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Scientific Development, National Development
On the Occasion of
International Year of Basic Sciences for Sustainable Development

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Abstract

A brief overview of the relationship between the two themes of national development and scientific development and the role and position of basic sciences in this relation is of interest in this note. The other topic is studying and analyzing the main criticisms of three societal fronts about the merits and demerits of academic systems in development approaches.

Future Temperature in Southwest Asia Projected to Exceed a Threshold for Human Adaptability

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Abstract

The amount of carbon dioxide in the atmosphere has increased by %25 from 1958 to 2020 and by %40 after the industrial revolution. The average global temperature is expected to rise to 2 ° C (in some estimates 3 ° C) or more in the next few decades. These changes will affect all areas of the earth. In the coming decades, Iran will face an increase of at least 2.6 ° C in the average temperature and a %35 decrease in rainfall. In terms of greenhouse gas emissions, Iran is responsible for most emissions in the Middle East and the seventh country in the world. Iran›s high share in greenhouse gas emissions depends on the significant

production and consumption of oil, gas and rapid urbanization. Changes in weather patterns can put life at risk. Heat is one of the deadliest weather phenomena. As ocean temperatures rise, hurricanes become stronger and wetter, which can cause direct and indirect deaths. Dry conditions lead to more forest fires, which pose many health risks. More frequent flooding can lead to the spread of water-borne diseases, injuries, and chemical hazards. As mosquitoes and ticks expand their geographic range, they can transmit diseases to new locations. The Indian Ocean Monsoon phenomenon, which was mainly limited to coastal areas, now, in 2022, affects areas as far as northern India (Himalayas) and northern Iran (Alborz) and has caused loss of life, damage to food resources, and as a result has threatened the health of more people.

Keywords: Climate change, Global Warming, Iran, Alborz, Monsoon, Carbone Dioxide.

Warning: Caspian Sea Pollution Crisis

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Abstract

Water pollution and decreased oxygen levels endangered more than 400 aquatic species, including sturgeon, that is caused by annual release of more than one billion cubic meters of industrial, chemical, and domestic wastewater into the Caspian Sea. Fishing, once a traditional economic sector, is now facing an alarming decline in stocks. The environmental degradation of the Caspian Sea can be aggravated by climate changes as well as increasing economic developments in the Caspian Sea countries. Climate change can increase temperatures and decrease rainfall in the region. The continuation of aggressive urban, industrial and agricultural development in coastal areas - which is associated with more consumption and diversion of water - causes a decrease in water flow and a potential increase in the concentration of nutrients entering the river into the sea.

The Need to Appraisal the Organizational Structure/ Function of Research Institutes
To Increase Their Productivity and Efficiency in Society and Industry

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Abstract

The needs of today and the future of society are very complex and the difficulty of their issues is increasing consistently. These complexities are often knowledge-based and can be designed and solved with the powerful tools of science and advanced techniques. Universities and research institutes are the driving force, the driving force and the main house of science and technology, and therefore the position and social responsibility of these centers, especially research institutes, is becoming more vital. Globally, governments

and investors emphasize the productivity of Research in society and industry and increasing the yield of investment in research. Despite Iran›s good rank (based on publications) in the field of wealth-creating sciences, that is, science and engineering, and its standing among 15 leading countries, the share of science-based knowledge in the Gross National Product is not promising. Therefore, a review of all elements of scientific centers, universities, research institutes and research centers, including the organizational structure, activities and missions, educational-research programs, the way of accepting students and postdoctoral training, up to the regulations and regulations of their promotion is a requirement. Following the papers on pathology of universities in back issues, in current article, along with reviewing the pathology of the current state of research institutes, in order to improve their productivity, three approaches have been outlined and described in detail.

Keywords: Research Institute, University, Government, Society and Industry, Research and Technology, Approach, Productivity, Gross Domestic Product (GDP)

Global Science and National Ccomparisons: Beyond Bibliometrics and Scientometrics

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Abstract

In the last three decades, a networked global system has emerged in the natural-science-based disciplines, sustained by collegial epistemic relations in universities. Nationally ordered and funded science has expanded alongside the global science system. The common global pool of papers, defined by bibliometric collections, nevertheless excludes large components of knowledge. In the global system, four tendencies are apparent: (1) rapid growth of papers, (2) diversification of scientific capacity to many more countries, (3) expansion of networked international and national collaboration as measured by co-authorship, (4) growing multi-polarity of capacity, outputs and quality, with the rise of China and several middle-sized national systems outside the Euro-American bloc. The paper critiques the interpretation of global science dominant in scientometrics, in which positivist data analyses are applied to performative national comparisons. It argues for a historical-synthetic explanation of the global system that combines data and theorisation, and accounts for relations of power.

The Role of Microorganisms in Sustainable Development
The Role of Microorganisms in The Balance of Biogeochemical Cycles and The Continuation of Life on The Planet

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Abstract

Microorganisms are microscopic organisms that are found everywhere and have a significant impact on their surroundings, and many ecosystem processes are affected by the presence of microorganisms. Despite

the negative attitude that most people have towards the negative effects and pathogenicity of microbes, these living organisms have countless benefits in preserving the ecosystem and the environment, including balancing biogeochemical cycles and breaking down various wastes, agriculture, including soil fertility and pest control. plant, in the field of health and medicine, including the production of antibiotics and anti-cancer metabolites, in the field of health and nutrition, including probiotics and the production of vitamins and food supplements, in the field of industry, including the production of chemical and industrial materials, including biofuels, enzymes, plastics and They have biodegradable polymers. Therefore, using them correctly can contribute to sustainable development. Also, the use of microorganisms plays a prominent role in modern biological technologies and scientific research, and a large part of the information obtained in various fields such as genetics and biochemistry has been obtained with studies on microorganisms. Considering the key role of microorganisms in the balance of biogeochemical cycles, in this review, the role and application of microorganisms in some of the most important cycles and their importance in contributing to sustainable development have been briefly discussed.

Keywords: microorganisms, biogeochemical cycles, ecosystem, environment, sustainable development

Thinking 'The End of Times': The Significance of Bioart|BioArt for Art|Education

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Abstract

Jan Jagodzinski (born in 1948) is a professor in the Department of Secondary Education at the University of Alberta. He collaborates with the Association for Psychoanalysis, Culture and Society and the Journal for Lacanian Studies. He is also the editor-in-chief of the Journal of Social Theory in Art Education. So far, he has edited 15 books and tries to redraw educational models in the face of expanding technological interfaces, in order to find a new foundation for teaching visual arts. By examining Lacanian psychoanalysis, feminism, and linguistics, among other methods, he focuses on the influence of these tools on the aesthetics, gender, and fantasy life of children, which is reflected in education and training. In his last book published in 2020 by Springer International Publications, he dedicated a chapter to bio-art interpretation. In this section, Jagodzinski beautifully explains all the structural aspects of bio-art and highlights its importance in the post-human era, which will be dominated by the recombinant species of human, in-human and non-human. This article is a translation of the eleventh chapter of the mentioned book:
Jagodzinski, J. (2020). Thinking 'The End of Times': The Significance of Bioart|BioArt for Art|Education. In: Pedagogical Explorations in a Posthuman Age. Palgrave Studies in Educational Futures. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-48618-1_11

Thinking 'The End of Times': The Significance of Bioart|BioArt for Art|Education

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Abstract

Iran is important in terms of non-metallic mineral resources in the world. Iran is ranked among the top ten countries in some sources of non-metallic minerals such as fluorspar, industrial soils (kaolinite), feldspar, silica and celestine. Iran›s non-metallic mineral reserves are significant. Iran is one of the largest holders of feldspar reserves in the world. So far, based on the limited discoveries made in Iran, barite reserves are about %13 and garnet, fluorspar and celestine reserves are about %1 of the total world reserves. The share of Iran›s non-metallic mineral production compared to the world in recent years includes 25 percent of celestine, 8.5 percent of feldspar, 4 percent of kaolinite, 2.6 percent of barite, 2.3 percent of bentonite, and about 1 to 2 percent of fluorspar, aluminum silicates, and talc. In terms of exports of non-metallic minerals, including bentonite, Iran ranks 10th, aluminum silicates 11th, feldspar 12th, and fluorspar 13th in the world. Considering the amount of resources and reserves of non-metallic minerals in Iran, their production and export can increase with the development of extraction and processing. Therefore, in addition to meeting its needs, Iran can be one of the top exporters of these products and minimize its imports of these products.

Keywords: non-metallic minerals, industrial minerals, industrial stones of Iran, non-metallic resources of Iran, non-metallic resources of the world

An Analytical View on Worldwide Statistics of 74 Types of Iran's Minerals Focusing on Zeolites as a Strategic Mineral (Identified Deposit Quantified, Variety, Production, and Branding)

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Abstract

The geographical position of Iran as one of the rare regions of the geopolitical position of the world has caused Iran to be, among the huge energy fields of the Persian Gulf and the Caspian Sea, in the heart of %75 of the total energy reserves of the world.
According to the Wall Street Journal, Iran ranks fifth in the world in terms of the richest countries having natural deposits. With %7 of mineral deposits in %4 of the world›s soil, Iran ranks first with the total oil and gas deposits. In accordance with Hallgarten End Institute (London Company), a great mining power, known as Iran, has emerged with more than 40 mineral products, and over 20 kinds of metals or the related metal products processed. Possessing 60 billion tons of definite and probable mineral deposits, Iran ranks the tenth in the world, the first in the Middle East, and the third in Asia. In addition, with 74 kinds of minerals, 42 of which are nonmetal minerals, and 11 metal minerals, and the rest building materials and different kinds of salt, Iran ranks the fourteenth or the fifteenth. Zeolite as a strategic mineral constitutes one seventy-fourth of the diverse minerals in the country. Based on the universal reference, Economic Zeolite, Iran is the

leader in having the premium type of clino zeolites with %80 purity, and enjoys a single-digit rank in the world for having high quality zeolites. Iran›s analsim type zeolites deposits have a single-digit ranking in the world quantity and quality-wise. Moreover, citing foreign sources, the studies and the synthesis of synthetic zeolites, as well as the synthesis of synthetic zeolites from natural ones have resulted in improving Iran›s scientific status to single-digit ranking in the world.

Keywords: Iran, deposits, position, strategic, zeolite, analsim, branding

SARS-CoV-2 Infection and Persistence in the Human Body and Brain at Autopsy

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Abstract

Coronavirus disease 2019 (COVID-19) is known to cause multi-organ dysfunction3–1 during acute infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), with some patients experiencing prolonged symptoms, termed post-acute sequelae of SARS-CoV-2 (refs. 4,5). However, the burden of infection outside the respiratory tract and time to viral clearance are not well characterized, particularly in the brain14–3,6. Here we carried out complete autopsies on 44 patients who died with COVID-19, with extensive sampling of the central nervous system in 11 of these patients, to map and quantify the distribution, replication and cell-type specifcity of SARS-CoV-2 across the human body, including the brain, from acute infection to more than seven months following symptom onset. We show that SARS-CoV-2 is widely distributed, predominantly among patients who died with severe COVID-19, and that virus replication is present in multiple respiratory and non-respiratory tissues, including the brain, early in infection. Further, we detected persistent SARS-CoV-2 RNA in multiple anatomic sites, including throughout the brain, as late as 230 days following symptom onset in one case. Despite extensive distribution of SARS-CoV-2 RNA throughout the body, we observed little evidence of infammation or direct viral cytopathology outside the respiratory tract. Our data indicate that in some patients SARS-CoV-2 can cause systemic infection and persist in the body for months.

Keywords: Autopsy, SARS-CoV-2, Persistence SARS-CoV-2 infection, COVID-19

Unbridled Growth of Water Fern (Azolla filiculoides, Lam.) in Anzali Wetland; The Tragedy of Introducing an Invasive Species to One of The Most Important Water Bodies in Iran

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Abstract

In the present study, one of the most important environmental problems and examples of biological invasion in Iran, which has destroyed Anzali wetland for many years, has been investigated. Water fern (Azolla filiculoides) is an exotic and invasive species that has been introduced to Anzali Wetland. In this study, various mechanisms to control Azolla are discussed. Studies have shown that in addition to mechanical, chemical and biological methods, prevention is still considered as the primary approach. Among the various methods, mechanical and biological methods have been considered due to the less environmental effects they have on the ecosystem. If it seems that the fastest solution is to use mechanical methods in the field of combating the spread of Azolla in Anzali wetland, however, this method is not very suitable due to the possibility of plant fragmentation and the possibility of plant regrowth. Among the control methods, the use of biological approaches can be helpful if it is adopted by experts and researchers considering all aspects. This is confirmed by case studies and experiences from other countries, including the biological control of Azolla in South Africa over the past years.

Keywords: Azolla, Anzali wetland, Biological control, Waterfern weevil, Environmental impacts

Future Temperature in Southwest Asia Projected to Exceed a Threshold for Human Adaptability

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Abstract

A human body may be able to adapt to extremes of dry-bulb temperature (commonly referred to as simply temperature) through perspiration and associated evaporative cooling provided that the wet-bulb temperature (a combined measure of temperature and humidity or degree of 'mugginess') remains below a threshold of 35 ° C. (ref. 1). This threshold defines a limit of survivability for a fit human under well-ventilated outdoor conditions and is lower for most people. We project using an ensemble of high-resolution regional climate model simulations that extremes of wet-bulb temperature in the region around the Arabian

Gulf are likely to approach and exceed this critical threshold under the business-as-usual scenario of future greenhouse gas concentrations. Our results expose a specific regional hotspot where climate change, in the absence of significant mitigation, is likely to severely impact human habitability in the future.

TURKEY–SYRIA EARTHQUAKE REVEALS BUILDING DANGER
Structures in the region have always been vulnerable, but war has made things worse

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Abstract

A magnitude- 7.8 earthquake hit southeastern Turkey and parts of Syria in the early hours of the morning of 6 February. As Nature went to press, at least 34,000 people were known to have lost their lives, with thousands more injured. The quake was followed by a magnitude-7.5 event some 9 hours later, as well as more than 200 aftershocks. The earthquake and its aftershocks have flattened buildings and sent rescuers digging through concrete debris to find survivors. Nature spoke to four researchers about the seismic activity in the region and building standards in both countries.