contribute to the country's scientific and technological security and economic security. At the same time, young scientific and technological personnel should also pay attention to the social development needs of the country, apply scientific research results to solve people's livelihood problems, such as in medical and health care, environmental protection, agricultural development and other fields, improve people's quality of life through scientific and technological innovation, and strive to realize the people's yearning for a better life.

2.1.2 Innovative spirit: scaling new heights, dare to be the first

The spirit of innovation is the core driving force to promote the development of scientific research and science and technology. It inspires scientific and technological workers to constantly break through the shackles of traditional thinking, have the courage to explore unknown fields and pursue outstanding scientific research achievements. Yuan Longping was committed to the research of hybrid rice. Facing the severe problems of low rice yield and grain shortage at that time, he dared to question the traditional theory and put forward the innovative idea of hybrid rice. In the process of scientific research, Yuan Longping has encountered numerous failures and setbacks, but he has always maintained the dedication to science and the pursuit of innovation, and constantly tried new experimental methods and technical routes. After years of unremitting efforts, he has successfully cultivated high-yield hybrid rice varieties, which has greatly increased the rice yield in China, not only solved the problem of food and clothing for hundreds of millions of people in China, but also made great contributions to the global food security.

Tu Youyou also showed an extraordinary spirit of innovation in her research on artemisinin. At that time, the global malaria epidemic was severe, the effect of traditional antimalarial drugs gradually weakened, and the development of new antimalarial drugs was imminent. Tu Youyou sought inspiration from traditional Chinese medicine and consulted a large number of ancient medical books and folk prescriptions. After repeated experiments and screening, she finally discovered artemisinin, providing an effective solution for global malaria prevention and control. This achievement has not only saved countless lives, but also opened up a new path for

the modernization of TCM.

In today's era, scientific and technological innovation has become the core element of international competition. Young scientific and technological personnel should have a strong sense of innovation, dare to break through conventions, and have the courage to try new scientific research ideas and methods. In the scientific research work, we should actively pay close attention to the frontier trends of international science and technology, constantly broaden our knowledge and vision, cross-integrate the knowledge and technology of different disciplines, and stimulate innovation inspiration. At the same time, young scientific and technological personnel should also have the courage to face failure. In the process of innovation, it is inevitable to encounter failures and setbacks. They should be able to learn lessons from failure, sum up experience, constantly adjust the research direction and methods, and unswervingly pursue innovation goals. For example, in the field of artificial intelligence, young scientific and technological personnel can explore new application scenarios and algorithm models and promote the innovative development of artificial intelligence technology; In the field of new energy, young scientific and technological personnel can carry out research and development of new energy materials and explore more efficient and environmentally friendly energy utilization methods to contribute to the response to global climate change.

2.1.3 Truth-seeking spirit: the pursuit of truth, rigorous scholarship

The spirit of realism is the cornerstone of scientific research, which requires scientific and technological workers to respect objective facts, pursue truth, treat scientific research work with a rigorous attitude, and ensure the accuracy and reliability of scientific research results. In scientific research, every data and every experimental result is related to the correctness of scientific research conclusions. Therefore, scientific and technological workers must uphold the spirit of pragmatism and carry out research meticulously.

In the field of astronomy, scientists need extremely high precision and rigor in the observation and study of celestial bodies. To accurately measure the position, trajectories and physical parameters of celestial objects, they need to use advanced telescopes and observation equipment and careful analysis and processing of observational data. Any small error can lead to a wrong understanding of celestial phenomena, so astronomers will repeatedly verify and compare each data in the process of research to ensure the accuracy of the data. For example, in the study of galaxy evolution, scientists have analyzed a large number of galaxies and found some phenomena that are inconsistent with traditional theories. In order to explore the reasons behind these phenomena, they studied in depth, constantly improved the observation methods and data analysis models, and finally put forward new theories and viewpoints, which promoted the development of astronomy.

In medical research, the spirit of pragmatism is also crucial. The development of new drugs requires a lot of experimental and clinical trials to ensure the safety and

effectiveness of drugs. In the process of experiments, medical researchers should strictly control the experimental conditions, accurately record the experimental data, and conduct objective analysis of the experimental results. Any false data or lax experimental manipulation may lead to serious consequences and even endanger the life and health of patients. For example, during the development of a cancer drug, researchers tracked the efficacy and safety. In clinical trials, they operate in strict accordance with scientific standards and procedures, and make detailed records of patients' disease changes and drug reactions. After years of efforts, the cancer drug has finally been successfully on the market, bringing new hope for cancer patients. Young scientific and technological personnel should always adhere to the realistic spirit and establish correct scientific research values. In the process of experimental design and data collection, the scientific norms should be strictly followed to ensure the repeatability of the experiments and the authenticity of the data. In the analysis and interpretation of the experimental results, we should be objective and fair, do not exaggerate or conceal, and treat the scientific research work with a realistic attitude. At the same time, young scientific and technological personnel should also actively participate in academic exchanges and discussions, accept others' opinions and suggestions with an open mind, and constantly improve their own research results. Only by upholding the spirit of pragmatism can we make real achievements on the road of scientific research and contribute our own strength to promote the development of science and technology.

2.1.4 Dedication: indifferent to fame and wealth, research with great concentration

The spirit of dedication is an important embodiment of the spirit of scientists, which shows the noble quality of scientific and technological workers paying silently for the scientific cause, regardless of personal gains and losses. On the road of scientific research, scientists often need to invest a lot of time and energy, to face all kinds of difficulties and challenges, and even have to give up personal fame and wealth and enjoyment. With their love for science and the pursuit of truth, they devote themselves to research, and contribute their wisdom and strength to promote the progress of science and technology and social development.

Nan Rendong, the main initiator and founder of the "Sky Eye", devoted his life to the scientific research in order to build a large radio telescope belonging to China. He gave up the generous treatment and comfortable life abroad and resolutely returned to China to devote himself to the construction of "the eye". In the process of project preparation and construction, Nan Rendong faced many difficulties, such as shortage of funds, technical problems, site selection and so on. But he never gave up, rushed around to raise funds, personally participated in the site selection and design work, and led the team to overcome one technical difficulty after another. After 22 years of unremitting efforts, the "Sky Eye" has finally been built and put into use, making China at the forefront of the world in the field of radio astronomy. Nan

Rendong has interpreted the connotation of the spirit of dedication with his whole life, and his deeds have inspired countless scientific and technological workers to make unremitting efforts for the cause of science.

In the field of scientific research, there are many other silently dedicated scientists like Nan Rendong. They work hard in their field without expecting for return. They may spend countless days and nights in the laboratory, may keep working in the difficult research conditions, or may give up the chance to reunite with their families for a research project. But they always stick to their original scientific research aspiration, in order to achieve scientific breakthroughs and technological innovation, willing to dedicate everything. For example, in some areas of basic scientific research, it may take a long time to emerge, and researchers need to endure loneliness, sit on the bench and concentrate on research. They do not care about personal fame and gain, only in the pursuit of scientific truth, to add new wealth to the treasure house of human knowledge.

Young scientists and technological personnel should learn and inherit this spirit of dedication and establish correct values and fame. In scientific research work, we should attach great importance to scientific undertakings, and devote ourselves to scientific research work without temptation by material interests. We should have the courage to undertake scientific research tasks, not be afraid of hardship, not be afraid of difficulties, and exercise ourselves in the difficult scientific research environment. At the same time, the young scientific and technological personnel should also cultivate the team spirit, support and cooperate with the team members, and work together to achieve the scientific research goals. Only with the spirit of dedication can we go further on the road of scientific research and make greater contributions to promoting scientific and technological progress and social development.

2.1.5 Spirit of coordination: gather wisdom to tackle key problems, unity and cooperation

Collaborative spirit plays a pivotal role in modern scientific research, and it is the key factor to realize the breakthrough of complex scientific research projects. With the continuous development of science and technology, scientific research projects are increasingly complex, involving multiple disciplines and professional directions. It requires the participation and cooperation of scientific and technological workers in different fields to overcome difficult problems and achieve innovative results.

The Chang 'e-5 mission is a major project in China's space field, and its successful implementation fully demonstrates the importance of the spirit of coordination. The Chang'e-5 mission involves multiple systems, including orbit design, aircraft manufacturing, measurement, control and communication, and ground application, which requires the close cooperation of many scientific research institutions and scientists. From the development of the probe to the launch, from the sampling of the lunar surface to the return to the Earth, every link is inseparable from the cooperation of various teams. For example, in the orbit design team, the researchers need to accu-

rately calculate the flight orbit of the probe to ensure that it can accurately reach the moon and return safely; the aircraft manufacturing team should ensure that the performance indicators of the probe meet the requirements and have the ability to work in a complex space environment; the measurement and control communication team is responsible for tracking the flight status of the probe in real time, ensuring the smooth communication to adjust the flight parameters; and the ground application team focuses on analyzing the returned lunar samples and exploring the scientific value. These teams cooperated closely with each other to form an efficient scientific research whole, which jointly promoted the complete success of the Chang'e-5 mission.

In the medical field, the research and treatment of some complex diseases are also inseparable from the spirit of synergy. For example, in the study of cancer, experts from multiple disciplines, including medicine, biology, chemistry and physics, are needed. Medical experts are responsible for the development of clinical diagnosis and treatment plans, biological experts study the growth and metastasis mechanism of cancer cells, chemical experts develop new anticancer drugs, and physics experts use advanced imaging and radiotherapy technologies to support the diagnosis and treatment of cancer. Through interdisciplinary cooperation, experts from various disciplines share their professional knowledge and research results, and jointly explore the pathogenesis and treatment methods of cancer, so as to contribute to improving the treatment effect of cancer.

Young scientific and technological personnel should actively cultivate the spirit of coordination and learn to cooperate with people from different backgrounds. In the scientific research team, we should respect the opinions and suggestions of others, give full play to our professional advantages, and contribute to the development of the team. At the same time, young scientific and technological personnel should strengthen interdisciplinary learning, broaden their knowledge, improve their comprehensive quality, so as to better adapt to the needs of collaborative innovation. By participating in collaborative innovation projects, young scientific and technological personnel can learn the thinking mode and research methods of different disciplines, improve their innovation ability and the ability to solve practical problems, and contribute their wisdom and strength to the promotion of scientific and technological progress and social development.

2.1.6 Educational spirit: willing to be a ladder, learn after learning

The spirit of education is an important part of the spirit of scientists, which reflects the care and cultivation of the older generation of scientists to the younger generation, and the high sense of responsibility for the inheritance of scientific research. Scientists are well aware that the sustainable development of scientific research cannot be separated from the cultivation of excellent talents, so they are willing to act as a ladder to provide support and help for the growth of the younger generation and encourage them to move forward on the road of scientific research.

Yuan Longping is not only an outstanding agricultural scientist, but also an excellent educator. While he has made great achievements in hybrid rice research, he is always concerned about talent cultivation. He was well aware that the development of hybrid rice needs a steady stream of new forces, so he actively devoted himself to the cause of education and personally guided students to conduct scientific research and practice. His students are all over the country, and many have become the backbone of the hybrid rice field. They continue to strive to realize the "dream of" enjoying the cool under the grain "and the" global dream of hybrid rice covering the world ". Yuan Longping pays attention to cultivating students' practical ability and innovative spirit. He often leads students to go deep into the fields to personally demonstrate rice planting and research methods, so that students can accumulate experience in practice and improve their ability to solve practical problems. He also encouraged students to innovate and explore new research directions, and inject new vitality into the development of hybrid rice.

In the scientific research team, the spirit of education is also reflected in the role of old scientists in guiding young researchers. With their rich scientific research experience and profound academic attainments, old scientists provide guidance and advice to young researchers. They will patiently answer young researchers' problems with young researchers in the process of research, help them analyze experimental data, guide them to write papers, and guide them to establish correct research values. At the same time, senior scientists will also provide opportunities for young researchers to show their talents and recommend them to attend academic conferences and research projects to help them grow in the research field as soon as possible.

Young scientists and technicians should cherish the learning opportunities provided by the older generation of scientists and learn from them humbly. In the communication with the older generation of scientists, we should not only learn their professional knowledge and scientific research skills, but also learn their scientific research spirit and attitude towards research. At the same time, young scientific and technological personnel should also establish a sense of education. When they have certain scientific research ability and experience, they should actively care for and help young researchers, and contribute their own strength to the inheritance and development of scientific research. Only through the joint efforts of generation after generation of scientists, can we cultivate more outstanding scientific and technological talents and promote the continuous development of scientific research.

2.2 The role of the spirit of scientists in science and technology

The spirit of scientists plays a vital role in the cause of science and technology. It is not only a source of power to encourage scientific and technological workers to climb the peak of science and technology, but also a solid guarantee for promoting the sustainable and healthy development of science and technology, and a key force to enhance the national scientific and technological competitiveness and interna-

tional influence.

The spirit of scientists is like a lighthouse, illuminating the way for scientific and technological workers to explore the unknown. Take Nan Rendong and Tu Youyou, for example, they demonstrated the powerful power of the scientist spirit in the construction of the Heavenly eye in China and the research of artemisinin respectively. Nan Rendong is faced with multiple challenges such as shortage of funds, technical problems and difficulties in location selection. However, with his love and persistent pursuit of science, he led the team to overcome many difficulties and finally built the remarkable Sky Eye of China. Under difficult experiments, Tu Youyou persevered in studying artemisinin, providing an effective solution for global malaria control, and won the Nobel Prize in Physiology or Medicine. The stories of these scientists tell us that the spirit of scientists can inspire scientific and technological workers to maintain a firm faith and unyielding will in the face of difficulties and challenges, constantly pursue excellence, and make contributions to promote the development of science and technology.

The spirit of scientists has many positive effects on the sustainable and healthy development of science and technology. In the training of scientific and technological personnel, it is like a beacon, guiding the direction of progress for young scientific and technological talents. Yuan Longping devoted his life to the research of hybrid rice. His selfless dedication deeply infected countless young students and inspired their enthusiasm to devote themselves to agricultural scientific research. At the same time, the spirit of scientists pays attention to cultivating the innovative ability and scientific literacy of young scientific and technological talents, and encourages them to dare to break through the shackles of traditional thinking and have the courage to try new research methods and technical routes. In the aspect of scientific research team building, the spirit of scientists is the core of gathering team strength. It emphasizes the close cooperation and mutual support among team members, such as the success of the Chang'e-5 mission, thanks to the collaboration between various research teams. In addition, the dedication advocated by the spirit of scientists also provides a guarantee for the stable development of the scientific research team.

The spirit of scientists plays an important leading role in the creation of an environment for scientific and technological innovation. A social environment advocating the spirit of scientists can stimulate the innovation vitality of the whole society and create a good atmosphere of respecting knowledge and talents. When the spirit of scientists is widely promoted, people's respect for and recognition of scientific research will constantly increase, so as to attract more talents to devote themselves to the cause of science and technology. At the same time, this environment can also promote the rational allocation of scientific research resources and provide strong support for scientific and technological innovation.

The spirit of scientists is also an important force to enhance China's scientific and

technological competitiveness and international influence. In the field of space, China's space industry has made remarkable achievements, which is inseparable from the guidance of the spirit of scientists. From the Shenzhou manned spacecraft to the Chang'e lunar probes, China's space science and technology workers have overcome a series of difficulties and overcome a series of key technological problems, showing the country's strength and style on the international science and technology stage. In the field of 5G communication technology, China has also achieved a leading position, which is also inspired by the spirit of scientists. Driven by the spirit of innovation, China's communication scientists have actively carried out the research and development of 5G technology, and achieved a series of innovative achievements, which have promoted the development of domestic digital economy and made important contributions to the progress of global communication technology.

3. The driving mechanism for young scientists and technicians to promote the spirit of scientists

3.1 Intrinsic dynamic factors

In the process of carrying forward the spirit of scientists, young scientists and technicians are driven by a variety of internal motivation, among which their personal ideal and career pursuit, love and persistence for the scientific cause, as well as the recognition and inheritance of the spirit of scientists are particularly key factors.

Personal ideal and career pursuit are an important beacon for young scientific and technological personnel to move forward. Many young scientists and technicians have been curious about science since childhood, with the dream of exploring the unknown and pursuing the truth. While growing up, they gradually defined their career direction, and closely combined their personal ideals with the development of national science and technology. Take Li Wenhao, captain of the "Qian Xuesen Science and Technology Youth Commando" at the Institute of Mechanics of the Chinese Academy of Sciences, as an example. He was deeply influenced by Qian Xuesen and other older generation of scientists and was determined to devote himself to the space industry. In the development mission of "MingDi" wide-field aircraft, he led the team members to overcome difficulties, developed rapid iterative methods, broke through a number of key technologies, and demonstrated the persistent pursuit of young scientists' personal ideals and a high sense of responsibility for their careers.

Hunan Suke intelligent Technology Co., LTD. General manager Deng Yiqi is also a typical representative. With the ideal of protecting public security with digital intelligence, he resolutely returned to China to start his own business. His team is committed to serving public security through big data and artificial intelligence, and has developed innovative products such as "virtual ruler", and achieved remarkable results in emergency response, security and other fields. Deng Yiqi's success stems from his adherence to his personal ideal and his unremit-

ting pursuit of his career. This internal motivation prompted him to constantly break through himself on the road of scientific and technological innovation.

The love and persistence of science is the powerful driving source for young scientific and technological personnel to overcome many difficulties and pursue scientific truth. The story of Chen Liang, vice president of the Beijing Institute of Geology for China National Nuclear Corporation, is clear evidence. His "Beishan Man" research team is rooted in the Gobi and is committed to the safe disposal of high-level radioactive waste. Although the working environment is extremely difficult, they have adhered to science for more than ten years, undertaken a number of major national scientific research projects, and achieved remarkable results.

Zhu Tong, an academican of the Chinese Academy of Sciences, also showed his infinite love and dedication to science. He has repeatedly went to the extremely high altitude areas of Mount Qomolangma for comprehensive scientific research, using his own body as the experimental object, to explore the impact of altitude sickness on the human body. This spirit of having the courage to challenge the limit and exploring the unknown in the difficult environment has made important contributions to the development of environmental science.

In addition to personal ideals and love, the identification and inheritance of the spirit of scientists is also an important internal motivation for young scientists and technicians to carry forward the spirit of scientists. This sense of recognition and inheritance enables them to internalize the spirit of scientists into their own values and codes of conduct. Mu Yongqi, the main shield driver of China Railway Tunnel Bureau Tunnel Co., Ltd., is deeply influenced by his grandfather Cheng-Kunming railway spirit, and has inherited the spiritual quality of the older generation of scientists. He has made extraordinary achievements in the ordinary post, became an excellent main shield tunneling driver, and contributed his own strength to the national infrastructure construction.

In the scientific research team, the recognition and inheritance of the spirit of scientists is also reflected in the construction of the team culture. The "Qian Xuesen Youth Commando" of the Institute of Mechanics of the Chinese Academy of Sciences is named after Qian Xuesen and other older scientists, which represents the inheritance and promotion of the spirit of scientists by the new generation of researchers. In their scientific research work, the team members always follow the example of the older generation of scientists and learn from their patriotism, innovation spirit and collaboration spirit. In the development mission of "MingDi" wide-field aircraft, the team members faced doubts and technical problems. Through teamwork and intellectual gathering, they not only improved their scientific research ability, but also inherited and carried forward the spirit of coordination in the spirit of scientists.

The recognition and inheritance of young scientists and scientists are also reflected in their sense of responsibility and mission for scientific research. They are well

aware that they shoulder the responsibility of promoting scientific and technological progress and serving the country and society, so they always uphold a rigorous academic attitude towards learning, pursue truth and have the courage to innovate. They take an active part in scientific research projects, strive to overcome key technical problems, and contribute their wisdom and strength to solving major problems facing the country and society.

To sum up, personal ideal and career pursuit, love and persistence for the scientific cause, as well as the recognition and inheritance of the spirit of scientists, together constitute the internal power system for young scientists and technicians to carry forward the spirit of scientists. These internal impetus not only promote their personal growth and development, but also inject new vitality into the country's scientific and technological cause.

3.2 The impact of national policies, social atmosphere and teamwork on young scientific and technological personnel

Young scientific and technological personnel are the main force of scientific and technological innovation, and their motivation to carry forward the spirit of scientists comes from many aspects, among which national policy and system support, social atmosphere and cultural environment, teamwork and collective honor play a crucial role.

National policy and institutional support has provided a strong external impetus for young scientific and technological personnel. In recent years, the state has introduced a series of policies to encourage scientific and technological innovation, aiming at stimulating the innovation vitality of young scientific and technological personnel. In terms of funding for scientific research projects, the National Natural Science Foundation of China has set up a youth Science Foundation project to provide stable scientific research funding support for young scientific and technological personnel. These grants enabled them to explore and pursue the truth. At the same time, the state has also implemented a series of talent training programs, such as the National Special Support Program for High-level Talents (Ten Thousand Talents Plan), which provides a broad platform for the growth of young scientific and technological personnel. Young scientific and technological personnel selected for the program can not only receive generous research funds and living allowances, but also participate in high-level academic exchanges at home and abroad, and cooperate with top scientists, which greatly improves their research level and international influence. In addition, the reform of the scientific research evaluation system also guides young scientific and technological personnel to establish correct scientific research values and encourage them to innovate and pursue excellence. The implementation of these policies and measures has stimulated the innovative vitality and enthusiasm of young scientific and technological personnel.

Social atmosphere and cultural environment have a profound impact on young scientific and technological personnel. A social atmosphere that respects science and

advocates innovation can make young scientific and technological personnel feel the value and significance of their own work, so as to enhance their sense of identity and sense of belonging to the scientific research career. The media have widely publicized the advanced deeds of scientists, such as CCTV's "Everybody" column, which tells the life stories and scientific research process of scientists, creating a strong atmosphere of learning the spirit of scientists and inspiring countless young scientists to devote themselves to scientific research. At the same time, the science popularization activities have also stimulated the public's interest in and love for science, and created a good social environment for young scientific and technological personnel. In the research team, an open and inclusive academic atmosphere can promote the communication and cooperation among members and stimulate innovative thinking. Scientific research institutions attach great importance to scientific research integrity and academic ethics, which sets up correct values for young scientific and technological personnel, so that they can consciously abide by academic norms and treat scientific research work with a rigorous attitude.

Team cooperation and collective honor are also an important external motivation to inspire young scientific and technological personnel to carry forward the spirit of scientists. Research projects are often complex and comprehensive, and require the cooperation of people from different professional backgrounds to complete them. In the process of team cooperation, the young scientific and technological personnel can give full play to their professional advantages, learn from and support each other with the team members, and jointly solve the scientific research problems. Taking the Chang'e-5 mission as an example, many scientific research teams and professionals work closely together to achieve the goal of returning lunar samples. Young scientific and technological personnel undertake important tasks in their respective teams, and they contribute to the smooth progress of the project, but also form a strong sense of collective honor in the process. This sense of collective honor not only enhances the cohesion and centripetal force of the team, but also stimulates the pride and responsibility of young scientific and technological personnel.

Teamwork can also promote knowledge sharing and the generation of innovation. In the process of cooperation, young scientific and technological personnel from different professional backgrounds can learn from each other and inspire each other to broaden their knowledge and vision. This sharing of knowledge helps to generate new research ideas and methods, solve complex scientific research problems, and improve the comprehensive quality and innovation ability of young scientific and technological personnel. At the same time, teamwork can also cultivate the communication, coordination and leadership skills of young scientists. In teamwork, young scientists need to conduct effective communication and coordination with their team members to ensure the smooth progress of the project. Some young scientists may also serve as team leaders or project backbone, providing them with opportunities to develop their leadership skills.

To sum up, national policy and institutional support, social atmosphere and cultural environment, as well as teamwork and collective honor together constitute an important external driving force for young scientific and technological personnel to carry forward the spirit of scientists. These factors interact with each other to promote young scientific and technological personnel to move forward on the road of scientific research and make greater contributions to the country's scientific and technological progress and innovation cause.

3.3 Comprehensive analysis of the dynamical mechanism

3.3.1 Interplay between intrinsic dynamics and extrinsic dynamics

Internal power and external power play a vital role in the process of carrying forward the spirit of young scientists. They interweave and promote each other, and together constitute a powerful power system.

Internal motivation is the inner source of young scientists, which comes from the love of science, the pursuit of personal ideals and the recognition of the spirit of scientists. This motivation has durability and stability, and can encourage young scientific and technological personnel to go forward bravely on the road of scientific research, and maintain firm faith and unyielding will in the face of difficulties and challenges. The love of science enables young scientists to devote themselves to scientific research and work, even under difficult conditions; personal ideal and professional pursuit encourage them to continuously improve their scientific research ability and level, and the recognition of scientist spirit enables them to adhere to the bottom line of scientific research ethics and practice the spirit of scientists.

External motivation provides strong support and guarantee for young scientific and technological personnel, including national policy and system support, social atmosphere and cultural environment, and teamwork and collective honor. National policies and institutional support provide a good development environment and opportunities for young scientific and technological personnel, such as scientific research project funding, talent training programs, etc. These policies and measures can stimulate their enthusiasm for scientific research and provide necessary resources and conditions for scientific research work. The impact of social atmosphere and cultural environment on young scientific and technological personnel cannot be ignored. A social atmosphere that respects science and advocates innovation can enhance their professional identity and pride, and encourage them to work harder. A good scientific research and cultural environment can promote academic exchanges and cooperation, and stimulate the collision of innovative thinking. Team cooperation and collective honor are also an important part of the external motivation. Through team cooperation, young scientific and technological personnel can jointly solve problems and achieve the team goals, so as to obtain the collective sense of honor and achievement. This collective sense of honor and achievement

further stimulates their enthusiasm for scientific research and innovation motivation.

Intrinsic and external dynamics interact to form a virtuous cycle. Internal motivation encourages young scientific and technological personnel to actively respond to the incentive of external motivation, make full use of various external conditions, and constantly improve their scientific research ability and level. The effective play of the external motivation can further stimulate the internal motivation of young scientific and technological personnel, so that they can more firmly pursue their own scientific research ideals, and deeply practice the spirit of scientists. For example, the national emphasis and support for young scientific and technological talents provides more development opportunities and resources for young scientists, which enhances their love for scientific research and recognition of the spirit of scientists; and the achievements and contributions of young scientists in scientific research will further affect the social atmosphere and encourage more young people to devote themselves to science and technology.

In the institute of mechanics, Chinese Academy of Sciences "Qian Xuesen technology research youth team" as an example, the love of aerospace team members and the spirit of scientists is the internal power, and the national support for scientific research projects, Chinese Academy of Sciences mechanics good research atmosphere and team internal cooperation and collective sense of honor is external power. The interaction between this internal power and the external power enables the team to constantly break through the technical problems and achieve a series of important scientific research achievements.

3.3.2 The role path of dynamic mechanism in the growth of young scientific and technological personnel

The dynamic mechanism plays a key role in the growth process of young scientific and technological personnel, and its action path can be clearly presented by constructing the action path model of the dynamic mechanism.

In this model, intrinsic motivation and external motivation, as input factors, work together on the growth process of young scientists. The internal motivation urges young scientific and technological personnel to set up clear scientific research goals, closely combine their personal growth with the development of national science and technology, and strive for the realization of scientific research ideals. At the same time, their love and persistence for the scientific cause enable them to maintain a high degree of enthusiasm and concentration on the road of scientific research, and their recognition and inheritance of the scientist spirit make them follow the requirements of the scientist spirit, and cultivate a rigorous academic attitude and good scientific research ethics.

Extrinsic motivation provides a good development environment and resource guarantee for young scientific and technological personnel. National policy and institutional support Through increasing investment in scientific research funds, set-

ting up funding plans for scientific research projects, implementing personnel training projects and other policies and measures, we provide more scientific research opportunities and development platforms for young scientific and technological personnel. Social atmosphere and cultural environment can stimulate the professional identity and pride of young scientific and technological personnel, and encourage them to actively devote themselves to scientific research career. Academic exchange and cooperation atmosphere in the scientific research and cultural environment can promote knowledge update and thinking expansion, and stimulate innovation inspiration. Teamwork and collective honor play an important synergistic role in the growth of young scientific and technological personnel. Through teamwork, they realize knowledge sharing and complementary advantages, jointly overcome scientific research problems, and enhance the sense of belonging and responsibility.

Under the action of the dynamic mechanism, young scientific and technological personnel have been comprehensively improved in their scientific research ability, innovation ability and comprehensive quality. The improvement of scientific research ability enables them to master scientific research methods and technologies, and have the ability to carry out scientific research projects independently; the cultivation of innovation ability is due to the innovative thinking and innovative spirit inspired by the dynamic mechanism; and the improvement of comprehensive quality includes the growth of communication ability, teamwork ability, leadership ability and other aspects.

Take the "Beishan Man" research team of Beijing Geological Research Institute of CNNC Nuclear Industry as an example, the young scientific and technological personnel in the team are growing continuously under the action of the dynamic mechanism. Their inner love for the nuclear industry and the inheritance of the spirit of scientists are the internal driving force, and the state's strong support for the nuclear industry research projects is the external driving force. In the difficult scientific research environment, the team members have formed a strong sense of collective honor and team spirit. Under the action of this dynamic mechanism, the young scientific and technological personnel have continuously improved in scientific research ability and mastered the key technology, explore new research methods and technologies in terms of innovation ability, exercise communication skills, team cooperation ability and leadership ability in terms of comprehensive quality, and gradually grow into the backbone of scientific research, and made important contributions to the safe disposal of high waste in China.

4. Practical strategies of young scientific and technological personnel to promote the spirit of scientists

4.1 Strengthen education and training

4.1.1 Integrate the spirit of scientists into the educational system

It is an important measure to integrate the spirit of scientists into the whole process of basic education to higher education to cultivate young scientific and technological talents. In the stage of basic education, we should pay attention to the enlightenment and interest of the scientist spirit, and stimulate students' interest in science through vivid and interesting ways. The science curriculum of primary and secondary schools should add the content of scientists' stories and the history of science. For example, Qian Xuesen returned to China to lay the foundation for the space industry, and Yuan Longping devoted himself to hybrid rice research to solve the global food problem, so that students can feel the spiritual quality of scientists while learning scientific knowledge.

In teaching activities, teachers can adopt a variety of teaching methods, such as carrying out scientific-themed class meetings and organizing scientific experiment activities, so that students can have a deeper understanding of the spirit of scientists. In the stage of higher education, more attention should be paid to the systematization and depth. Colleges and universities should set up special courses of scientist spirit, covering patriotism spirit, innovative spirit, realistic spirit, dedication spirit, collaborative spirit and the spirit of education. Through theoretical teaching, case analysis, group discussion and other teaching methods, students are guided to deeply understand the connotation and value of the spirit of scientists.

In the teaching of professional courses, teachers should also integrate the spirit of scientists, such as introducing the research results and spiritual quality of scientists in related fields combined with professional knowledge. In addition, universities can also strengthen the cultivation of the spirit of student scientists by holding academic lectures and scientific research practice activities, invite well-known scientists to the campus to share their research experiences, and organize students to participate in the practice of scientific research projects.

4.1.2 Carry out targeted training and exchange activities

According to the characteristics and needs of young scientific and technological personnel, carrying out diversified training and exchange activities is an effective way to improve their scientific literacy and humanistic feelings. Academic lectures are a common and effective training method. They can invite well-known scientists and researchers at home and abroad to introduce the frontier trends and the latest research results, share research experiences and methods, and stimulate the research enthusiasm and innovative spirit of young scientific and technological personnel.

Scientific research practice activities play an important role in improving the practical ability of young scientific and technological personnel and the ability to solve practical problems. Organize young scientific and technological personnel to participate in scientific research projects, so that they can exercise scientific research skills in practice, and cultivate teamwork spirit and innovation ability. At the same time, exchange and discussion activities are also an important way to promote the

growth of young scientific and technological personnel. Academic exchange activities can be organized regularly to provide a platform for young scientific and technological personnel to share research results and exchange research ideas.

In order to promote the humanistic feelings of youth science and technology personnel, can also carry out some humanities training activities, such as humanities social science courses, humanities lectures, cultural exchange activities, etc., let young science and technology personnel in learning professional knowledge at the same time, rich humanities knowledge reserves, improve the humanistic quality, set up the correct values and outlook on life.

4.2 Set an example and a model

4.2.1 Publicize the advanced deeds of the older generation of scientists

Promoting the advanced deeds of the older generation of scientists can set a shining example for the young scientific and technological personnel. The story of Qian Xuesen returning to China to lay the foundation for the space industry shows his deep patriotic feelings and selfless dedication to the country's space industry. Yuan longping's commitment to hybrid rice research and solving global food problems is also a vivid textbook to inspire young scientists.

The deeds of these scientists can be widely spread through various media channels, such as CCTV's "Everybody" column and popular science documentaries, so that young scientific and technological personnel can deeply feel their patriotic spirit and innovative spirit. In addition, exhibitions such as the deeds of scientists and lectures on the spirit of scientists can be held to enable young scientists to feel the spiritual charm of the older generation of scientists and encourage them to set up correct scientific research values and life goals.

4.2.2 Commend the young scientific and technological personnel who have made outstanding contributions to scientific and technological innovation

Commending young scientific and technological personnel who have made outstanding contributions to scientific and technological innovation is an important measure to set an example for young people and stimulate their enthusiasm and creativity. Through the establishment of relevant awards and honors, such as China Youth Science and Technology Award and Scientific Exploration Award, young scientific and technological personnel who have made outstanding achievements in scientific research and demonstrated the spirit of outstanding scientists are commended and rewarded.

The awards cover many fields of natural science, engineering technology, agricultural science and medical science, and the winners are all young scientific and technological elites who have made remarkable achievements in their respective fields. Through the publicity and reporting of these award-winning young scientists, such as publishing their scientific research achievements and innovation stories in sci-

ence and technology media and industrial journals, holding award ceremonies and experience sharing meetings, more young scientists can understand their successful experience and spiritual quality, and encourage more young people to devote themselves to scientific and technological innovation.

4.3 Provide resources and support

4.3.1 Increase the investment of scientific research funds and resource allocation

Research funds and resources are the material basis for young scientific and technological personnel to carry out scientific research work. It is of great significance to increase the investment of scientific research funds and rationally allocate scientific research resources to stimulate the innovation vitality of young scientific research resources. Adequate research funds can support young scientific and technological personnel to purchase advanced experimental equipment, reagents and consumables, and carry out large-scale experimental research. At the same time, the rational allocation of scientific research resources is also very important, including scientific research equipment, laboratory space, scientific research data and so on.

In order to realize the rational allocation of scientific research resources, a scientific research resource sharing platform can be established to integrate the scientific research resources of universities, scientific research institutions and enterprises, break the barriers of resource dispersion and departments, and realize the sharing and optimal utilization of resources. The government and scientific research institutions should further increase the investment of young scientific and technological personnel, optimize the allocation mechanism of scientific research funds, and ensure that the funds can be inclined to young scientific and technological personnel. At the same time, we should strengthen the management and supervision of scientific research funds to ensure that the use of funds is standardized and transparent. Scientific research institutions should also strengthen the construction of scientific research infrastructure to provide good scientific research conditions for young scientific and technological personnel. Increase the investment in the laboratory construction, update the experimental equipment, improve the laboratory environment, improve the safety and comfort of the laboratory. For example, the construction of intelligent laboratories, equipped with advanced automatic experimental equipment and information management system, improve the experimental efficiency and data processing capacity.

4.3.2 Establish a sound scientific research evaluation system and incentive mechanism

The establishment of scientific and reasonable scientific research evaluation system and incentive mechanism is a key measure to stimulate young scientific and technological personnel to actively innovate and carry forward the spirit of scientists. There are some problems in the current scientific research evaluation system, such

as paying too much attention to the number of papers and influence factors, and ignoring the quality and actual contribution of scientific research achievements. Therefore, it is necessary to reform the scientific research evaluation system and establish an evaluation orientation with innovation quality and practical contribution as the core.

In scientific research evaluation, attention should be paid to the innovation, practicability and influence of scientific research achievements, and diversified evaluation methods such as peer review and expert review should be adopted. In order to encourage young scientists and technicians to carry out innovative and challenging research, the scientific research evaluation system should appropriately relax the requirements for short-term results, and give them more time and space to explore. Incentive mechanism is an important means to stimulate the innovation vitality of young scientists and technicians. Diversified incentive mechanism should be established, in addition to material rewards, should also pay attention to spiritual incentive and career development incentive. In terms of material rewards, a reward fund for scientific research achievements shall be set up, and generous bonuses and certificates of honor shall be given to young scientific and technological personnel who have made outstanding achievements in scientific research. At the same time, the salary and treatment of young scientific and technological personnel should be improved to match their income with their scientific research contribution.

Spiritual motivation is also indispensable. The young scientific and technological personnel who have made outstanding achievements in scientific research work are publicly commended and publicized to enhance their sense of honor and achievement. Career development incentive is of great significance for the growth of young scientific and technological personnel. It should provide more promotion opportunities and development space for young scientific and technological personnel, establish a scientific and reasonable professional title evaluation system, and break the traditional concept of seniority. At the same time, we provides more training and training opportunities for young scientific and technological personnel to help them constantly improve their scientific research ability and comprehensive quality.

4.3.3 To provide more development opportunities and platforms for young scientific and technological personnel

Building a rich and diverse scientific research platform and providing sufficient project opportunities for young scientific and technological personnel is an important way to help them grow and develop. Universities and scientific research institutions should strengthen the construction of scientific research platforms to provide advanced experimental equipment, perfect scientific research facilities and a good scientific research environment for young scientific and technological personnel. At the same time, the government and research institutions should increase support for research projects for young scientific and technological personnel, and set up research projects for young scientists.

In order to promote the exchange and cooperation between young scientific and technological personnel, various academic exchange activities can also be organized, such as academic seminars and academic forums, inviting well-known experts and scholars and young scientific and technological personnel to participate. The establishment of young scientific and technological personnel exchange community is also an effective way to promote the development of young scientific and technological personnel. By building an online and offline communication community, young scientific and technological personnel can exchange research experience, share research experience and solve research problems anytime and anywhere.

4.4 Promote exchanges and cooperation

4.4.1 Strengthen interdisciplinary and cross-field scientific research cooperation

In today's era of rapid development of science and technology, it is of great significance to strengthen interdisciplinary and interdisciplinary scientific research cooperation to promote scientific and technological innovation. Interdisciplinary and cross-field cooperation can integrate the knowledge and methods of different disciplines and provide new ideas and perspectives for solving complex problems. At the same time, it can also promote the sharing and optimal allocation of innovative resources, and avoid the repeated construction and waste of resources.

In order to promote interdisciplinary and interdisciplinary scientific research cooperation, universities and scientific research institutions can take a series of measures. Interdisciplinary team building should be strengthened and researchers from different disciplines should be encouraged to form joint research teams; optimize scientific research management mechanism, break the barriers between disciplines and create a good policy environment for interdisciplinary cooperation; and strengthen interdisciplinary talent training and open interdisciplinary courses and training programs to cultivate interdisciplinary talents with interdisciplinary knowledge and ability.

4.4.2 Promote scientific and technological exchanges and cooperation at home and abroad

In the context of globalization, international scientific and technological exchanges and cooperation have become an important force in promoting scientific and technological innovation. Actively carrying out international scientific and technological exchanges and cooperation can expose young scientific and technological personnel to international cutting-edge scientific research achievements and advanced research methods, broaden their horizons, and improve their own scientific research ability and international competitiveness.

By participating in international academic conferences, cooperative research projects and other activities, young scientific and technological personnel can have in-depth exchanges and cooperation with their international counterparts. Interna-

tional science and technology cooperation projects are also an important platform for young scientists and technology personnel to enhance their ability. Participating in international cooperation projects can carry out scientific research work with international teams and learn their advanced technology and management experience.

In order to strengthen international scientific and technological exchanges and cooperation, the government and scientific research institutions should formulate relevant policies to encourage young scientific and technological personnel to participate in international scientific research activities. The government may set up a special fund for international scientific and technological cooperation to support young scientific and technological personnel to participate in international academic conferences and carry out international cooperative research projects. Scientific research institutions should strengthen cooperation with international scientific research institutions and universities and establish long-term and stable cooperative relations. At the same time, it should also strengthen the introduction and training of international scientific and technological talents, attract outstanding young scientific and technological talents from abroad to work and study in China, and promote the flow and exchange of international scientific and technological talents.

5. Conclusion and Outlook

5.1 Study Conclusion

The spirit of scientists plays a vital role in the growth of young scientific and technological personnel. It not only sets up the correct values and outlook on life for young scientific and technological personnel, but also helps them improve their scientific research ability and comprehensive quality, thus making important contributions to the country's scientific and technological progress and social development.

In the level of personal growth, the patriotic spirit in the spirit of scientists inspires young scientists and technicians to closely link their personal pursuit with national development, the spirit of innovation stimulates their desire to explore and creativity, and the spirit of truth-seeking cultivates a rigorous attitude towards research. These spiritual connotations together shape the scientific research character of young scientific and technological personnel, enabling them to constantly pursue excellence on the road of scientific research.

In terms of career development, dedication brings young scientists wholeheartedly to scientific research, the spirit of collaboration improves their teamwork and communication skills, and the spirit of education provides them with valuable opportunities to learn and grow. These spiritual characteristics help young scientists and scientists to achieve remarkable achievements in the field of scientific research and lay a solid foundation for their career development.

In terms of social contribution, young scientific and technological personnel will carry forward the spirit of scientists and promote scientific and technological inno-

vation and industrial upgrading. Their research results have been widely used in artificial intelligence, environmental protection and other fields, contributing to sustainable development. At the same time, the power of their example has inspired more young people to engage in technology.

In addition, this study deeply analyzes the dynamic mechanism of young scientists to promote the spirit of scientists, and proposes a series of practical strategies. Internal dynamic factors, such as personal ideal and career pursuit, and love for science, make young scientists have the willingness to carry forward the spirit of scientists. External dynamic factors, such as national policy support and social atmosphere, provide a strong guarantee for them. Through strengthening education and training, setting examples and examples, providing resources and support, and promoting exchanges and cooperation, the scientific literacy and innovation ability of young scientific and technological personnel have been effectively improved.

5.2 Research outlook

In the future, the research of young scientists and scientists to promote the spirit of scientists can be further explored in the following directions:

First of all, in terms of the dynamic mechanism, it is necessary to further study the dynamic differences in different scientific research fields and development stages. Different fields have different requirements for researchers, so it is necessary to deeply study the role mechanism of internal motivation and external motivation in various fields to provide a basis for the formulation of targeted incentive policies. At the same time, with the growth of young scientific and technological personnel, their dynamic factors may also change, and it is necessary to study the dynamic changes of different development stages.

Secondly, in terms of practical strategies, personalized practical strategies should be formulated according to the actual situation of different regions and scientific research institutions. China is a vast region, and there are differences in economic development level and scientific and technological resources in different regions. Therefore, it is necessary to combine regional characteristics, optimize the content of education and training, innovate the publicity methods of role models, rationally allocate resources and support, and improve the effectiveness and adaptability of practical strategies.

In addition, with the rapid development of science and technology, new scientific research models and scientific research environments are constantly emerging. The impact of these new trends on the promotion of young scientists and how to better promote the spirit of scientists in the new environment should be studied.

Finally, it is crucial to continue to pay close attention to and support young scientists in promoting the spirit of scientists. The state, research institutions, universities and all sectors of society should work together to provide a good growth environment and development opportunities for young scientific and technological personnel, and stimulate their innovative vitality and creativity.

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References

- [1] Zhou Yuan. Carry forward the spirit of scientists and cultivate the foundation of cultivating innovative talents [J]. Mass, 2024, (23): 53-54.
- [2] He Yufang, Gong Lingyan. The spirit of scientists in the perspective of Marxist ethics [J]. Journal of Northeast Normal University (Philosophy and Social Sciences Edition), 2024, (06): 58-68.
- [3] Konlingli. Research on the path of integrating scientist spirit into the cultivation of scientific and technological talents [J]. Industry and Technology Forum, 2024,23 (21): 100-102.
- [4] Editor of the Academic Frontier. The era implication of the scientist spirit [J]. People's Forum • Academic Frontier, 2024, (20): 4.
- [5] Zhang Yan. Build and improve the system and mechanism to carry forward the spirit of scientists [J]. People's Forum • Academic Frontier, 2024, (20): 11-16.
- [6] Ding Minglei. With the spirit of scientists in the new era to gather the majestic power of high-level scientific and technological self-reliance and self-improvement [J]. People's Forum • Academic Frontier, 2024, (20): 17-23.
- [7] Jia Xiangtong. The time connotation of the scientist spirit under the background of developing new quality productive forces [J]. People's Forum • Academic Frontier, 2024, (20): 24-31.
- [8] Zhao Zhongxiu. Promote the coordinated cultivation of the spirit of educators, the spirit of scientists and the spirit of craftsman [J]. People's Forum, 2024, (20): 39-43.
- [9] Guo Fei, Wang Qianqian, Jin Linghui. Evaluation of Chinese scientists [J]. Science and Technology Economic Guide, 2024,32 (05): 54-65.
- [10] Niu Huiqi, Song Min. Opportunities, Challenges and practices to carry forward the spirit of scientists in the digital era [J]. Century Bridge, 2024, (18): 103-105.
- [11] Mao Xiaohui. The possibility and possibility of enabling new qualitative productivity in the spirit of scientists [J]. Journal of Yanbian Party School, 2024,40 (04): 20-24.
- [12] Zhang Ying, Ji Wei Bing. Exploring the value of the spirit of scientists in the new era [J]. Democracy and Science, 2024, (04): 35-40.