Universe Scientific Publishing

ORIGINAL ARTICLE

Construction of College Students' Physics Innovative Design Competition Base

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Fund Project: Jianghan University College Students Innovation Practice Base Construction Project "College students physics innovation design competition practice base".

Abstract: This paper mainly discusses the construction of the base of college students' physics innovative design competition from three aspects: first, the basic situation and construction conditions; second, the base construction planning and construction content; third, the projects that the base can provide.

Keywords: Physics; Innovative Design Competition; Base Construction

1. Basic information and construction conditions

The base takes physics as the background, takes "Hubei Physics Teaching Experiment Demonstration Center" and "Hubei Physics Virtual Simulation Experiment Teaching Center" as the basic platform, takes "physics community" college students' community organization as the core, faces the whole university science and engineering students, and takes the establishment of students' scientific research team, declaration and implementation of college students' physics innovation research project as the scientific research platform to build the college students' innovation research base The practice and innovation training system of the new base is committed to cultivating innovative talents with solid physical foundation and proficient experimental ability.

The base will adhere to the common interest oriented training mode, provide necessary knowledge training, hardware support and exchange platform, let a group of people with common ideals and interests together, carry out scientific research, exchange and discussion, realize their dreams, and lay a solid foundation for further study in the future.

The base relies on the faculty of applied physics teaching and research section, university physics teaching and research section and physics experiment demonstration center of science school of chemistry and environmental engineering to carry out specific guidance for students. At present, there are 24 full-time teachers in the physics teaching and research section and the university physics teaching and research section, including 18 doctors of physics, 16 senior professional titles, 1 Wuhan Huanghe talent, and 6 experimenters in the physics experiment demonstration center, including 1 senior experimenter. The instructor team has rich experience in teaching and scientific research. It not only publishes a number of teaching and research papers, but also has been granted a number of patents and computer software copyrights. It undertakes a number of national projects. Its knowledge reserves include all fields of physics, and senior experimenters provide engineering and technical guidance. The base has a strong faculty.

At present, the base has a fixed student activity room, regular activities every week, training for new members and preparation for the competition. The base is backed by photoelectric functional materials and devices laboratory, modern physics laboratory and

doi: 10.18686/ahe.v5i2.3352

physics demonstration laboratory. Each laboratory is open to students in the base, and the demonstration laboratory is also open to teachers and students in the whole school. At present, the main equipment of the base includes: 3D printing, laser processing, magnetron sputtering, gas sensing test system, electrochemical workstation, contact angle measuring instrument, modern physics experiment equipment and physics demonstration experiment equipment, etc., which can provide all-round and multi angle training and practice conditions for the students of the base. The base of college students' physics innovation design competition has sufficient hardware conditions.

"Physics club" has a fixed seminar room. Every year, it will recruit new members for all the students of science and engineering. As long as they have ideas, passion, like physics and have the spirit of cooperation, they can have the opportunity to join the physics club. Here, we can always find a group of people with the same interests to study and cooperate together. To provide a stage for each student to display their talents and realize their ideas. The base has a mature activity organization and inheritance mechanism.

With the strong support of the university, the careful guidance of the teacher team, and the efforts of all previous students, the team of Jianghan University obtained excellent results in the five consecutive Hubei College Students' Physics Experiment Innovation Design Competition.

Actively participating in the innovative design competition of college students' physics experiments in Hubei Province aims to give full play to the exemplary role of the provincial physics experiment teaching demonstration center of our university, show the reform results of our university's physics experiment teaching, improve the teaching quality of physics experiments, stimulate the interest of contemporary college students in experimental physics, improve their innovative consciousness and creative ability, and cultivate their flexible use of experiments Physics basic knowledge, methods and technology, the ability to solve practical problems, show students innovative thinking, team spirit and practical ability, guide students to innovative high-quality talents development.

The innovative design competition of college students' physics experiment began to expand from the provincial competition to the national competition, and Jianghan University is also in a new development pattern. Under the new situation, we feel pressure, but also have a strong driving force. We apply for the construction of the innovative design competition base of college students' physics, hoping to promote the development of college physics and college physics experiment, the basic course of science and engineering. So as to meet and promote the development needs of science and engineering under the new situation.

We hope that through the construction of college students' physics innovative design competition base, we will strive to win more and higher awards in college students' physics innovative design competition, and gradually expand to more challenging competitions such as challenge cup, as well as innovation and entrepreneurship. At the same time, we will strive to train students to obtain more scientific research achievements, guide students to publish papers and apply for patents, and our base will cultivate more talents more solid foundation, good at practice of innovative high-quality talents.

2. Base construction planning and construction content

Take the base as the platform, take the project as the support, take the competition as the leading, and take the talent as the goal.

(1) Integrate the existing resources of the base, establish a sound safety management mechanism, improve the hardware construction of the existing site of the base, and provide better conditions for college students' innovative practice.

(2) Guided by the college students' physics innovative design competition, we should establish a normalized and efficient contact mechanism between teachers and students, improve the competition team that can continuously inherit and improve, constantly improve the quantity and quality of the entries, strive for more and higher awards, and create brand and word-of-mouth effect.

(3) Through continuous innovation and competition, we will strive to expand to other related competitions, such as challenge cup, innovation and entrepreneurship, Internet plus, etc., so that students can get more exercise and show.

(4) Take the base as the platform, implement the tutorial system, encourage students to enter the laboratory, encourage students to make bold attempts, actively invest time and energy, actively carry out extracurricular scientific research and project practice,

accumulate experience, train and train students, guide students to actively publish papers and apply for patents, and strive for more and better scientific research results.

(5) To further strengthen the coordination between college students' physics innovation design competition base and professional laboratories is conducive to improve the utilization rate of professional laboratories and expand the hardware resources of innovation practice base.

In short, through the construction of college students' physics innovative design competition base, fully mobilize the existing hardware resources and human resources, fully activate the whole system; take the college students' physics experiment innovative design competition as the leading, strive for more and higher awards, cultivate more innovative high-quality talents with solid foundation and good practice, and form a good brand and reputation effect.

3. What the base can offer

(1) Maintenance and improvement of demonstration experiment equipment and college physics experiment equipment.

(2) Carry out popular science education for all the students of science and engineering and social primary and secondary schools.

(3) Design and production of personalized 3D printing works.

(4) Application of laser marking machine and laser processing platform, design of personalized products.

(5) Maintenance and development of physical virtual simulation software.

(6) Preparation and performance test of new materials.

(7) Participate in the projects of instructors or students' scientific research projects.

(8) College students' physics experiment innovation design competition.

(9) Students will be guided to publish papers or apply for patents for the above good results.

(10) For the above good projects, we will participate in the challenge cup or try to start a business.

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