

Science Cultivation

Journal of Enculturation and Policy Making of Science, Innovation and Technology

Vol7, No. 1, January 2017

ISSN:X8003-539

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- Application of Biomimicry in Textiles



FAST-Iran

Foundation for the Advancement of Science
and Technology In Iran

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God

Science Cultivation

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Science Cultivation “Journal” is published by Foundation for the Advancement of Science and Technology in Iran. (FAST-IRAN).

This journal aims at advancing and accelerating the science and technology policy in Iran.

License Holder : Foundation for the Advancement of Science and Technology in Iran. (FAST-IRAN)

ISSN: X 8003-539

Publisher: Foundation for the Advancement of Science and Technology in Iran

Layout : Sina Movaghati

Web Coordinator: Zahra Moosavi-Movahedi

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Dialogue with Scientists and Politicians

Experience gained from different countries indicates that advancement in science and scientific development is strongly linked with the support extended by the national government and governing authorities of that country to science and related scientific activities. On this line, dialogue between scientists and governing political decision makers plays an important role in achieving scientific progress and sustainable national development in Islamic Republic of Iran. As such, towards realization of this goal as a highly valuable investment, it is imperative that necessary preparatory steps be taken for establishing dialogue with these authorities.

Other development in the country is highly linked with progress in science and ethics in a society. It should also be noted that the knowledge in its general context, lies at the root of love as a manifestation of mental reach to a state of awareness. On this line, we may note that when man gains true knowledge of a subject, then develop love for it. This is to state that at the state of true love whether being in conscience or mind or in heart, we will be willing to make all necessary sacrifices for it. When we reach a state of true knowledge and love of a subject, then we have reached state in which we may say that we cherish both of the worlds, i.e. this world and thereafter. This is for the reason that all true knowledge is the principle of all good. As stated and can be verified, in case of majority of developed countries, development in science lies at the root of progress made in these countries. Of course for national growth it is necessary that policies be in compliance with by ethics.

On this line, it is worthy to establish an office aimed for dialogue between scientists and authorities in the universities where duties of this office is to develop a plan for realization of such dialogue between scholars and policymakers and senior officials of the country. As part of duty of this office, would be to monitor innovation and technology in the world. This suggestion constitutes of a scientific monitoring office that serves as a dynamical monitoring facility for authorities in the country to benefit from it in a regular fashion. Establishing of such an office, has been practiced in some of the universities in the developed countries. It is hoped that this proposal would be welcomed by universities authorities and senior government officials.

Ali A. Moosavi-Movahedi
Editor-in- Chief

Unemployment and the Emigration of Skilled Graduates

Ahmad Shaabani *

Scientific and technological institutions have a prominent role in the cultural, social, economic, political, national and international developments. In which the progress of science and technology, are the leading indicators of development, advancement, and grow in countries. In other words, academic centers with human resources training and empowerment lead to progress and sustainable development of countries. In this context, if in an establishment of academic centers necessary standards, including student-teacher ratio, teaching and research facilities and physical space are not observed or society and organizations because of inefficiency or excessive numbers of graduates do not hire skilled graduates, sustainable development cannot be achieved. This situation can impose many economic and financial losses and will become a threat for national security. In this study, two knowledge-based damages of unemployment and the emigration of skilled graduates or brain drain that are facing high-education from several points of views have been considered. Finally, a method based on changing the structure of the high- education system and research-based guidelines using a hierarchical pyramid of academic staff and doctoral graduates, with the aim of preventing the emigration of skilled employment that causes most of the damage to higher education, is provided. The presented approach is based on the convergence and synergies, in order to increase the capability and potential of science and knowledge, promotion of quality education and research, and efficient use of limited financial resources and research facilities of the country.

Keywords: Emigration of Skilled Graduates, Brain Drain, Immigration Genes, Third Generation University (TGU), Hierarchical Pyramid Approach Faculty, Employment of PhD Graduates, Unemployment Graduates.

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Requirement of Career for Technology Young Knowledge Workers

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Research indicates that due to the increasing population of young academic jobseekers and their unemployment, entrepreneurship can be one of the solutions for this scope. But on the other hand, social conditions and the current job market have its own requirements. The world future development based on knowledge-based economy will be inclusive soon and creates a new form of modern economic behavior in human society. In other words changes in economics, globalization, internal diversity and technology have created new needs for the organization, and the new requirements in some ways are very creative for the organization to pull it forward and sometimes can be harmful and destructive. However, it seems that if most of these challenges are managed well, they will create many opportunities for human resources and organizational structure. In this study, due to the pace of changes and technology acceleration in a new era and by using the library resources and experts analysis, we have tried to introduce young Knowledge Workers' career technical requirements in this decade. The research result entitled as future managers' suitability tools is expressed in three parts of key knowledge, key attitudes and key skills, and they should try to get the specified knowledge and information in addition to closing their attitude to the given attitudes, and for this purpose obtain the related skills too.

Keywords: Requirement, Career, Human Resources, Technology, Merit.

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The Prevalence of Wrong and Nonreplicable Data Publication

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and Ali Akbar Saboury*

Weak research design, flawed data analysis, biased observation and poor discussions have encouraged the publication of nonreplicable or false findings in recent years. In the present study, different types of errors and biases and their role in prevalence of wrong data publications are discussed. The main reason for occurrence of wrong and nonreplicable findings is the great tendency for publishing favorable results and ignoring the unwanted ones. As most project sponsors and publication reviewers seek impressive results, it is becoming a routine procedure to either neglect the peculiar results or fix them. Many scientists publish erroneous results due to the lack of knowledge or cognitive biases. This can be avoided if the present science culture undergoes a substantive change. Researchers are usually under pressure to publish more papers, because institutions reward them on the quantity of their publications, this policy needs to change too. Here some methods are recommended to attain a decent science culture.

Keywords: Science Culture, Replicability, Error, Cognitive Biases, Research Paper.

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Make a Better PhD Graduate

Fariba Dashtestaniand*

The employments in many countries are not proportionate to PhD graduates. Since, most of the PhD graduates expect academic careers. Whereas, one-fourth of PhD graduates could be faculty member and it means that many PhD graduates will be unemployment each year. This problem not only in Iran but also in many countries is a fundamental problem. In this regard, Nature journal published an article entitled “How to build a better PhD” to deal with the causes and solutions of the problem. This article summarized and translated that article published in Nature journal. In this paper, five solutions for improving employment of PhD graduates are offered.

Keywords: PhD Graduate, Employment, Applied Technology, Vocational PhD , Academic PhD.

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Climate Change and Disease: Role of Global Warming in Worldwide Type 2 Diabetes Epidemic

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Type 2 diabetes mellitus is one of the oldest known diseases and mostly is due to life style and genetic factors. Physical inactivity and obesity, sedentary lifestyle, long term exposure to free radicals caused by stress, cigarette smoking and consumption of alcohol are important factors in diabetes. Excess energy stores as triglycerides in adipose tissue and when the storage capacity of adipose tissue is exceeded, lipids can accumulate in some organs which can cause insulin resistance in them. It was demonstrated that activation of brown adipose tissue at cold climate, by consuming the stored lipids, might be reduced insulin resistance. Climate change and global warming directly and indirectly enforce the stress to the society and imposes various diseases, specially diabetes type 2. Considering the global warming phenomena it could be concluded that changing the lifestyle is necessary to reduce the risk of type 2 diabetes.

Keywords: Type 2 diabetes, Global warming, Obesity, Adipose Tissue, Stress, Diseases.

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Perspective on Golden Ratio (Φ)

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The golden ratio or the Phi number, of 1.618 is a proportion known since antiquity to be the most aesthetically pleasing and it has been described and studied by many scientists and artists. The properties of Golden ratio can be instituted in the pattern of mathematical series and geometrical patterns, e.g. golden rectangle, triangle and spiral and they are known as the base of nature construction and the most pleasing to human visual sensation and not limited to aesthetic beauty. Phi has an important role in nature construction; this number is the reason of the symmetry and the best geometrical arrangement. The spiral galaxies whirl with a golden spiral superimposed; the orbital data of all planets, asteroids, moons and rings in the solar system are based on the golden ratio. We can find this ratio in plants phyllotaxis and structure; in animal's growth patterns and genealogy; in human body ratio, health and beauty. We can follow the Golden ratio in the past architecture, e.g. in pyramids, Parthenon and Persepolis; also, Renaissance art is very important in this field. Persian-Islamic architecture and art we can find this unique mathematics the reason of beauty and strength. This paper seeks to represent a panoptic view of the miraculous Golden Proportion and its relation with the nature, globe, universe, arts, mathematics and science.

Keywords: The Golden Ratio, Phi Number, Fibonacci, Aesthetics, Balance, Symmetry, Geometry.

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New Technologies Based on Biomimetic and Bioinspiration

Zainab Moosavi-Movahedi*

Biomimetic field is study of nature and natural phenomena to realize the principles of mechanisms, to obtain ideas from nature and to apply concepts that may benefit science, medicine, engineering, etc. Since the rapid rate of industrialization affects human survival, biomimetic and bioinspiration are the best methods that potentially may solve the problems on pollution and lack of resources with the best performance among the other developed products. The basis of biomimetic is recreate and reproduce some biological aspects like structure-function relations observed in living entities and ultimately to bioinspiration, that structural properties and their functions are pushed to new levels, beyond what nature offers. Nature has experiences of billion years, human can learn and imitate from this great bank of ideas, and equip with its strategies and designs. Biomimetics and bioinspiration help us to create an economy which follows natural evolution with more biodegradable and biocompatible products. This pathway should be lifestyle for better life.

Keywords: Biomimetic, Bioinspiration, Technology, Structure-Function, Biocompatible.

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Application of Biomimicry in Textiles

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Throughout the millennia, nature has evolved to adapt and develop highly efficient and creative solutions to solve problems. Therefore, human being has always been inspired by nature in order to solve his problems. Although this approach has been for centuries ago, it is recently developed into the areas of science and has been called as “biomimicry”. Biomimicry is now a rapidly growing research field that deals with extraction and imitation of functional principles of nature to achieve the best solutions as well as considering aesthetic and artistic aspects. There are numerous examples of biomimicry in many areas such as engineering sciences, medicine, chemistry, physics and material. Textiles are one of the outstanding fields which have a great potential in the development of biomimicry. This paper provides a general overview of bio inspired textiles in a descriptive analytical method. Hydrophobic and self-cleaning textiles, fast swimming products inspired from shark, self-repairing and thermal insulating textiles are some of related examples. Other famous examples like structurally color textiles which are seen differently due to the view angle, dry adhesion inspired from gecko-feet and producing textiles by means of biological systems, confirm the great potential of research in this area.

Keywords: inspired textiles, biomimicry, nature, functional surfaces.

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