

# Study on the Development of Professional Education Based on Biological Evolution Theory

Li Xiaojing Ji Yunzhe Wang Xiaojie

Sevice College, Naval University of Engineering, Tianjin 300450, PR China

## Abstract

The development of professional education is similar to biological evolution. Both of them are complicated system engineering. The development of professional education faces many challenges but also opportunities. In the paper it analyzes the enlightenment given by biological evolution to development of professional education by comparison and analysis on them taking advantage of general rules of biological evolution.

**Key words:** biological evolution, professional education, enlightenment

## 1. Preface

Inter-disciplinary talents will be cultivated by professional education aiming at meeting position requirements. Development of professional education shall keep pace with that of occupation post and shall also promote its development. As for the incumbents on occupation posts, the superior will survival while the inferior will be eliminated. It's the natural law and objective fact of biological evolution that the fittest shall survive, and it's also a generally applicable rule to the nature. Survival of the fittest is not only a standard of selection but also its result, which is realized by struggle for existence (competition) and genetic variation. In this paper it realizes education transformation from each level using general

rule reflected in biological evolution system under the directions of optimized evolution ways and structure mode in order to obtain stronger immunity and competitiveness. The purpose of this is to be adapted to new situations and tasks which are changing continuously and provide theoretical basis for speeding up in-depth development of professional education.

## 2. Comparison and analysis of development of biological evolution and professional education

The ideal of evolution has not only penetrated to each aspect of biological science and also has been widely used in each field out of biological science for a long time. It's discovered from recent research that society has characteristics similar to organisms. On one hand, institutions of higher learning has certain material and spiritual elements; on the other hand, as a organic system composed of people, the education in institutions of higher learning has certain faith Journey [1]. Professional education is an important means for improvement of post abilities. It's a product of development under new situation in a new period. It's an evolution or sublimation for education system itself. Therefore, promoting coordination and development of internal & external relationship of professional education using generally applicable rule of bi-

ological evolution has important realistic significance.

### **2.1. Diversity of organisms and diversification of professional education**

Diversity of organisms is formed during long-time evolution of organisms, which is resulted from interaction of organism with ecological environment. Organism will generate rich diversity by differentiation to be adapted to different environments. Human is the inevitable outcome of diversity development and evolution of organism and is also an important and special member in organism diversity. At present, our country is in transition period of development strategy while the domestic and international environments are all complicated. Meanwhile, there're still development imbalances between regions and industries in China. The requirements of different regions, different industries, different posts, different levels of the same post and requirement changes on post of the same level and others can only be met by realization of diversification of professional education. This also promotes diversification of school-running mechanism of professional education and personnel training specification.

### **2.2. Variation of organism and innovation of professional education**

*Variation* is the phenomenon of character difference between filial generation and parental generation and that between filial generations. The variation characteristics will make organism generate new character or even new species so that diversity of organism is formed. One important factor resulting in variation of organism is the internal and external environment the organism is in. Eric Ashby, outstanding theorist and practitioner of Universities UK put forward the ideal of *Genetic environmentalism of university* in the

book named *University Education in a developed scientific time*. The so called Heredity of Ashby's refers to continuation and demonstration of internal logic of self development of university in different space-time, i.e. the university concept by utilization of which core control and guidance role has been generated on subsequent universities by early classic universities and patterns. The genetic information implied on genetic gene of university is relatively stable, which has certain potential variability of genetic significance and uncertainty of expression way. It changes with the environment faced by university [2]. It can be known from the analysis on factors causing variation of organisms that, important attention shall be paid to *The creation of external environment and Improvement innovation* during innovation education.

### **2.3. Gene recombination of organism and crossing & seeping of professional education subjects**

Gene recombination is the method cultivating new species by directional transfer of DNA of external source into another organism based on the willing of people via artificial process so that hereditary substances of the two organisms will combine. The cultivating targets of professional education conform to the theory of gene recombination. Therefore, *Transplantation* is possible. Adequate negentropy shall be added into disciplines of professional education in order to realize intersection and infiltration of disciplines and to make it be full of vigor again. The target of professional education is to cultivate inter-disciplinary talents meeting professional requirements of the posts. This is the motivation for realizing inter-discipline and also its internal demand. Interdiscipline is often the point of new science for generating new concept, new law, new theory, new scientific issue and new technical means. Its essence is infil-

tration and combination of knowledge system. Intersection of disciplines may be blending of two subjects or multidisciplinary cross from microscopic view and may be mixing of ideals of disciplines, mutual supplement of function of disciplines and interlacing of layers of subjects [3] from the view of connotation. Intersection of disciplines is the only road and source of power of innovation. At present, a number of emerging disciplines and interdisciplinary subject are all required by theoretic innovation and social economic development and are all established by *Gene recombination* and *Hybridization*. Intersection of disciplines can be made among subjects of different fields and different majors in order to develop emerging subject technology.

#### **2.4. Co-evolution of organism and integrational development of professional education**

The process of evolution of organism is actually the course promoting joint evolution between organisms and that between organism and inorganic environment. This dynamic unbalance is the source [4] of orderly evolution of organisms. There's certain ecological investment strategy, co-adaption and co-evolution during growth of organism to make them realize the existence and breeding in the nature with minimum price or cost.

Development of professional education shall be integrated with co-evolution of knowledge. The integrated includes horizontal integration of talents, subject construction and cooperation between universities and also longitudinal integration of enterprise, university and research institute. Resource integration can be realized by horizontal integration, which will reduce cost. At present, the deviation of technical development from social demands and personnel training from post demands have become an important issue having influences on coordination devel-

opment of *Ecological system* of professional education. Cultivating high-quality talents required by posts on the technical innovation platform for construction of colleges and universities utilizing integration of enterprise, university and research institute with the support of social development under instructions of enterprise will certainly make stronger vitality be obtained by development of professional education.

### **3. Enlightenment given by biological evolution to development of professional education**

Development of professional education is similar to biological evolution, both of them are complicated engineering. Biological phenomena are dialectics of breeding and immunization. Human is different from other animals. Development of professional education is far more complicated and profound than biological evolution.

#### **3.1. Improve competition based on cooperation.**

Competition and cooperation are unified. Motivation for evolution of any system is internal and external competition and coordination from system. It's necessary condition [5] for promotion of system evolution. Dual culture is a way of fostering professional teacher team jointly with other domestic and international colleges and universities. This way of culturing can realized resource sharing making full use of teachers, education facilities and other resources of other colleges and universities. It's also an effective manner for mutual learning, communications, reference and improvement among teachers. Horizontal linkage and longitudinal connection of educational training can be realized by dual culture to play fully its

role of integrated education comprehensively.

### **3.2. Bring into full play of leading role of preponderant discipline.**

Leading of discipline refers to join of research specialist staff because of academic level, organization management ability and personality charm of academic leaders and the process of integration. The development of modern biology indicates that, generation of new species is controlled by the gene playing leading role. Bring into full play of leading role of preponderant discipline is in favor of richening connotation of subject, resource configuration and sharing and discipline intersection and innovation. Thus core competitiveness of preponderant discipline can be improved.

### **3.3. Explore deeply professional potential of main body of education.**

If action of species is too rigid to adjust itself, it may not escape the fortune of being eliminated in case there's any environment change. In addition, it's found by study that, self-designs of species survived are simplified. The expression of this point in professional education is to give enough innovative space to main body of education and to break constraints of traditional education.

### **3.4. Enrich continuously residual capability of main body of education.**

Residual capability is source of sustaina-

ble development of education. One of the most important conclusions in the theory of evolution of Darwin's is successful organism has residual capability. If development of animal is quite complete, each limb or organ can do only one thing and the thing implemented by it is perfect, then it's even impossible to achieve successful evolution. Therefore, the main body of education can only remain invincible in the complex and changeful environment if it has enriched its knowledge structure continuously and enhance professional capability in order to remain *Residual capability* on posts.

## **4. References**

- [1] Chen Yi and Cheng Ka, Discussion on cultivation mechanism of emerging Inter-discipline in colleges and universities based on the theory of biological evolution [J]. Academic Degrees & Graduate Education, 2007 supplement issue:1-4.
- [2] Kang Muyun, Heredity and variation of university [J]. China Education Innovation Herald, 2009,23:112.
- [3] Liu Zhiguo, Bi Chaohui, Study on historical inevitability of interdisciplinary [J]. Huazhang, 2011,8:8-9.
- [4] Zhang Lingzhi, He Jinsheng, Mechanism of Knowledge Evolution Based on Biological Evolution [J]. Journal of information, 2011,30(2):105-109.
- [5] Jia Genliang, evolution economics—hotbed of economics revolution [M]. Shanxi: People's Publishing House of Shanxi, 2004.