“I am especially aware of the role of scholars and students in making progress happen. Where others see unsolvable problems, you see paths that can lead to answers and successful action. This is the tradition of great scholarship of which you are a part...”

Remarks at the Woodrow Wilson School of Public and International Affairs - Princeton University, 26 Feb. 2008

“Education is ... an enabler, not only of productivity and success but also, of responsible citizenship. What's needed are connections as well as curriculum standards - support systems to encourage great thinking and innovation...”

2008 Darden School Commencement Address, 28 May 2008

“Excerpts from remarks by His Majesty King Abdullah II”

Fostering Research, Innovation and Entrepreneurship

General Director, SRSF

The future plans of SRSF have set forth quite an ambitious agenda for the much anticipated success and growth focusing on the delivery of high quality applied research. The past three years in the life of SRSF have progressively witnessed rising budgetary allocations targeting cutting-edge research, post-doctoral scholarships, and new programs fostering applied research leading to innovations giving an edge for national work products in competitiveness across industrial markets.

In staging its priorities commensurate with the national agenda, SRSF has set at its center stage an applied research strategy that would readily impact innovative outcomes to contribute towards a knowledge-based economy. In so doing, SRSF strives to be a leading governmental institution to help universities bolster spirits of creativity, innovation and entrepreneurship as applies to faculty members and students whereupon faculty applied research and student projects would often culminate in incubated work products leading to a flourishing national industrial base capitalizing on start-up and ultimately spin-off companies.

Furthermore, SRSF is presently supporting a Brain Drain reversal project, currently being administered by the Higher Council for Science and Technology, whereby opportunities would be created for collaboration between local Jordanian researchers and peer Jordanian scholars/experts in diaspora in ways that would promote applied research, knowledge exchange, technology transfer and entrepreneurial activities helping Jordan move across the competitive developmental fronts into industrialization.
Civil Service Bureau Honors SRSF

In a venerable celebration commemorating its 60th anniversary, patronized by His Excellency the prime minister as deputy of His Majesty, the Civil Service Bureau honored the Scientific Research Support Fund for the best scientific research endeavor in the field of societal studies.

This came in recognition of the superb work on a funded study titled, “The Salary Scale in Civil Service Charter in Accordance with Gender Classification: A Comparative Study”.

The team involved in carrying on this endeavor included Jehad Abu Al-Sundus and Abdel Nasser Zyiod of the business school at Al-Balqa Applied University and Ghazi Al-Assaf and Ala’a Al-Tarawneh from the business school at the University of Jordan.

SRSF General Director, Dr. Abdallah Al-Zoubi, received the award tendered by His Super Excellency, Prime Minister Dr. Abdallah Nsour, on behalf of his organization.

SRSF Honors the Winning Team in the Best Social Work Study

Amman, 26 June 2015 (Petra)

The SRSF director honored a joint team from University of Jordan and Al-Balqa Applied University for having won the outstanding research award for their SRSF-funded project in the social studies domain.

According to a press release by SRSF, director Al-Zoubi has tendered the award in recognition of the outstanding achievement by the winning team in executing the research work titled, “The Salary Scale in Civil Service Charter in Accordance with Gender Classification: A Comparative Study”.

The team involved has under its wing Jehad Abu Al-Sundus and Abdel Nasser Zyiod of the business school at Al-Balqa Applied University and Ghazi Al-Assaf and Ala’a Al-Tarawneh from the business school at the University of Jordan.

The press release pointed to the fact that this comes out of sheer interest to bringing outstanding researchers to the limelight of scientific achievements, and to tendering financial awards to deserving researchers in an effort to spread a culture of competitiveness and excellence across the educational and research communities in Jordan, and inculcate a spirit of innovation and entrepreneurship. The SRSF director reiterated that the basis for development, technological advancement and the fulfillment of societal goals all come about as a result of scientific research pursuits.

The researchers amongst the winning team expressed the gratitude and appreciation for being awarded such an honor, noting the importance of these awards in inciting fellow researchers towards more dedication and commitment in moving the country’s economy forward leveraging innovation and creativity.
SRSF Allocates Funding for Innovative Graduation Projects and High School Student Ventures

The governing board of SRSF has approved budgetary allocations to fund innovative senior student projects and those creative ventures committed to by high school students.

This come to bolster ongoing efforts by SRSF to promote a culture of innovative scientific research that would ultimately lead to start-up companies and thereupon to spin-offs that would create a real backbone for the Jordanian industrial sector.

SRSF Director Takes Part in a Leadership Workshop at the Oxford Academy/Oxford University, England

The SRSF general director, Professor Dr. Abdallah Al-Zoubi, has taken part in a leadership workshop conducted at the Oxford Academy in the period June 8 – 12 of this year. The workshop title was “The Role of Higher Education Leaders in Raising Funds and Scientific Research”. The purpose of this workshop was to maximize the role of an academic leader in enhancing scientific research, bolstering the position of his university at the world stage, and in fostering industry-academia collaboration.

Dr. Al-Zoubi has been a diligent participant in a series of higher education workshops held at renowned world academies in his incessant endeavors to gather world expertise at upholding universal standards as accrues to scientific research and in bolstering scientific research endeavors by Jordanian researchers that would stand in support of sustainable development efforts in Jordan.

SRSF Appoints Working Teams on Facets to Combat Extremist Ideologies

The governing board of SRSF has approved the recommendations set forth by the management of SRSF to identify working groups that would be involved in research ventures dealing with some solicited endeavors to address ways in combating extremist ideologies. These identified working teams entail teams that would include a steering committee, a research team addressing education and teaching, a team that would tackle religious aspects, one for sociopolitical aspects, and another for communication and media. The team formations were as follows:

1- Steering committee chaired by HE Abdul Salam Abbadi, with memberships of:
   a. HE Dr. Ibrahim Badran
   b. HE Professor Salah Jarrar
   c. HE Mr. Sameeh Maaytah
d. Professor Dr. Abdul Rahim Huneiti  
e. Mr. Ramadan Rawashdeh  
f. Professor Dr. Abdallah S. Al-Zoubi, General Director of SRSF  
g. Dr. Sami Al-Majali, Chairman of the Higher Council for the Youth  
h. Professor Dr. George Hazboon, American University of Madaba  
i. Chief Secretariat, Scientific Research Support Fund

2- Research team on Education and Teaching Axis, Chaired by Dr. Salman Al-Bdour, with the memberships of:
   a. Professor Dr. Ahed Wahadni, Jordan University of Science & Technology  
b. Professor Dr. Mohamad Mesmar, Prince Sumayyah University of Technology  
c. Professor Dr. Ghaida Khazneh Katbeh, University of Jordan  
d. Dr. Ali Al-Momani, Ministry of Education  
e. Dr. Basem Tuweisi, Director of the Institute of Media  
f. Mr. Muath Deisat, All-Jordan Youth Association

3- Research team on Religion Axis, headed by Professor Dr. Abdel Naser Abu Al-Basal, with the memberships of:
   a. Dr. Mohammed Khair Al-Eissa, Retired Major General  
b. Dr. Waleed Shaweish, Islamic Sciences University  
c. Dr. Adnan Al-Assaf, University of Jordan  
d. Dr. Abdallah Fawwaz, Mutah University  
e. Dr. Jameela Refaie, University of Jordan  
f. Nour Eddin Al-Khatib, All-Jordan Youth Association

4- Research team on Sociopolitical Axis, Chaired by Professor Dr. Waleed Abdel-Hai‘, and memberships of:
   a. Dr. Waleed Awajan, Middle East University  
b. Professor Dr. Ibrahim Othman, University of Jordan  
c. Dr. Lubna Akroush, Jordanian Lady Academicians Sector  
d. Dr. Hasan Al-Momani, University of Jordan  
e. Dr. Abdallah Darawsheh, Al-Hussein Bin Talal University  
f. St. Muna Abu-Hammour

5- Research team on communication and media, chaired by Professor Dr. Muhannad Mubeideen, and memberships of:
   a. Dr. Hussein Al-Omoush, Jordan Television  
b. Dr. Mohammad Abu-Rumman, Center for Strategic Studies, University of Jordan  
c. Mrs. Aman Al-Saieh, Addustour Daily  
d. Dr. Yousuf Rababah, Philadelphia University  
e. Mrs. Haya Jamil Baku, Madrasati Initiative
SRSF Nominates 22 Funded Projects for SRSF’s 1st Upcoming Conference

SRSF technical board has nominated 22 carefully selected funded projects for presentation at SRSF’s 1st conference entitled, ‘Research & Development in Service of Sustainable Development across Jordanian Society’. These projects categorized in accordance with the sponsored sectors include:

1- Basic Sciences Sector:
   a. Structural and mineralogical uniqueness of Jabal Waqf as Suwwan meteoric impact, PI: Dr. Hani Khouri, University of Jordan
   b. Encapsulated Sol-gel glass materials for use as filters for water purification and in optical display, PI: Dr. Mohamad Zeitoun, Mutah University
   c. Conductive Polymer nanocomposites for electromagnetic interference shielding applications, PI: Dr. Mohamad Assaleh, Jordan University of Science & Technology
   d. Organic Nanocrystalline Titanium Dioxide (nc-TiO2) – Dye Sensitized Solar Cells, Dr. Hmoud Al-Dmour, Mutah University

2- Engineering Sciences Sector:
   a. Palm Tree Climbing Robot, PI: Dr. Khaled Asfar, Jordan University of Science & Technology
   b. Novel and Modified Mixtures of Concrete and Mortar Using Jordanian Bentonite as Waterproofing and Low Cost Construction Materials, PI: Dr. Ayyoub Ghrair, Royal Scientific Society

3- Energy Sector:
   a. Introducing concentrated solar energy concept for tri-generation (electricity, cooling, and desalination), PI: Dr. Ayman Maayta, Mutah University
   b. Using the electrochemical reaction engineering, biotechnology and solar cells technology to produce hydrogen and desalinate sea water, PI: Dr. Farqad Al-Hadeithi, Royal Scientific Society
   c. Powertrain and Control Design for Hybrid Fuel Cell / Battery Vehicle, PI: Dr. Mohamad Abu-Mallouh, Hashemite University

4- Water and Environment Sector:
   a. Treatment of effluent water from phosphate-containing fertilizer industry for reuse and production of useful compounds- Phase I, PI: Dr. Mohamad Harahsheh, Hussein Bin Talal University
   b. Sol-Gel Synthesis of Water Desalination Inorganic Membranes from Natural Clays, PI: Dr. Mailouba Abu-Daiibes, German Jordanian University
   c. Municipal sludge treatment and reuse options: Solutions for Jordan, PI: Dr. Maha Halalsheh, University of Jordan

5- Agricultural and Veterinary Sciences Sector:
   a. A Biotechnological approach to improve drought tolerance traits in local barley genotypes, PI: Dr. Ayed Mreif, University of Jordan
   b. Identification, Development and Isolation of Insect Infecting Fungi to Combat Green House Infections in Jordan, PI: Dr. Mohammad Al-Mazra’awi, Al-Balqa Applied University
   c. Development of Drought Tolerant Wheat Transgenic Lines by the Overexpression of Drought Responsive Transcription Factors from the Model Plant Arabidopsis, PI: Dr. Amal Harb, Yarmouk University

6- Information and Communication Technology Sector:
   a. A Signal Processing Approach for the Diagnosis of Asthma from Cough Sounds, PI: Dr. Mahmoud Khasawneh, Yarmouk University
   b. Intelligent System for Stack Emission Air Pollution Detection Using Video Monitoring, PI: Dr. Ashraf Ahmad, Princess Sumayya University of Technology
SRSF Sets Forth National Research Priorities for 2nd CFPs Cycle in 2015

The board of directors for SRSF has set forth the national research priorities as accrues to the 2nd Call for Proposals cycle in 2015. These priorities were categorized according to the fostered sectors under SRSF. These classifications were according to the following sectors:

1- Engineering, Nano- and Bio-Technology Sciences Sector:
   a. Production and development of new materials suited for engineering applications
   b. Development and automation of industrial processes
   c. Applied research in the production and infrastructure sectors that bear sound impact upon sustainable development
   d. Applied research as accrues to defense technologies
   e. Assessment and mitigation of consequences of traffic congestion, earthquake catastrophic hazards upon urban and high density population conglomerations

2- Medical and Pharmaceuticals Sciences Sector:
   a. Research endeavors connected with common diseases in Jordan; its diagnosis and the development of the suitable medical care and medications for proper treatment. Priorities under this cycle cover heart diseases, cancer, glands, obesity, bone fragility, liver diseases, and respiratory system
   b. Research endeavors tackling health of teeth and mouth

3- Agricultural and Veterinary Sciences Sector:
   a. Studies addressing seed production and enhancement
   b. Studies related to honey bee diseases and its environmental impacts (agricultural, hygienic, etc.)
   c. Research connected to livestock hereditary amelioration
   d. Studies connected to modern molecular technologies towards the development of tolerant plant species commensurate with Jordan's environmental conditions
   e. Agricultural technology transfer
   f. Food security

4- Energy Sciences Sector:
   a. Research connected to renewable non-classical energy sources and efficiency improvement

5- Water and Environment Sciences Sector:
   a. Pollution-related research, and pollutant analysis leveraging modern molecular technologies
   b. Research related to deep ground waters
   c. Water purification and waste water treatment
   d. Earth, the environment and public health

6- Information and Communications Technology Sector:
   a. Information and data security
   b. National network architecture and optical fibers
   c. Mobile applications and cloud computing
   d. Cross-sector applications of ICT including medicine, energy, environment, agriculture, etc.

7- Basic Sciences Sector:
   a. Materials-related research oriented towards technological, industrial and environmental applications
   b. Research related to small-scale systems (nano-, micro-, femto-, etc.)
   c. Research related to knowledge creation and applications to promising areas of expertise
   d. Research related to national mineral resources linked to economic feasibility

8- Social, Economic and Humanities Sector:
   a. Educational policies and challenges that face the future of education, vocational training and higher education
   b. Higher education outcomes from job market perspective
   c. Continuing education potentials in responding to social development needs in Jordan
   d. Forced migrations and the social, economic and educational impacts in connection with the political turmoil in the region
   e. Investment and returns economics
   f. Extremism and national security and the media role in national political stability
   g. Tourism and the preservation of heritage and antiquities
   h. Research related to history resources; both documented and transferred
   i. Social, economic and political impacts of poverty and unemployment
   j. Research endeavors related to the physically challenged
   k. The Arabic Language: Prospects, Challenges and Solutions
   l. Topics and directions in modern-day business administration.
Role of Academic Leadership in Promoting Research Endeavors

Professor Abdel Rahim Hneiti
University of Jordan
Member of the Board, Higher Education Council

At times of rapid societal changes accompanied with a significant evolution in the role of universities, research at any university plays a key role in increasing fundamental capabilities of a society towards generating creative breakthroughs that lead to technologies with positive impact in creating opportunities for economic growth and development. To carry out world-class research and bolster intellectual endeavors to the highest international standards it is necessary to restructure our research governance at universities to increase university research intensiveness and performance. This would have an immediate bearing on the advancement of knowledge in a manner that would lead to feasible economic outcomes and allow for knowledge mobilization services across the full spectrum of all university program offerings.

The process would start out from improving the selection criteria of academic leaderships on to selecting competent academics well qualified for upholding research standards commensurate with the stated objectives of the university; particularly those ones capable of establishing high-profile partnerships and research collaborations with researchers at leading academic institutions. In a world driven by competitiveness, this would have to go hand in hand with efforts leading to landing funding opportunities through potential investors to promote mobilization of knowledge created into industrial work products. The efforts tallied should target those individuals well-versed in developing strategies to implement plans in support of rich research environments that serve the best interest of a university's stated research objectives, both nationally and globally.

What our university system direly stands in need of would be for the type of leaderships that foster innovation and promote multi-disciplinary collaboration and research partnerships. They would be the ones that would similarly promote fundamental academic research as a creative intellectual activity as well as the types of university–industry and university–society collaborations that are deeply rooted in fundamental research. This would inherently require the establishing of an office for research services offering premium support to researchers covering about every facet from grant and contract writing to funding administration on to regulatory oversight meetings. Such an office would be the entity entrusted with upholding the highest intellectual property management standards and knowledge mobilization services. In this manner, this entity would work with researchers and inventors to identify, protect, and commercialize various kinds of intellectual property assets.

When fostered properly by a true academic leadership, such practices would certainly position the university well on being successful in attracting research funds from national and international sources and will enhance the creation of knowledge leading to new applications and work products leaving positive impacts on the economic development of a nation while helping the university itself achieve best results in international academic ranking.
Current statistics indicate that there are over 120,000 engineers registered with the Jordan Engineers Association (JEA) in all engineering disciplines and over 55,000 enrolled engineering students at public and private universities all across Jordan. These numbers give the heads up and pose an important question as to the future of the engineering profession in Jordan. Taking into account that there are many engineering colleges in the Gulf region that put out considerable numbers of engineers in their local markets, where some graduating engineers were traditionally employed, there are several questions and issues that government and Engineering Associations must face and try to answer: Are there enough jobs for the growing numbers of graduating engineers? Is there a corresponding increase or growth in the industrial markets in Jordan and the neighboring countries to absorb these ever-growing numbers? What about the quality of these ‘engineers’ and do they possess hands-on experience? Do these ‘engineers’ get enough training during their residency with engineering colleges that will prepare them for their future careers in ways that would ensure the much sought after competitiveness for an industrial market?

To that end, there exists no easy answers to such questions and perhaps no magical solutions are right off hand to some of the existing problems. Government, Industrial Society, and Jordan’s Engineers Association have some moral obligations towards our upcoming generations of engineers. They should exert every effort to plan ahead to avert an inevitable unemployment ‘crisis’ in the engineering profession which may bear heavily on the national economy. Some of the following important and urgent steps have to be undertaken in order to bolster engineering student capabilities and bring about a much sought innovation culture:

1. Universities and institutions of higher learning at large should establish Innovation Centers and Technological and Business Incubators. Startup companies centered about novelty in ideas and research projects should be encouraged within the realm of incubators between students and faculty members in ways that would ultimately lead to Spinoff companies. Success stories should entice students and future engineers to strive and work hard towards fulfilling their career goals. Support for incubators can be solicited through various sources, in addition to university funding, including SRSF, HCST, KAFD, and KADDB…etc.

2. Extensive annual summer technical training (internship opportunities) should be required from all engineering students at local or international industries instead of taking summer courses for a speedy getaway! This will give them the much needed hands-on experience which will enhance their employability.

3. Applied Senior Graduation Projects should be required to emphasize the practical aspect. Industrial links on the part of academic institutions should be encouraged as well.
Solar-powered Single-compartment Multi-purpose Electrochemical Reactor

Dr. Farqad Al-Hadeethi
Applied Science/Scientific Research
Royal Scientific Society

This invention comes about as a fruitful outcome of an SRSF-funded project titled: “Using the Electrochemical Reaction Engineering, Biotechnology and Solar Cells Technology to Produce Hydrogen and Desalinate Sea Water”. Essentially, the invention could be utilized to produce hydrogen gas with high purity as an energy carrier, desalinate sea water, remove heavy metals from drinking water, eliminate pathogenic bacteria in treated water, producing a wide range of chemicals with high purity. The invention, as shown in Fig. 1, consists of PV cells, two batteries to store the electrical energy harvested through the PV cells in order to power the electrochemical reactor (electrolyzer), D.C. current controller, the storage tank to keep the electrolyte as a feed for the electrolyzer, the PVDF pump, and the PVC flow meter. It is worth mentioning that the electrochemical reactor (electrolyzer) is made up of three major sections: an inlet, a working section (anode made of Graphite and cathode made of Inconel alloy), and the outlet section. A fully computerized system with special software is connected to the electrolyzer in order to monitor the various stages/components during operation. The mentioned system in Fig. 1 could be scaled up OR down depending on the application and the desired rate of production.

Fig. 1: A solar-powered single-compartment multi-purpose electrochemical reactor system
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