Research on Promotion Innovation Ability of College Students

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Abstract. Innovation is the main theme of the development of the modern world, college students is an innovative force. Problems of the college students to cultivate and enhance the innovation ability are studied; the innovation meaning, characteristics and classification are discussed; the essence of innovation and relationship between the innovation and college students are discussed; eight kinds of methods that college students' innovative and invention should be used are put forward; six strategies are given to improve the college students' innovative invention ability. Finally conclusion is college students should stand in the forefront of education with innovative inventions to reflect the true meaning of education.

The Significance of Innovation and Invention

Chinese government takes "respect knowledge, respect labor, respect creation" as the national policy, and takes the innovation list in the science and technology awards; attention the innovation and invention activities, respect the innovation talents are embodied fully. Innovation has changed human life and to stimulate the human intellect, then changed the world, so it has an important significance on promoting the progress of mankind.

Innovation Has Changed People's Lives

The progress of science and technology have brought great changes to human life, count the human inventions in twentieth century human life changes can be insight into such as E-mail instead of the traditional letters has become a quick communication tool; mobile phone, especially the intelligent mobile phone greatly reduced the distance between people, people living in a "global village"\cite{1}.

Innovation Makes People Smarter. Innovation from Wonderful Ideas and "Dissatisfaction"

Innovation is not difficult as long as we are willing to "discover". For example, the "9.11" event led to a large number of people were trapped and unable to escape, countless lives instantly reduced to ashes, San Francisco doctor Kevin J invented the skyscraper escape device and effectively solve the problem of high-rise escape.

Innovation and Invention to Make Things More Practical

It is closer to people's lives, and can bring convenience to people. For example, the "horizontal piano" for the disabled;"free inflatable hive tire" solved the problem of air leakage.

Innovation and Invention Change People's Life by People Admire

Great inventor Edison's motto is: "genius is one percent inspiration and ninety-nine percent perspiration", he won the people's respect and affection for innovation has 1100 patents.
Classification and Characteristics of Innovation and Invention

Classification of Innovation and Invention

Innovative and invention can be divided into useful and unprofitable. Beneficial invention refers to the promotion of social progress, improve the human life of the new technology and methods; unprofitable invention refers to the departure from the invention of the purpose of the development of society have no effect or even harmful[2]. Inventions such as France "De Gaulle" aircraft carrier is because of high cost, poor practicability and become useless inventions.

Characteristics of Innovation and Invention

Innovation and invention have two distinct characteristics, that is new and valuable. Useful invention should have the leading character, it emphasizes the "first", it embody the spirit of "pioneers". Unprofitable invention of the "useless" in excess, for example, the Japanese invented the "deodorant underwear" because of its expensive materials, washing inconvenience, the deodorization function appears redundant.

Innovative Invention and Intellectual Property

The invention is a scientific method and some rules, it is a ability of everyone can have. Invention is the most advanced, the most active, the most complex, the most meaningful practical activity in human labor, its essence is human pursuits the functional system with new valuable. The invention is giving from education point of view, and it should be mastered from the learning perspective. Every aspiring invention students should use specific methods to arm themselves. Consciously learn and apply scientific methods are effective and powerful guarantee of inventions and excellence in their professional field, but also a shortcut to success. In the process of invention, college students should also learn the knowledge of intellectual property, training the skills in patent application and patent document writing. When a person has applied for the invention patent, it will deeply realize the importance of intellectual property rights to the state, the nation and individual, then understanding that the patent is a design scheme, it experiences the process of demand, motivation, choice, problem solving, experiment and development. Patent application is their invention summary, that he must have certain innovation ability and the unique research to the specialized domain, enhances competitive advantage in employment and enterprise aspect[3].

The Essence of Innovation and Invention

Innovation should be targeted. Invention has no boundaries, regardless of gender and skin color. Innovation and invention should explore deficiencies and to improve from life, in fact, the achievement of the innovation and the invention from the actual need has great vitality. Technological inventions of every age are closely related with the level of social productive forces, science and technology, it depends on the inventor's quality, ability and thinking too. Meeting and conforming the social demand is the basic conditions of innovation, the social demand growth puts forward new the technology target. The contradiction between the original technology and the new technology target promotes and stimulates the innovation and invention, the accumulation of knowledge will lead to the creation and innovation of innovative technologies, new technological achievements can lead to new needs and promote the promotion and application of innovative. Innovation and invention must be novelty, creativity and practicability[4]. Novelty refers to the invention has not been the same as before the date of application in the domestic and foreign publications, but not the same invention of innovation by other applications. Creativity means that the invention has prominent substantive features and significant progress compared with the prior technologies. Practicability refers to the invention can produce a positive effect after manufacture or use.
Innovative Ability Cultivation of College Students

Relationship between College Students and Innovation

The famous scientist and inventor Gao Hongxiang pointed out: the value of education is making the knowledge as a carrier to grasp the ability to manage knowledge. The knowledge of college students learning now has become obsolete after two times delay of books compiling and learning, therefore, college students should reflect the truth of education with inventions and stand in the forefront of education[4]. Innovation and invention of college students have to face the nature, the society and the inner worlds, love science, understand society and have lofty aspirations. Innovation is a kind of behavior of the people reflect their own values for seeking survival, development and resisting injustice. Innovation aims to overcome the problems in the existing technology, the characteristic of the invention is not for the "best", but the "earliest". Students' creativity is a kind of hobby and self-expression. Innovation is a kind of rare impulse, it can reflect a student's intelligence and ability to solve problems, it determines a person's impact and identity on society. Innovation is the process of college students self promotion, a person living in society must to be restrict by various rules, people's value lies in the difference between people. Innovation is whimsical or a new in order to be different, turn the seemingly impossible into reality, and not stick the old rules. Innovation must be application value, novel, practical and advanced with a clear purpose. An innovation scheme should not only reflect the attribute structure and law of the external things, but also reflect their needs. Before creation of new products and new technology, the inventor's idea is according to the optimization function objective in the invention process. Students can through diligent to change themselves, but also through wisdom to create a better future. Innovation is a continuous learning process, a person although educated, but in the face of the rapid development of the society, the amount of knowledge has still become stretched, therefore, as a contemporary college students, should learn for lifelong. Innovation is a human instinct, it can arouse people's enthusiasm and increase the amount of knowledge of people, and promote the scientific thinking of human life. Is there a shortcut to success? the correct answer is yes! the way is the innovation and invention. The "conscientious person" is good at looking for attention everywhere in the life for seeking "not satisfied", and then find the solution to the problem of "not satisfied", this is the innovation soil. All kinds of strange things of innovation, can promote social development on the macro, can provide the opportunity of creation, change your life specifically. So, a good student once learned innovation, and can stand above others shoulders, out of the ordinary, to get a good job turn the "poor" into the "rich"; can enhance the ability to resist risks and become more intelligent[5]. In daily life, after long-term use the problems of many items were solved, it is almost perfect, but inventors is always think that "there is abnormal in normal", with the development of society, the improvement of life, technological progress, many insufficient still be exposed, as long as be careful and discerning, or can be innovative. Innovation needs to pay attention to ethics, as well as "out of the ordinary, but also with the public; innovation have the social responsibility of "to be first and showing the norm"[6].

Innovative Methods for College Students

There are many methods of innovation for college students, mainly in the following:

The method of combination invention. According to the needs, create a new things by combining different things organically. For example, the rice cookers and electric furnace are combined together become electric cooker; a cup combined with an electric stove become an electric cup. The combination is not a simple superposition, but reasonable comprehensive development, it relies on the present knowledge, technology and wisdom.

The invention method of remedy deficiency. Breakthrough of invention method of remedy deficiency is to find things shortcoming, and then put forward the scheme of making up for the weaknesses. For example, when boiling water with a kettle, boiling water will put out the fire and
lead to danger, open a slit on the kettle cover, the use of water vapor blow the buzzer for sounding alarm.

The invention method of need. "necessity is the mother of invention", "need" can present invention target, around this target invention scheme is designed carefully using the correct methods and skills, the invention must be able to succeed. For example; for saving time, the fast food is invented; for food storage, the canned food, refrigerator and freezer are invented.

The associating invention method. Associating is remembering certain thing by some related things. The first one is close to associating which is near in space or time, such as looking at a pencil by associate the pencil eraser; the second one is similar associating, it associates similar characteristics of things together, such as by grass seed with hook think to nylon buckle.

The changing invention method. Changing is the power source of the things development, the content of changing is extremely rich in material, color, smell, shape, sound, volume, weight, purpose, process and operation method and so on. For example, sales of the products can be increased by changing the fabric, the color, the style, the performance of the clothing.

The invention method of expanding the usage. The new usage of the product can be expanded by adding a function. For example, the multi-purpose sofa, a multi-purpose tool and a multi-purpose vehicle etc.

The invention method of the bionic. From the phenomenon in process of biological evolution, a creation method is formed through imitation. For example, the saw is invented by imitation grass teeth.; the helicopter is designed by imitation dragonfly ; the radar is designed by imitation the bat.

The invention method of reverse solving. This method is using of reverse solving ideas to solve the problem. For example, the water off the shaft of the washing machine, at first the hard shaft design is used, the problem of the vibration and noise has been unable to solve, by using the reverse ideas, the soft shaft is used, the problem is solved well.

Promotion Strategy of College Students' Innovation Ability

The invention is an inexhaustible motive force for the progress of human society. In real life, the invention is in everywhere, invention is materialized from a small light bulb to a large spacecraft. Not the inventor of the invention patent but also is closely related to the common people; the invention does not mysteriously, as long as good at observation thinking, the essentials and the techniques of invention will be able to grasp. As the famous educator Tao Xingzhi said: "creation is at everywhere, invention is in every day, and everyone is a creator". the invention cannot do without inspiration, then what is the inspiration? the inspiration is a flashes touch by listening, filtering, searching, feeling in heart! Each of the students is a potential inventor, everyone has creative thinking, the key is to dare to say "no" to the existing things! Innovation ability of college students is enhanced from the following aspects:

Get into the Habit of Recording and Thinking at Any Time

College students should develop a good habit to record whenever and wherever possible, they record the problems and various conceptions emerged usually at any time, to become the "fire" of the innovation.

Establish Goals and Implementation Plan

At first listing specific innovation goals, then determine the specific requirements of the target; divided a goal into several smaller goals, and draw up a small problem which must be solved to realize each small target; At the last finding feasible ways and methods to solve every problem, the implementation plan of innovation and invention be overall designed through the correct way and gradually improved.
Learn Basic Knowledge in the Conventional Thinking Way

Analysis of basic knowledge using logical thinking way, put forward the question to master the basic knowledge in reverse way of thinking, and then try to resolve in order to deepen and grasp the knowledge.

Break the Shackles of the Traditional Concept for Innovation with Courage

At first innovation must have the courage and is not afraid of failure. College students must have the courage to challenge and be good at innovation, never observant of conventional standards.

Good Observation and Actively Practice

The social need is source of science and technology, the innovation of science and technology must be in-depth practice and meet the needs of the people. Therefore, through in-depth observation, actively practice for social needs in order to ensure the innovation to maintain enduring vitality.

To Have the Spirit of Perseverance

Innovation road are covered with thorns and frustrations, failures and setbacks can hardly be avoided, shaping a heart of "stand up from where you fall" unremittingly, keep on fighting until success.

Summary

Innovation is the motive force of social development; the invention is the art of benefit human. The correct orientation of culture value, rich imagination, solid basic knowledge and wide view provides a nutrient rich soil for innovation. College students should embody the essence of education with the invention and creation, stand in the forefront of education; with the spirit of learning and love science and lofty aspirations, always establish a consciousness of innovation and invention in everywhere, will continuous innovation and devote themselves to the invention, transforming the wealth of knowledge into productivity benefit of mankind.

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