Research on the Mutual Integration of the Teaching of Basic Subjects and Cultivating of Humane Quality

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Abstract. Human culture can be divided into two categories of scientific culture and humanistic culture; however, the development of human culture has long been divided and separated. Based on the understanding of the relationship between basic subjects and art subjects, this paper discussed the means and methods of the integration of the two kinds of culture. It studied the problems what is the basic scientific knowledge from the point of view of art professional and how uses the basic theory to describe the art design, obtained the basic courses teaching content of mutual integration of basic science and arts subjects, achieved the mutual infiltration of the two cultures.

Introduction

Human culture can be divided into two categories of scientific culture and humanistic culture.

In the source of the science of history until the early modern period such a very long historical period, the two cultures of science and humanities basically in a state of a seamless. Even in the early modern science, the development of science is more independent, science and humanities still have a profound relevance.

Specifically, the nature of science is to observe and explore the world, trying to some underlying order and pattern is determined from the known things, to the language of the objective description of the world, without any subjective guesswork. And the source of human science, especially the art, is the rich imagination of human beings. It is an illusion to show the spiritual world through art creation. From this level, there is a huge gap between science and art, and there seems to be no coherent between the two, scientists do not need to pay attention to the arts, and artists do not need to learn scientific knowledge.

But both have a common foundation: both face the same nature, are the means of human attempt to cognitive the world. Both belong to the human civilization, and belong to the great achievements of mankind's great creativity.

Necessity of the Integration

The relationship between science and humanity is interrelated, mutual blend and unity.

However, the development of human culture has long been divided and separated. Art in the pursuit of aesthetic does not care about the objective law of nature. Science in
the pursuit of the objective law, often give up the richness of things, while ignoring the aesthetic taste. Such as the British Snow in a speech at Cambridge University in the late 1950s said: "In our time, the actual existence of two cultures, between the two, it is difficult to communicate, a deep divide, the division and confrontation, is a great loss to society as a whole."

China's famous woman scientist Wu Jianxiong also stressed: "In order to avoid the crisis of social sustainable development, the urgent problems is to eliminate the estrangement between the two kinds of culture in the modern culture, scientific culture and humanistic culture. In order to strengthen the exchanges and contacts, no further than a university place. Only when the estrangement of two kinds of culture in the university campus to be bridged, we can for the world to coherent and convincing description."

In modern society, science and art unilaterally has made considerable progress, but one-way one-sided development of adverse consequences are obvious, a man of insight has the feeling to both to communicate, the necessity and possibility.

President of Harvard University Summers said: "because of the development prospects of Science in various fields, the way of thinking about science and science is affecting a very wide range of human activities." "We can't say the name of Shakespeare's five plays, but if you can't tell the difference between genes and chromosomes, don't take it for granted, such education is not complete.

President of Stanford University Heinrich said: "the university is in the rapid development of science and technology entrepreneurs in the world, we can't ignore those constitute our human life is an integral part of the humanities and the arts."

In the higher education stage, although we have to eliminate the gap between the two cultures, but this is far from enough, this bias is far from reverse. As well as "division of Liberal arts and Science" at the high school stage implementation, and the high degree of specialization of university education, etc.. This is a cause the training high-level talents obviously have the defect in the knowledge level.

Therefore, our university through general education the most urgent problem and task is to the scientific culture and humanistic culture in campus to be bridged, seeking true while the dissemination of the contents of the two kinds of culture. It with our party's education policy, training moral, intellectual, physical and other aspects and harmonious development of the new generation coincide, achieve the harmonious development of university students' scientific literacy and humanistic quality.

**Current Situation of the Integration**

Some study on the relationship between the integration of scientific spirit and humanistic spirit by the domestic scholars. In 2001, "scientific challenges" report was held in the People's Great Hall. Dr. Li Zhengdao presided over the "science and art" exhibition and seminars; Tsinghua University has held the nationwide "science and art" conference every two years; The Science and Art Society of Shanghai has opened the international science and art exhibition every year since 2003.

The exploration and practice on the intersection and integration of scientific culture and humanistic culture in Chinese universities.

**Combination of Mathematics and Humanities**

Professor Gu Pei, school of mathematics at the Nankai University, opened "mathematics culture" course;
Combination of Physical and Art

Professor Shi Daning, department of physics at Nanjing University of Aeronautics and Astronautics, opened "physical and art" course; Combination of physical and humanities. Ni Guangjiong of Fudan University opened "physical and culture " course;

The representative courses of the arts have arts and science courses group in Communication University of China, the department of industrial design in Kunming University of Science and Technology opened "design mathematics" course, the modern design art school of Yunnan University of Finance and economics opened the compulsory course "design and application mathematics ".

Integration of Basic Sciences and Arts

Of the results of the first study of mathematics and art, physical and art, art and chemistry, then combination of mathematics, physics, chemistry and art, human understanding of the nature, society and different forms are analyzed compared to present mathematics, physics, chemistry and art difference and connection. Then, we also study the art of mathematics and physics and chemistry knowledge representation, in order to enhance the knowledge of abstract visual appreciation.

Mathematics and Art

the integration of mathematics and art can produce many highlights.

Mathematical Perspective of Art Works. Proportion and segmentation, symmetry and similarity, perspective and projection, etc..

Beauty of Mathematics Itself. Curves and surfaces, geometry and art, fractal graphics.

Role of Art in Mathematics. The integration of mathematics and art, can provide a new project and expand the field of mathematics. to provide a new task, to expand the field of mathematics. Such as the Renaissance, the real world to become the object of painting, the three-dimensional space objects painted on a two-dimensional canvas, resulting in the creation of perspective.

The integration of mathematics and art, can make the abstract mathematical content with simple beautiful words to express, contribute to mathematical understanding and communication. Such as Hua Luogeng's method of the number and shape combination, is use of the poems to explain the number; Zhang Jingzhong academician's masterpiece of mathematical popularization science; Xu Chi's reportage of Goldbach conjecture.

The integration of mathematics and art, can change temperament and cultivate sentiment. The mathematical research activities, both long time relaxation and cudgel thinking. The most active relaxation is the reading of literary classics and listening to the elegant music.

Physics and Art

The integration of physics and art can impact many sparks.

Formal Beauty of Physical Movement. Harmony and balance, light and color, space time view of the physical understanding and the performance of painting, etc..

Physical Science and Artistic Creation. The beauty of the physical world, the artistic expression of holography, the art of electricity and magnetism, and the art of sound.
Chemistry and Art

The combination of chemistry and art can add a lot of color.

**Art in Chemistry.** Material structure and artistic expression.

**Chemistry in Art.** Chemical analysis of art works, Determination and identification of cultural relics.

**Role of Chemistry in Art.** Chemical Application in pottery, bronze, jewelry and color, etc.

Basic Subjects and Art

The integration of basic science and art can get the truth and perfect beauty.

Science and art from the route to go, today have the same thing, is the inevitable result of historical progress. 19th century French literature Gustave Flaubert: "Art more and more scientific, science more and more art, both in the foothills of the break up, one day, will be at the top of the mountain again." From the perspective of the history of science development and the development of human, the human beings had cognitive art and physical theories and mathematical language reflected in the BC, the middle ages, the Renaissance and modern in every historical stage, to show that the human civilization is a rising tower, past science and art reason apart very far, because our positioning is not lofty cause. And to those who have artistic accomplishment and scientific culture, science and art is one of them. Many great people is not only scientists, artists, such as Durer, Da Vinci, Lomonosov, Oppenheimer etc.

Conclusions

Through the rational thinking on the cultivation of science literacy and humanistic quality related issues, we will is in contrast to the culture and art development process and the development of natural science, sorting out from ancient times to the present main philosophical concept and compare their similarities and differences, formation doesn't sever the art and science of natural view.

The relationship of physics and chemistry science and arts subjects to recognize, from the professional point of view of the art, we see the scientific knowledge of mathematical and mathematical technology to express in art and design problems, so as to form a truly suitable for art students with the technical nature of the mathematical curriculum content. For example, mathematical shape design method, digital graphic pattern technology and so on. The content of the research into school of public elective courses, college students' science and technology training programs and seminars and other forms of teaching materials. The results obtained on the integration of basic subjects and art are as follows.

To solve the problem of the mutual infiltration and integration of engineering, arts and arts, and to construct the corresponding teaching system, to improve the effective teaching mode of the comprehensive quality of students.

To solve in the fusion of science and art of teaching process, problem of lack of video, audio, images, and other information and material to meet two schools of engineering and liberal arts and art is the need of quality education.

To solve the limitation problem of college students the mathematical curriculum understanding. At present, the students of mathematics of understanding of the curriculum is to remain at the surface of things that mathematics, physics, chemistry is only a few courses, to finish school must complete the task. Project intends to allow students to understand the importance of the integration of science and art in the case of...
the project, know that science and art courses not only have these surface effects, but also has a deeper meaning.

To solve the problem of science curriculum Abstract difficult to appreciate. For engineering students, the teaching of mathematical physics is mainly to impart knowledge and its application, in the art of some of the content is rarely involved.

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