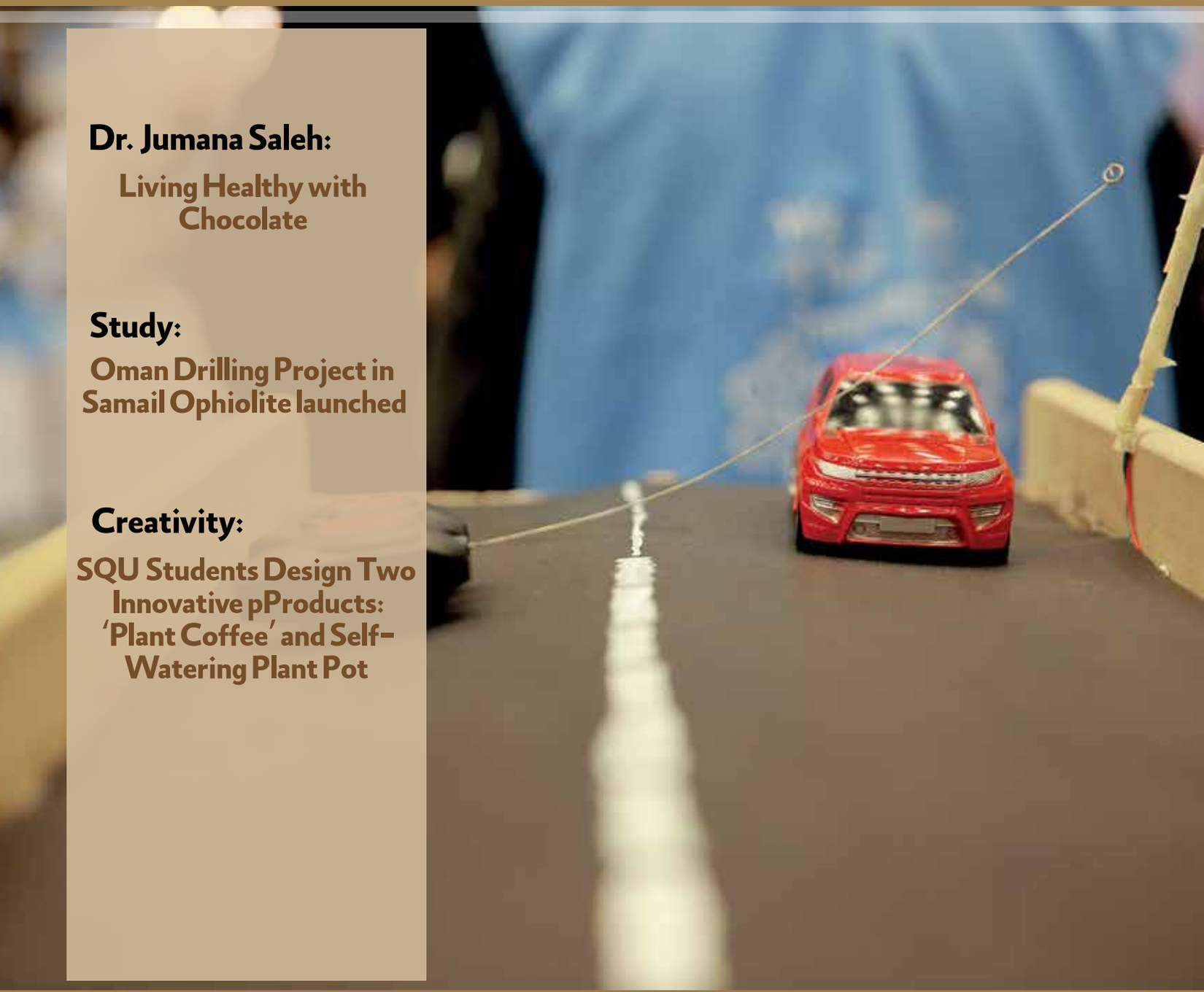
15
TAWASUL تواصل علمي
دائرة النشر العلمي والتواصل بعمادة البحث العلمي

From the Drawing Board into the Marketplace: Transferring Innovation to Industry

Specialists Highlight the Obstacles and Suggest Solutions

Seasonal Edition Issued by Oman Observer And SQU



Dr. Jumana Saleh:

Living Healthy with Chocolate

Study:

Oman Drilling Project in Samail Ophiolite launched

Creativity:

SQU Students Design Two Innovative pProducts: 'Plant Coffee' and Self-Watering Plant Pot

The State Council's Education and Research Committee Chairman to Tawasul:

We are Certain that Research will Help Overcome the Economic Crisis

TAWASUL

General Supervision
Dr. Rahma Al-Mahrooqi

Executive Supervision
Basma Yahya Al-Shabibi

Managing Editor
Salim Rabia Al-Gheilani

Photography
Amur Khalfan Al-Khrusi

Translated and Edited by
Dr. Hisham Jawad

Proofreading by
Dr. Aysha Heble

Design and Production
Ibtisam Said Al-Harthi

Periodical magazine published by publication and outreach department

Preface

Research and the Omani Parliament

Several countries have agencies that closely collaborate to formulate plans for developing research in a way that would save time, money and effort, as well as accelerate the attainment of expected goals and results.

Research issues are not confined only to educational institutions, such as universities, colleges, research centers or other research-oriented public and private organizations. Parliaments and legislative and supervisory councils engage in research as well, given the paramount position of research in the development plans of many countries.

Addressing research in parliaments and legislative and supervisory councils is highly important, since they include mostly academics, researchers and specialists, in addition to former officials and other representatives of the people, who can take care of all research-related aspects, such as drafting relevant legislations, setting plans for research development, and implementation and handling of research challenges. This could lead to a fruitful dialogue and discussion which would result in a broad vision for research which is derived from real needs rather than based on mere abstract theory.

A closer look at what has been achieved so far in the Sultanate will reveal that the country has made great efforts to promote scientific research through the creation of the Research Council, the Deanship of Research at Sultan Qaboos University, and other institutions. Research has also been a key issue on the agendas of the Council of Oman and two committees, namely, the Education and Research Committee in the State Council and the Committee for Education and Research in the Shura Council.

It is noteworthy that these two committees include members who are specifically concerned with education and research issues in the Sultanate, and those who come from various relevant institutions. Eventually, this will help in enhancing research, drawing up appropriate legislation and regulations, and providing researchers and academics with insights, ideas and proposals that will facilitate their scientific efforts so as to transfer new knowledge to industry and thus build a new source of revenue for the national economy.

Editor

Strategic Research Projects Funded by His Majesty's Trust Fund Presented at Forum

The Office of the Deputy Vice-Chancellor for Postgraduate Studies and Research organized a Forum for Strategic Research Projects Funded by His Majesty's Trust Fund under the auspices of His Highness Sayyid Dr. Fahd bin Julanda Al Said, Assistant Secretary General of the Innovation Development at the Research Council.

Dr. Rahma Al-Mahrooqi

The goal of the forum was to highlight some of the research projects funded by His Majesty's Trust Fund, and to display their findings and results to various institutions, organizations, and community members. The presented projects are strategic in nature and directly related to various sectors in Oman and have applications for the global market and international community. It is envisioned that these projects, through systematic investigations and experimentation, would aid decision makers and the country's private and public sector institutions, and will help them overcome the challenges that they might encounter.

The forum commenced with a speech by Dr. Rahma Al-Mahrooqi, the Deputy Vice-Chancellor for Postgraduate Studies and Research. Fourteen projects were then presented, highlighting the importance of project findings for the job market and the community. In this way, the forum has helped achieve positive interaction between the university and the community to serve the interest of the country, in addition to conveying project findings to a wider audience, thereby enabling researchers and other stakeholders to take advantage of these and to transform them into the spin of companies.

It should be noted that His Majesty's Trust Fund for Strategic Research at Sultan Qaboos University plays a pivotal role in supporting projects and multidisciplinary research that is of strategic importance to the country. In this regard, SQU has achieved a number of important milestones in projects funded by His Majesty's Trust Fund since the fund began in 2001. Some private institutions have embodied the principle of true and effective partnership with SQU to help achieve the objectives of contributing to Oman's continued progress by promoting scientific research in providing information that can develop and enhance the country's social and economic development. Both the Gulf Energy Company and the BinOmeir Establishment for Research and Charity acted as generous sponsors of the event, which helped make it a success.

Deanship of Research Introduces its Services

promoting Research and Innovation in SQU workshop activities

The Deanship of Research at SQU recently held a workshop on promoting research and innovation at the University.

The event is part of the Deanship's efforts to increase awareness of the University's plans to enhance research, and the mechanisms, procedures and resources available for this purpose. It was aimed at reaching out to those who will benefit from its services.

The workshop, organized at the seminar hall (1), shed light on the opportunities of research and innovation at the University, as well as the efforts made by its academics, researchers and other staff. It also aimed to introduce the University's staff to the ongoing support programs and how to benefit from them. There were also presentations by officials from different sections of the Deanship of Research about their respective sections and the activities and services offered by each section.

The function was part of the Deanship's efforts to engage efficiently in the implementation of institutional accreditation to manage research at the highest quality level and in accordance with the University's vision. This is achieved through establishing an integrated system of institutional accreditation to promote research and academic performance and maintain sustainability at all levels to meet the needs of the domestic and international market. Institutional accreditation is a recognition of the University's mission for higher education and that it has the management infrastructure in terms of laws, regulations, policies and procedures, material and financial resources, academic programs, faculty members and staff, and quality requirements needed to ensure the accomplishment of its mission and create a research culture.

Institutional accreditation includes eleven standards for institutional and academic accreditation of universities. The tenth standard, concerning research, measures the research activity in all colleges and research centers at the university. Therefore, the workshop was part of many events and seminars delivered by the Deanship of Research, to introduce the research resources available to all researchers.

SQU Seeks Institutional Accreditation

Sultan Qaboos University has formed a high-powered committee to supervise the process of applying for institutional accreditation, an executive committee to submit the University's report to the Oman Academic Accreditation Authority, and other subcommittees.

By seeking institutional accreditation, the University hopes to attain quality assurance of its outcomes, including academic and research programs, as well as services delivered to the community. It also aims to strengthen its reputation at the local, regional and international levels, ensure quality and excellence, and disseminate the culture of quality among its staff and students.

In order to fulfil the requirements set out by the Oman Academic Accreditation Authority, the University is currently reviewing and enhancing its academic, research, administrative and technical services.

The Oman Academic Accreditation Authority has laid down a number of standards that should be met by institutions in order to receive institutional accreditation. Each standard subsumes certain criteria. Governance and management includes thirteen criteria, student learning by coursework programs, eleven criteria, student learning by research programs, nine, staff research and consultancy, also nine, industry and community engagement, six, academic support services, seven, students and student support services, ten , staff and staff support services, ten, and general support services and facilities have four criteria.

The State Council's Education and Research Committee Chairman to Tawasul:

We are Certain that Research will Help Overcome the Economic Crisis

Research is a recurrent topic in discussions and debates due to its significant role at all levels, and specifically under the current economic circumstances in the region. Such a situation makes it imperative to pay more attention to research and to the practitioners in this field, so as to enhance social and economic development.

Besides the public and private educational and research agencies in the Sultanate, there are legislative and supervisory authorities that have made considerable efforts to encourage studies and emphasize the role of researchers in addressing socio-economic problems. One such authority is the State Council that has formed a committee for education and research.

Tawasul met with the Honourable Dr. Abdullah Bin Mubarak Al Shanfari, Chairman of the Education and Research Committee at the State Council level, and had the following interview:

What are the responsibilities of the State Council's Education and Research Committee?

The Committee is in charge of examining the bills and topics which concern education, research and human resources which are referred to the Council, proposing draft laws, and reviewing the effective laws that fall within its competencies. It also assesses the policies and regulations related to all stages of the education system, and evaluates the educational aims and programs in order to ensure that they are complementary to and in harmony with the overall development goals set for them. The Committee further follows the situation of the educational sector and studies and submits proposals and insights that could help improve it in such a way as to meet the requirements and needs of the labor market and the overall development plans. Finally, the Committee is responsible for reviewing the policies for the development of human resources, research, innovation and new technologies, as well as any other matters referred to it by the Council or its office, or its Chairman.

We have several responsibilities and two studies now under consideration

What are the main studies undertaken by the Committee, and what are their results?

There are two studies under the consideration of the Education and Research Committee during the first annual session: the first one is about enabling researchers of the academic and research institutions and engaging them in the industrial and commercial agencies in the Sultanate, and the second has to do with reviewing the duality of academic programs and disciplines in higher-education institutions. We hope to finish the two studies in the next few months.

Challenges are expected and can be tackled through cooperation

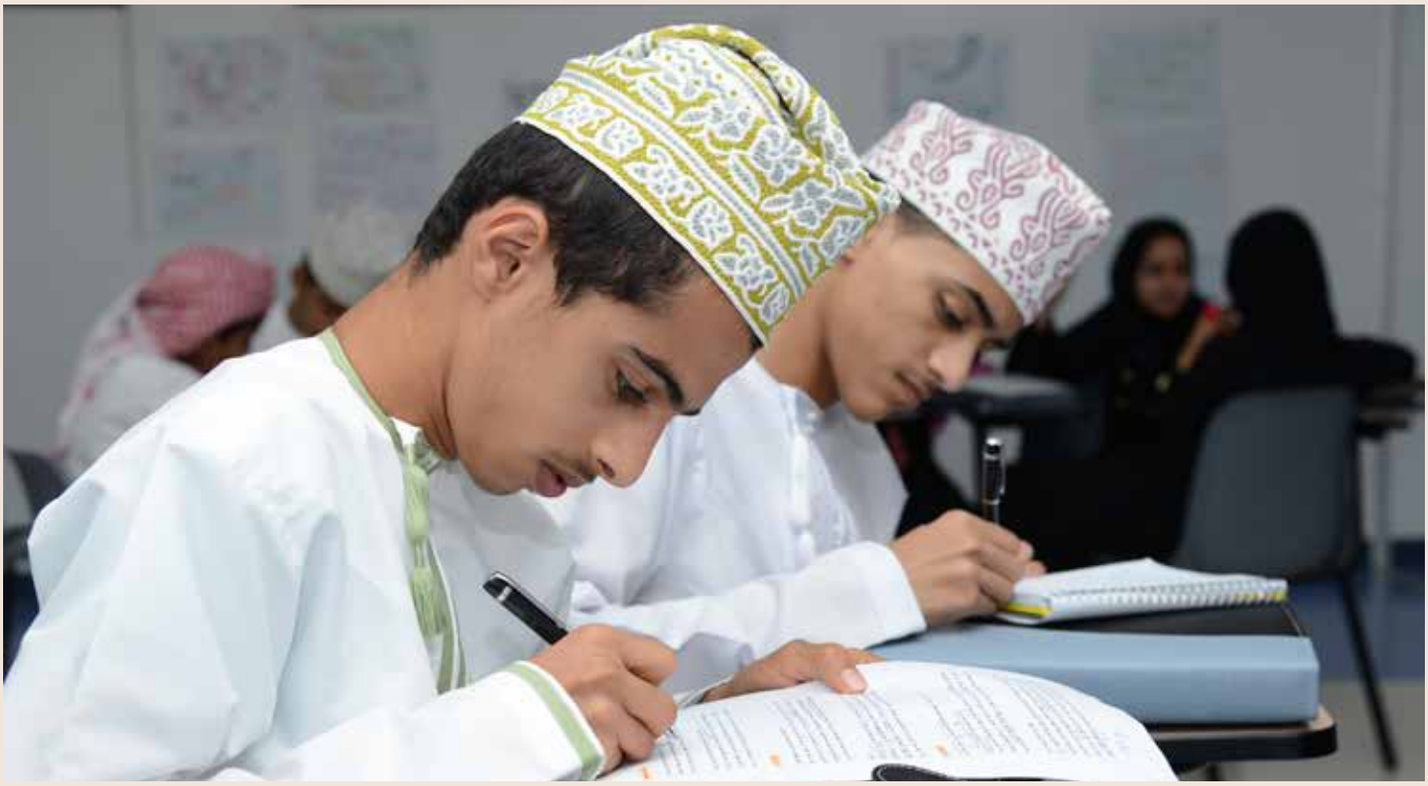
Are you, in the Committee, facing any challenges in your work?

It is possible to encounter difficulties, but these can be overcome by coordination with other competent agencies of higher education and research.

How do you see the reality of research in the Sultanate?

Research is a fundamental pillar for the development of nations and civilizations. It plays a key role in the progress and prosperity of societies through enhancing human resources and capabilities, stimulating creativity and innovation, and promoting a knowledge- and application-based economy. A knowledge-based economy is the main engine of economic growth in the current era, by which knowledge and technology are used to provide excellent and innovative marketable services and achieve economic recovery. Therefore, a knowledge-based economy transforms knowledge into wealth that is often worth more than the value of natural resources. As Head of the Committee of Education and Research, I think the reality of research in the Sultanate falls short of expectations and is not proportional to the huge resources that abound in Oman. Clearly, there are some challenges facing research. We have low public spending on research, almost exclusive dependence on government support, and a private sector reluctant to be actively involved in research programs. The Research Council has estimated the private sector's contribution to the total expenditure on research and development at about ten percent. There is also little partnership between the academic and research institutions and various social and economic organizations to invest in knowledge and science so as to increase the GDP. Another issue is the lack of an envi-

Committee meetings



ronment conducive to research in public and private institutions. This is due to insufficient coherent policies or a clear vision for development according to the results and recommendations of research and studies. There are also insufficient full-time researchers or others qualified in specific areas such as health, energy and oil and gas in Oman.

Given the current economic challenges, how do you think research can help find solutions?

We are sure that researchers can help overcome the crisis through delivering in-depth studies to find non-oil revenue sources such as tourism, agriculture, fisheries and infrastructure.

Can you reflect on the relationship between your committee and SQU?

There are good relations between the two sides. Being the Committee's Chairman and an SQU faculty member, I have the opportunity to invite some SQU faculty members and officials to contribute to the studies which are under consideration by the Committee.

Sustainable funding is the appropriate mechanism to minimize the impact of economic conditions on research

What mechanisms do you suggest to alleviate the impact of economic conditions on research efforts in the Sultanate?

Well, to address this issue, I believe we need a policy for sustainable spending on research. This could be achieved through funds specifically designed to support research.

There are several agencies concerned with research in Oman. Is that good, and why?

Having diverse research agencies in the Sultanate is vital for enhancing the value of research. Therefore, all of them should exchange data, information and indices, collaborate on developing research, plans and strategies, and hold regular meetings to exchange views on current issues.

Omani researchers have shown significant research skills. What are the means to ensure their continuous efforts in this regard?

No doubt, Omani researchers have demonstrated significant research abilities both locally and globally. We believe there are certain measures that should be taken to support them. These include ensuring appropriate funding, building a societal infrastructure supportive of Omani researchers, and focusing on the concept of sustainable development among researchers by encouraging them to create new ideas and products that would help improve the standard of living.

Omani researchers have demonstrated significant research abilities, both locally and globally

What future plans does the Committee have?

There are plenty of research ideas that address the current challenges in the domains of research and education. We also need to tackle certain issues in general education, technical and vocational education, and higher education, in coordination with competent agencies in charge of such sectors. We hope to conduct several studies, which will be based on recommendations to be made by the two studies mentioned above. As I said earlier, the two studies will enable researchers of the academic and research institutions to engage in industrial and commercial agencies, as well as enhancing research and academic programs in the Sultanate.

Association Between Sleep Patterns in Oman and Cardiometabolic Disorders

Dr. Mohammed Al-Abri, from the SQU Hospital

Dr. Mohammed Al-Abri, from the SQU Hospital (SQUH), is carrying out a sleep and metabolism case-control association study aimed at investigating the link between obstructive sleep apnea (OSA) and sleep deprivation and metabolic syndrome in the Omani population.

Sleep is vital for the human body to carry out normal metabolic processes. The rapid socio-economic changes that have occurred in our society in the last decades have had a negative impact on people's health.

The study will examine the association between disturbed sleep and the metabolic components of the metabolic syndrome, diabetes mellitus, hypertension, obesity, hyperlipidemia and heart diseases. The high prevalence of both the metabolic syndrome in Oman and obstructive sleep apnea will provide sufficient statistical validity to this study.

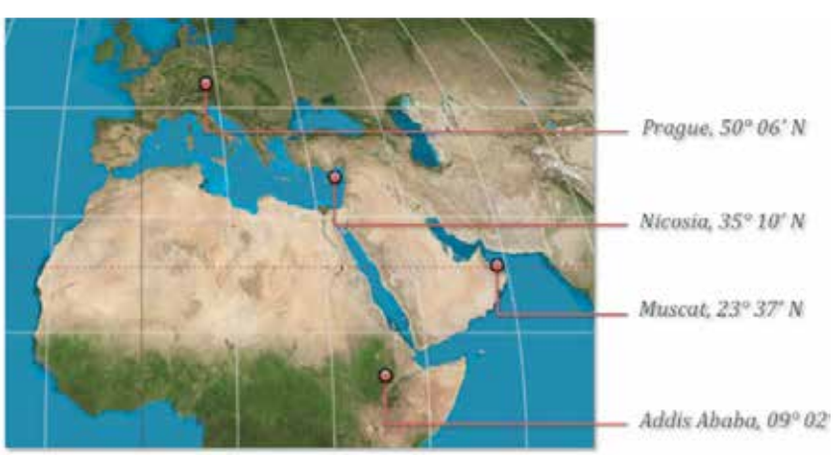
The research will be conducted at SQUH, targeting patients attending the lipid clinic and family physician clinic. Sleep quality will be assessed at the SQUH Sleep Laboratory. The medical and technical experience, as well as the high quality facilities in SQUH to perform the physiological and biochemical tests, will provide a reliable platform to do this study.

ADME genes in Omanis and Other Populations

Dr. Said Al Yahyaee - College of Medicine and Health Sciences

Physicians know that their patients can react differently to the same medical treatment; for some of them, the drug will prove inefficient, whereas for others it might provoke side-effects, which sometimes can be rather serious. Such differences in response to drug intake are due to several factors, of which molecular variations in specific genes, named «ADME « (Absorption, Distribution, Metabolism, Excretion) is one.

In this regard, a new research project is underway to investigate the evolutionary mechanisms responsible for the diversity of ADME genes in human populations. Because of their role at the interface between the organism and its chemical environment, ADME genes are likely targets of recent selective pressures linked to changes in the environments in which human beings evolved, such as changes in dietary habits for instance.



The project is being conducted by a team from the College of Medicine and Health Sciences, led by Dr. Said Al Yahyaee and including Dr. Khalid Al Balushi, Dr. Khalid Al Dhuhli and Dr. Rubin, in collaboration with Dr. Estella S. Poloni, from the University Hospital, Geneva.

The aim of this project is to study the diversity of ADME genes and of their expression in four populations located along a latitudinal axis that extends from East Africa to Central Europe, passing through the Arabian Peninsula and the Mediterranean area, so as to take into account environmental factors that might have influenced the evolution of this diversity. This project is thus intended to evidence the evolutionary mechanisms that shaped genomic regions that are functionally important from the clinical and epidemiological point of view. Moreover, it will allow us to extend the knowledge of human molecular diversity and its evolution to a key-region of the peopling history of our species.

Student's Performance in TIMSS test in Oman: A new Study

Dr. Sulaiman Al Balushi – College of Education

The Trends in International Mathematics and Science Study (TIMSS) has been recognized globally as an important indicator for the advancement of the teaching of these two subjects. Unfortunately, the performance of Omani students in 2011 was disappointing. In science, Omani fourth-grade students scored 377 and eighth-grade students scored 420. Both scores were much lower than the TIMSS Centerpoint Scale (500). Across the globe, the highest score in grade four was 587, scored by South Korea. In grade eight, 590 was scored by Singapore. The poor Omani results require initiations and actions from the different parties associated with the educational process in the country, including the research community. Therefore, there is an urgent need to investigate the cognitive and metacognitive variables, which could contribute to students' performance in TIMSS, and design proper interventions to enhance their scores.

To address this issue, a College of Education research team, led by Dr. Sulaiman Al Balushi, has conducted a study aimed at investigating the cognitive and metacognitive variables which might affect students' performance in TIMSS-like tests and tasks, and using such data to construct learning profiles. Further, the project will use the data from the learning profiles to design and then examine the effectiveness of an intervention package known as inquiry-based mobile e-formative assessment on students' performance in a TIMSS-like test.

A wide range of cognitive and metacognitive variables will be investigated in order to construct the learners' profiles. The main cognitive and metacognitive variables to be studied in the current project are prior knowledge, scientific process skills, critical thinking, innovative thinking, spatial ability, working memory capacity, mind wandering, metacognitive awareness, self-regulation and self-efficacy. The target population of the current project is students in grades four and eight, since these are the two grades involved in TIMSS. In this project, a test bank will be developed to assimilate TIMSS tests. The validity and reliability of the questions included in this test bank will be thoroughly established. This test bank will serve as the source for designing the TIMSS-like tests used in the project. The intervention will be based on the principles of scientific inquiry since it is the core theme around which TIMSS test items are designed. The intervention will also take the constructed learners' profiles into consideration. The effectiveness of the intervention will be tested by means of a quasi-experimental design involving three groups: (1) science inquiry mobile experimental group, (2) science inquiry non-mobile experimental group, and (3) control group. The purpose of involving a second experimental group is to eliminate the novelty effect resulting from asking students to do something new or different, which is the use of mobile technology in this case.

Dr. Al Balushi pointed out that there are different reasons for using mobile technology in this project. One of them is to reach new learners who use mobile technology in everyday life. Another reason is to facilitate the collection of data on cognitive and metacognitive variables while students conduct science learning tasks. In addition, the students' performance on each task will be analyzed for other variables such as time spent on the task, the hints they benefit from, and the different navigation routes they take to reach the answer. The collection of these data will be made possible using mobile technology.

He added that what makes this project different from previous ones is that it constructs students' learning profiles while engaging in scientific inquiry and conducting scientific processes. Although research techniques such as think-aloud interviews , thought experimentation, and a guided imagery technique help in establishing the learning profile of students› thinking processes while solving problems or performing other learning tasks, these situations are still not as authentic as real learning environments. Thus, in the current project, with the aid of mobile technology, different types of data will be gathered for each learning task which students perform in a regular classroom environment.

This will allow for the construction of a comprehensive learning profile through which researchers will be able to establish the relationship between different variables during the performance of different learning tasks by different types of learners, he concluded.

Foot Drop Stimulator for Locomotion Control

Dr. Riadh Zaier-College of Engineering

Dr. Riadh Zaier, from the Mechanical and Industrial Engineering Department, College of Engineering, is designing a stimulator that can control the foot of a patient suffering from foot drop disease, provided that the muscles of the foot are undamaged. Knowledge of the motion of selected joints allows appropriate EMG pulses to the legs that stabilize the patient's gait to be calculated.

The pulses are computed by a microcontroller-based unit, which is part of the proposed design. Instead of patients, the proposed work utilizes a humanoid robot that is capable of imitating the main features of the pathological gait of the patient in question. The controller output is subsequently applied to the joints of the robot to stabilize its locomotion.

The project falls into two phases. First, there will be a mapping between the patient and the humanoid robot, which entails the conversion of data from the patient to the motion of the humanoid robot. Once the mapping has been established, the proposed study is conducted on the humanoid robot that, in turn, then 'suffers' from the foot drop disease.

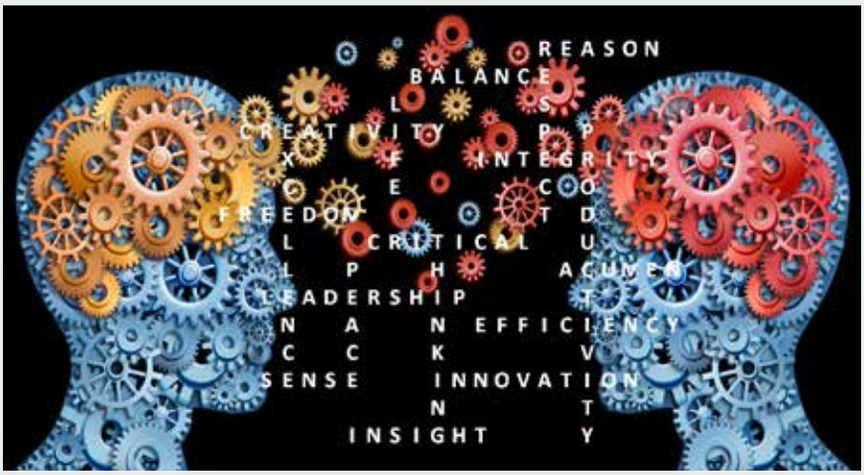
The second phase is to fabricate a supporting device for the humanoid robot that stabilizes its locomotion. Consequently, the locomotion of the humanoid robot will be less affected by the foot drop disease. The controller, that is part of the device, is designed to self-learn the optimal response to minimize the effects of the foot drop disease of the robot. This optimization will yield a minimum-energy-gait pattern. The locomotion controller includes a reflex generator module. This module allows compensating effects that arise in the presence of sudden events, for example an unexpected and sudden drop in ground elevation.

The device has been developed at SQU and the intellectual property rights are, hence, owned by the Sultanate.

Critical Thinking Skills for 21st Century Higher Education in Oman

Dr. Victoria Tuzlukova - Center of Preparatory Studies

A new study has been launched at SQU to see how critical thinking and problem-solving skills necessary for the 21st century are incorporated in the curricula and taught in Oman's higher education institutions.



Dr. Victoria Tuzlukova, from the Center of Preparatory Studies, argues that there is misalignment at the intersection of higher education and the workforce, resulting in a mismatch between the demands of the workplace that seek individuals who can think critically and act logically to evaluate situations, as well as understand and solve problems. She added that there is also an acute need for such individuals who can analyze data, make decisions and access and apply specialized knowledge from various fields.

In her study, the researcher tries to answer the following question: Does the current training of critical thinking and problem solving skills in higher educational institutions in the country match the demands of the competitive workplace?

The study will enable educators and decision makers to gain a better understanding of the modern corporate culture and cognitive demands of the workplace through exploring skills-training that optimizes student success in Oman.

Management of Tomato Yellow Leaf Curl Disease Complex in Oman

Muhammad Shafiq – College of Agricultural and Marine Sciences

The tomato yellow leaf curl disease (TYLCD) has become the key limiting factor for the production of tomatoes in several countries. The disease is caused by a geminivirus complex that involves multiple distinct begomoviruses. Since the first report, the virus causing the disease has spread and now causes heavy losses worldwide. In the Sultanate of Oman TYLCD-like symptoms on the tomato crop were first observed in the late 1980's by the Ministry of Agriculture and Fisheries, although the causal agent was identified in 2007.

In this regard, Dr. Muhammad Shafiq – College of Agricultural and Marine Sciences – has embarked on a research project to investigate the unidentified tomato infecting viruses from distinct locations, measure the extent of the problem, and understand the complexity of these tomato infecting viruses in Oman. Another objective was to develop rapid universal detection tests to screen and evaluate the resistance sources (tomato cultivars) for their resistance against the TYLCD-complex.

According to the researcher, farmers in Oman use three major management practices to control TYLCD: a) insecticides to kill the whitefly vector (Bemisia Tabaci) exclusively transmitted TYLCD, b) physical barrier (AGRYL™ cover), and c) partially resistant tomato cultivars. He added that despite these control measures, the incidence of TYLCD may sometimes reach 100% in some fields. Subsequently, due to rapid recombination, several resistance breaking strains causing severe losses in the tomato crop have been produced.

For instance, in a survey conducted in 2012-2013, only six viral species emerged, whereas several others remain to be characterized in Oman.

He said: "To control TYLCV, the first pathogen derived resistance construct based on the TYLCV Oman strain (characterized in 2007) has been developed (in our lab) and incorporated in N. benthamiana and tomato c.v Pusa Ruby plants. The first transgenic plants (T1 generation) have also been challenged for single virus infection and it seems to provide some resistance against the TYLCV Oman strain, but it needs to be confirmed whether these tomato lines (transgenic), apparently providing resistance in initial analysis against a single virus strain, will also deliver effective resistance which is durable in the field against other reported TYLCD virus complex."

He concluded that: "In the light of these findings, this project is designed to continue and improve the earlier work done in the department, as well as to adopt a wider approach to produce new constructs based on highly similar regions among all tomato infecting viruses to produce broad spectrum resistance in tomato plants. The project will help in the capacity building of human resources through training Omani staff and students in various techniques in the lab and in the field."

Deanship of Research

Introduction

As part of the support offered to postgraduate students, the Deanship of Research at Sultan Qaboos University organizes training programs and workshops aimed at developing their research skills. Since 2008, the Deanship has held over 30 workshops and training courses per semester. Delivered by experienced specialists, they are designed for the University's postgraduate students, academics and researchers.

Programs and workshops

In terms of theme, they are divided into three types:

- Research methodology
- Writing skills
- Documentation skills

Under each type, there are a number of workshops held in every semester to meet the needs of students, such as topic selection and the viva.

As part of the efforts made by the University to benefit the local community, the workshops will be open for registration in the current semester (Spring 2017). Anyone from outside the University is welcome to sign up for these programs and for a reasonable fee.

How to register?

If you want to sign up for any of the above workshops, you can visit the website of the Section of Skills Development through the following link:

https://pas.squ.edu.om/spa/login.cshtml

We hope that a large number of individuals will benefit from our programs.

Deanship of Postgraduate Studies Announce the Lunch of "Best Postgraduate Thesis Award" for the Academic Year 2017/2018

The Deanship of Postgraduate Studies announced on Wednesday, 22/2/2017 the launch of the «Best Postgraduate Thesis Award» for the Academic Year 2017/2018.

The Award comes to support original and outstanding postgraduate students and build a culture of innovative research among them, through highlighting their achievements and discoveries in relation to the local community development in particular ,and the international community in general, and promoting the added value that results from such researches and studies.

Two winners from each college will be selected for the "Best Postgraduate Thesis Award", one for the doctoral degree and another for master's. Application submission shall start on Sunday 26 FEB 2017 until Thursday 16 March 2017.

Proposing a New Design Approach for M-learning Applications

As Information and Communication Technologies (ICT) are constantly developing, new learning approaches have been introduced to facilitate teaching and learning processes. Mobile devices are growing in popularity and there has been an increasing interest in their potential as innovative tools for learning. Mobile learning, or M-learning for short, is a new learning approach intended to use mobile devices such as laptops, smart phones and the personal digital assistant in the learning process in any place and at any time.

Many research projects focused on the design aspects of M-learning. Most of these approaches concentrated on one aspect of M-learning design and omitted other aspects, such as design of the learning content, learners' requirements and content presentation models, which are essential for the acceptance of the application among learners. M-learning applications need to be designed in a way that takes into account the special features and constraints of mobile devices, such as screen size, available storage, processor speed and battery life.

In this regard, Haleema Al Harrasi – a researcher at the Department of Computer Science, has conducted a study aimed at exploring the existing design approaches for M-learning and defining their main limitations. The study also proposes a new design approach for M-learning applications focusing mainly on three main aspects: learner, learning content and technology. The approach consists of three phases: starting dimensions, M-learning development, and learning content design.

The research work used a case study scenario to demonstrate the feasibility of the proposed approach, showing its strengths and advantages over other design applications.

A study on the so-called "Omani Companions" of the Prophet

Abdullah Al Mashrafi – a researcher at the Department of Islamic Studies, College of Education – has carried out a study on the Omani companions of the Prophet, and their stories. The study includes a preface, an introductory chapter, two chapters and a conclusion.

The introductory chapter provides, in its first section, an account of Oman in terms of its name and borders; the second section provides a linguistic definition of the term 'companion'; while the third section reviews the contributions made by the people of Oman.

The study examines 56 dignitaries in terms of their companionship and belonging to Oman. Each figure is defined in terms of their name, lineage, conversion to Islam, status, contributions, evidence of companionship

and impact. Chapter I discusses the different opinions about those aspects and attempts to arrive at the most plausible view. The chapter is divided into three sections: Section I reviews the opinions that provide evidence in favor of the companionship; Section II introduces evidence against the companionship.

The second chapter reviews different narratives, focusing on the existing evidence that supports them or otherwise. It is divided into two sections, which elaborate a host of stories.

The study of the stories and biographies of Omani companions is significant as it shows the strong impact of the role of the people of Oman in spreading the Sunnah and highlighting the strong connections between them and the era of the Prophet's Companions.

The Role of Parliament in Supporting Science and Technology Plans

Pro. Khalifh Al Jabri

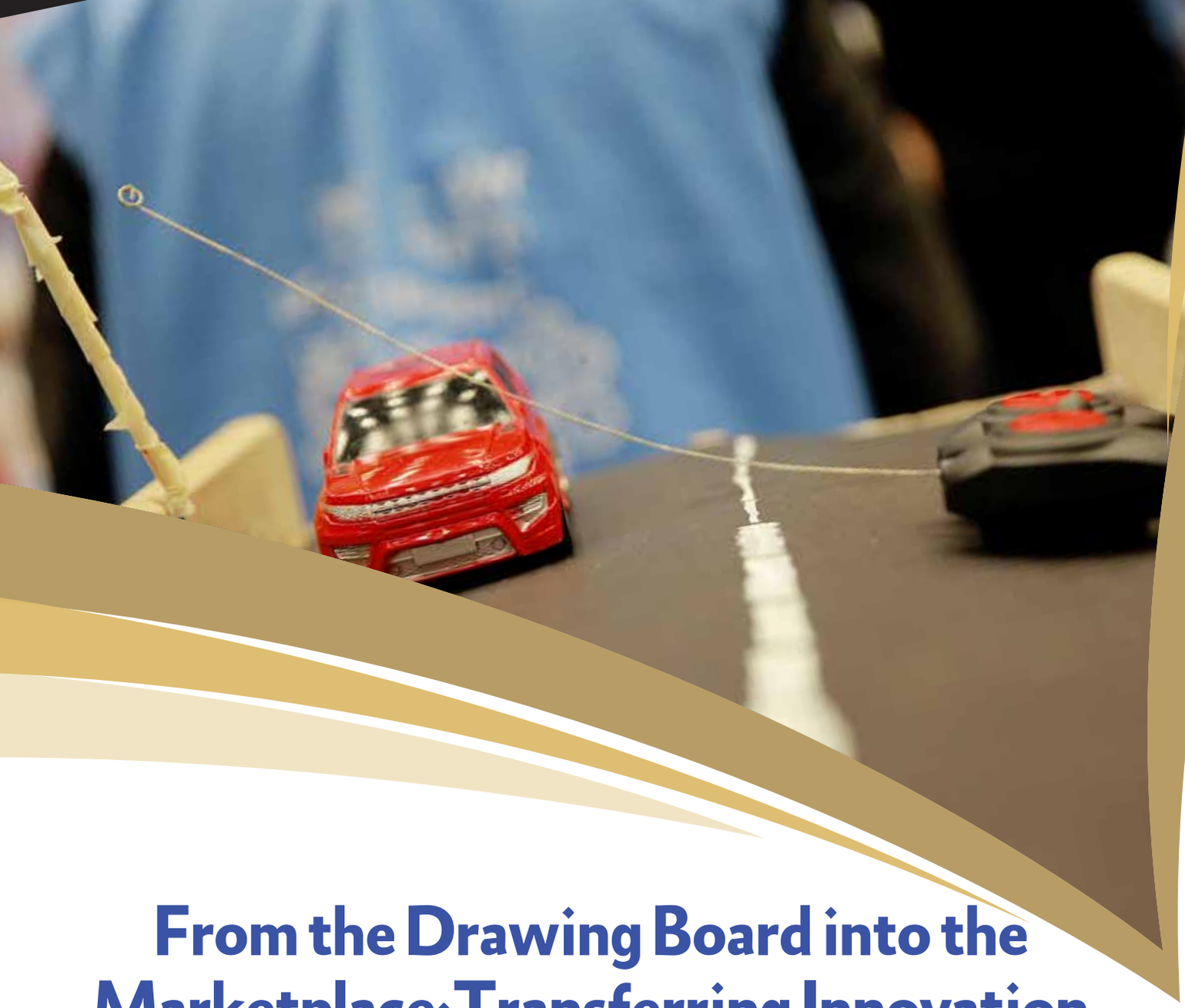
In the last six decades, the world has witnessed rapid and huge advances in science and technology which have impacted the development plans and economic growth in many countries. As a result, such countries have gradually moved to a knowledge-based economy which improves the welfare of all citizens.

Complementary to these two areas are the fields of industry and research, whereby any progress will define how advanced a country might be. In this sense, research is considered complementary to education at academic institutions and research centers, as well as an indication of their performance in terms of both quality and quantity. No wonder that the continuing scientific progress in the developed countries, as well as some developing ones, is the outcome of research projects which are conducted at their academic institutions and industrial centers. This has prompted many governments to pay special attention to these areas of development by providing a state-of-the-art infrastructure, distinguished scientists and researchers, and generous funding for scientific studies. Furthermore, the constructive collaboration between research organizations, industry and society has been streamlined by a variety of mechanisms and procedures in order to find solutions to different issues by utilizing research outcomes in promoting human development.

In 1936, a scientific committee was created by the UK House of Commons. It was entrusted with such goals as addressing scientific and technological matters, as well as establishing channels of communication between members of parliament, scientific and academic circles, industrial organizations and society. As countries saw various advances in science and technology, permanent committees were called for to address these aspects, for example in the parliaments of the UK, Canada and Australia, as well as in the U.S. Congress.

The majority of parliamentarians have no solid background in the fields of science and technology, which have become an integral part of society, and can have an impact on public policies in many countries. In spite of this, they are expected to answer all questions related to a host of issues that deal with science, technology, the environment, medicine, communications, engineering, ethics of medicine and sciences, amongst others. To help them do their work and ensure an objective examination of different matters, support units were created in many parliaments which are in charge of delivering information, data analysis and advice to the members, and keeping a close liaison between the parliament, scientific institutions and the community.

Since the Sultanate is a leading country in the region in terms of innovations in science and technology delivered by its research centers and universities, a committee that is concerned with science, technology and research affiliated to the State Council has become necessary, now that we see unprecedented rapid developments in these areas. Such a committee will serve the Sultanate's national interests and contribute to scientific and technological progress in the country. This may coincide with the current plans to create a university for science and technology to produce and train national human resources in these fields.



From the Drawing Board into the Marketplace: Transferring Innovation to Industry

Specialists Highlight the Obstacles and Suggest Solutions

The Sultanate is witnessing a growing number of innovators due to a general awareness among Omanis about the importance of innovation. This is a healthy sign, thanks to the great efforts made by several agencies and individuals to harness the culture of innovation in Omani society, specifically among the youth and students of different educational institutions.

Omani youth have produced important innovative products, some of which were transferred into projects. However, the bulk of those creative ideas have remained within the confines of the drawing board, which raises a lot of questions.

In this regard, Tawasul has met with specialists and inventors to discuss with them the reasons behind this, and the ways to promote and transfer the inventions into an industry that benefits the society.

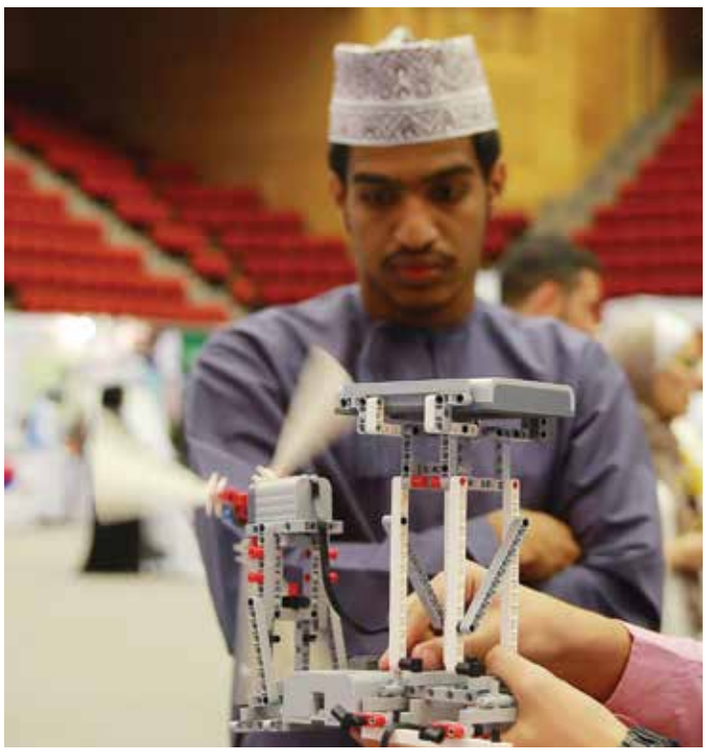
Intellectual property

First, Thurayya Al Alawi – an employee at the Technology Transfer Section, Department of Innovation and Entrepreneurship, SQU – has underlined the importance of raising awareness of the community about innovation issues. She said that: "There is a sense of the importance of innovation in the society, but we need to help inventors to transfer their inventions to the marketplace through setting up a system that allows for a smooth flow of inventions from the academic to the industrial sectors. This entails that all supporting bodies, together with their programs, come together to bridge the gap between the two sectors and promote the innovative products for investment and production."

Thurayya Al Alawi: IP protection rules should be streamlined

As for the demands of transferring technology to the marketplace, she said: "In order to achieve this, the intellectual property (IP) regulations have to be streamlined with reference to certain technologies which can be highly instrumental in enhancing and stimulating national industries. On the other hand, such regulations might be strict when it comes to foreign technologies, which may enter the local market and compete with locally developed products. This is mainly dependent on the priorities of the national strategy for innovation which should define the technologies of high priority for a knowledge-based economy."

She pointed to the growing number of studies conducted by different institutions: "Research output has been growing at a rapid pace in both quality and quantity. Such performance by academic institutions and research centers in both the public and private sectors indicates that there are researchers and scientists who need to be helped to patent their technologies before commercializing them. This calls for the need to put in place certain IP policies to regulate the rights and duties of both the institution and the employee in terms of property, revenues and commercialization. Also, there should be clear policies and rules to encourage disclosure of inventions, resulting from applied research, registration and ownership before publication, thus, contributing to the national economy with new and important products."



Lack of awareness

Maadh Al Raqadi, who was granted a U.S. patent for two inventions (a device for enlarging study desks and a barbecue skewer apparatus), expressed his views about investing in inventions. According to him, "Investing in innovative products can only be possible through an organized, clear handling of the product, right from the early stage of developing an idea to the stages of production and marketing. For a number of reasons, it is not possible for inventors to translate their projects into industrial products which could bring in revenues for them, their organizations and the country. What they need is a booklet giving some instructions or explaining the measures necessary to reach the point of commercializing the products. There are no clear procedures nor guidelines to help inventors develop their products."

Maad Al Raqadi: Innovative ideas should be properly handled up to the stage of production and marketing

He carried on: "Although the private sector companies have contributed to the development of inventions, most of them still do not consider the inventions in terms of investment or business, but rather a commodity to be displayed in exhibitions. They just do their social duty of supporting such products. Nothing more, nothing less!"

"Other reasons for not marketing inventions have to do with the lack of passion among many inventors. For example, they take part in a competition with their products with the aim of winning an award, but after having been shown in the competition, their products will become less important and the idea of marketing is not part of the picture. Now, it so happens that most of them are university students. Once they have graduated, they become less interested in innovation. In other words, the

public and private institutions do not consider the culture of innovation as part of their employees' careers. Another reason is related to the lack of incentives for the youth."

Salim Al Habsi: Innovators need a stimulating environment

Preparing the innovation

Engineer Abdullah Al Saeedi – CEO of Nafath Renewable Energy – reflected on the spread of an innovation culture in the society: "Recently, the concept of innovation became widely reported in the Sultanate and there have been a couple of practical inventions. However, it is noticeable that the whole thing has turned, for some people, into a marketing issue. It is anything but true when some public institutions and human resource trainers suggest that marketing is easy. On the contrary, invention and innovation demand hard work, perseverance and huge funding, and the outcomes cannot be achieved overnight."

Khalid Al Harthi: The professional innovator is the one who works hard to have his ideas transferred to the market

Al Saeedi listed a number of steps to be taken before any innovations can be made: "First, we need to encourage scientific research, since any innovation is achieved through specialized, lengthy scientific work and a far-reaching point of view. Then come the steps of experimentation, standardization and prototyping. It takes a lot of time and effort and costs a lot of money to design the best possible prototype of the innovation and align it with the needs of the user or beneficiary. Then comes the stage of standardization of the innovation in the market. It makes no sense to spend money on something that does not bring in revenues or better the lives of people. So, the most important question that should be asked is: why do we innovate?"

He concluded his remarks by referring to the last stage: "Now, after all these steps, there is the patent registration, then the commercial manufacturing, and both of them are not available in the Sultanate. Here comes the role of the private sector and private investors, since the government cannot handle all of these aspects. I think that educational and research agencies should prepare the innovators by providing them with all research facilities. The private sector, on the other hand, should develop and invest in the innovations."

Stimulating environment

Salim Al Habsi, a student who has won international innovation awards and is the Head of a High Tech company, argues that there are several reasons why we have a large number of innovators: "There are companies that support innovations and disseminate them through their own visions or contests. Recently, we saw student companies which were encouraged by various quarters. However, the failure of innovations may be attributed to the lack of passion among the innovators themselves, as they do not find a stimulating environment or the funding for their projects which could convert them into innovative products in the market. Another reason has to do with the lack of knowledge among some innovators about entrepreneurship, marketing and business."

As for the solutions to these problems, he says: "The innovators should be provided with a stimulating environment, incentives and funding for their ideas. They need to be supported and trained to run their own companies and develop investment opportunities."

Supporting innovation incubators

On the role of innovation in increasing revenues, the student Thuraya Al Yazidi – the Head of Innovation and Entrepreneurship Group in the Department of Mass Communication, for the academic year 2015/2016 – said: "No doubt, innovation has become an important element in advancing economic development in the country; it offers solutions for most of the problems of the community. One can notice that innovation in the Sultanate is growing, which calls for the need to support innovators by prioritizing innovation in the upcoming development plans, which are concerned with developing an environment suitable for innovation and engaging both the public and private sectors."

She added: "Most of the difficulties facing innovation in the Sultanate may be seen in the application process of innovations and how to use them. Merely manufacturing and promoting such innovations is not enough in itself."

She also referred to some solutions that would help minimize the accumulation of unrealized innovations: "Efforts should be made to draw up long-term plans to turn such innovations into real products that could contribute to improving the national economy. Youth initiatives should be encouraged in order to spread the culture of innovation under laws and regulations that protect the rights of innovators. Incubators of innovation and creative work should be supported and the national capacity should be further built to run these ideas and turn them into real products."

On the other hand, she said: «With regard to technological innovation, the creation of scientific clubs and applied laboratories is a must. Many scientific innovations ceased to exist because the environment was not conducive to develop them. I may also mention the importance of having centers, funded by the private sector, to support research in technology. The media also play an important role in spreading the culture

of innovation and the transfer of innovative experiences, as well as reporting on the bodies that deal with innovation in the Sultanate. All of this will encourage innovators to engage in innovation. We also need an electronic platform for innovators which is accessible to private and public sectors."

Needs and requirements

Khaled Al Harthi – Founder and President of KHALTECH company for research and development, and a participant in the Stars of Science Program in Qatar – explains why there is a reluctance among innovators to pursue their work. "In the past, innovators used to complain of the lack of support, but nowadays, there are plenty of technical and financial kinds of support offered to innovators by the public and private sectors. In addition, there are public agencies specifically designed to support innovators, right from the first idea to the final prototype of the product, and then the innovators can get some investment or loan from the government or private organizations to market their ideas. But the question to be asked, is: Why do not we find the ideas of innovators and their projects turned into products that are sold and used in the markets?"

He continued by saying: "I think there are two factors, namely the owner of the idea and the market. One of the reasons why the innovators' ideas fail to be marketed is that the market needs for the product have not been carefully investigated. It is not enough for an idea to be distinctive and elaborate. It should meet the needs of the market."

According to Al Harthi, the innovators need to be resilient and stand up to all sorts of challenges and difficulties. They should not be only interested in participating in exhibitions and bagging contest awards. He emphasized that the real achievement is when innovators manage to have their ideas commercialized. It is the real and professional innovator who works hard to have his ideas transferred to the market. Otherwise, he concluded, we are just dealing with an amateur innovator.

Abdullah Al Saeedi: The first step is to enhance research

Thurayya Al Yazidi: Innovation should be prioritized in future development plans

With $4-million funding and 40 scientists,

Oman Drilling Project in Samail Ophiolite Launched

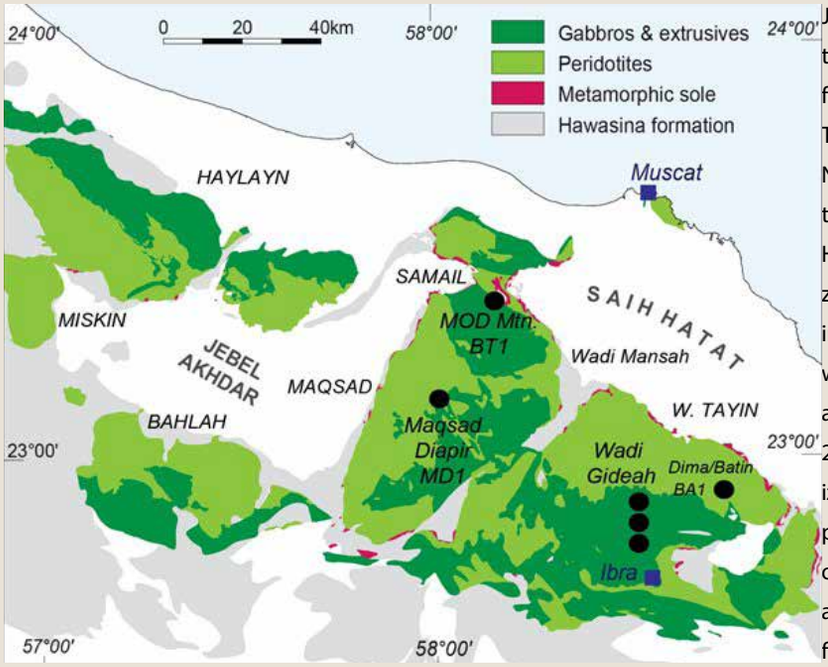
Dr. Nasr: Oman's peridotite rocks absorb an annual estimated 100,000 tons of carbon dioxide and can do so for the next thousand years.

Dr. Subhi Nasr – Director of Earth Science Research Centre

Oman is one of the few places where the rock appears on the earth's surface. It also boasts the largest such rock formation in the world, stretching more than 600 km, with a width of 150 km and a depth of 3 km. Peridotite rocks absorb up to 100,000 tons of carbon dioxide every year in Oman and could do so for the next thousand years. One of the global and technological challenges is how to curb the increasing emissions of carbon dioxide in the air.

Now, a breakthrough solution to the issue of carbon emissions on a global level has been delivered by an international team of about forty researchers with a $4-million funding. The program, initiated in November 2016, is designed to drill 13 boreholes in the Samail ophiolite, near Ibra. It is supervised by Sultan Qaboos University (SQU) in collaboration with the Ministry of Regional Municipalities and Water Resources. Observations on the drilled cores, geophysical logging and biological and hydrogeological measurements in the drilled boreholes will help in the understanding of the geology and hydrogeology of the Samail ophiolite.

Dr. Subhi Nasr, Director of Earth Science Research Centre (ESRC) at SQU, says that the program includes researchers from the ESRC, Water Research Center, Oil and Gas Research Center, College of Science and College of Engineering, in addition to some 40 scientists from a broad spectrum of disciplines coming from the U.S.A., UK, France, Germany, Norway, the Netherland, Japan, Australia, Canada, Italy, Switzerland and Sweden.



Other international institutions and organizations have also contributed to the project. They include the International Continental Scientific Drilling Programme (ICSD), Deep Carbon Observatory, International Ocean Discovery Program (IODP), National Aeronautics and Space Administration (NASA), National Science Foundation, German Research Foundation (DFG), European Research Council, Swiss National Science Foundation, Japan Society for the Promotion of Science, Japan Agency for Marine-Earth Science and Technology, and Le Centre National de la Recherche Scientifique.

He added that the carbonization of the peridotite rocks in Oman was the subject of a workshop held at SQU in 2011 and another in New York in 2012. The events were organized by scientists from the disciplines concerned and in collaboration with SQU, IODP, ICSD, and other experts from the fields of engineering, chemistry, mining and energy. The main goal was to investigate how peridotite rocks react with carbon dioxide. It turned out that there was a lack of understanding of the

carbonization and the biological, transformational, engineering and chemical changes of the peridotite rocks and the mechanism of fluid flow. It was agreed that further geological studies be done on flows of water and liquids in terms of flow time, porosity, permeability, rates of reaction, spacers and surveys of boreholes, in addition to other studies on modern carbonization and biological processes.

Dr. Nasr stated that the scientists stressed the importance of developing a global research program and a network of research to develop techniques so as to understand the changes in such rocks. The discussions highlighted the technical goals needed in the research plans of drilling programs as part of the scientific collaboration activities. The participants were unanimous about the need to find a practical way based on laboratory experiments and the theoretical and modelling developments, as well as by gathering new data, both surface or subsurface, to see changes in the rocks and their impact on carbonization.

He added that there is a lot of missing data, such as the effects of subsurface weathering, hydraulic properties under the sea or on land and the vital effects of time on the rocks. The participants underlined the need for taking certain actions, including monitoring, taking measurements, developing models for well drilling and designing techniques for studying peridotite rocks under different conditions.

According to the scientist, the peridotite rock – made up mostly of silicate minerals olivine and pyroxene — reacts with carbon dioxide, which converts the gas into calcite, a solid mineral. This reaction only requires that holes be drilled into the peridotite rock.

He remarked that such a discovery could help reduce the world's carbon dioxide emissions drastically and curb global warming, an extremely worrying issue with serious environmental consequences. There is a dramatic increase in global temperatures and a rise in sea levels in most areas, including Oman.

To absorb the carbon dioxide, the scientists propose to liquefy the carbon dioxide from gas-exporting plants and pump it through wells drilled into the rock. They also propose to grind the peridotite rock and mix it with the liquefied carbon dioxide. The process needs more research as drilling operations are very costly, but it is still a lot cheaper and safer compared to other methods, such as converting carbon dioxide into coal and storing it underground.

Scattering the rock powder in marine areas could help preserve coral reefs, Dr. Nasr explained, adding that Oman could consider plans for exploiting peridotite rock powder for economic purposes, which could potentially bring in considerable revenues.

As for the importance of such research to the Sultanate in general, and SQU in particular, Dr. Nasr said the Research Centers (Earth Sciences, Water, Environment, Oil and Gas, Earthquake Monitoring, Remote Sensing and GIS) and the departments of Chemistry, Geology, Chemical Engineering and Biology will actively engage in training students. This will be through workshops, field trips and visits to laboratories in the countries taking part in the program. Ten students will be sent to the United States annually, and grants will be offered to Omani doctoral and master's students. There will be programs for training students in the techniques of field characterization of rocky pulp and on board the SQU research vessel, as well as interactions with prominent scientists from Europe and America.

He added that there are plans to hold workshops and seminars at schools and within the local community to raise awareness of the project and the science of geology. The media will play a key role in highlighting the different stages of the project and marketing Omani rocks. He revealed that the Sultanate will be granted an ophiolite standard rocky section to be used in future global reference studies, and all the devices and equipment that are purchased and used during the project will be retained by SQU. Finally, SQU will gain a global reputation and the Sultanate will become a more attractive tourist destination, while more jobs will be available for the national labor power and drilling companies.

Induction Programs in Higher Education Institutions in Oman

Dr. Victoria Tuzlukova – Center for Preparatory Studies

Induction is an important part of introducing faculty to the new contextual milieu, as well as supporting their adaptation to a wide range of issues, such as the curriculum, cultural knowledge, institutional policies, etc., as they seek to achieve excellence in their practice. Guided by the theory of adult learning and the conceptual frameworks for examining continuing professional development, Dr. Victoria Tuzlukova – Center for Preparatory Studies – has carried out a study that examined the existing formal and informal provision for induction at higher education institutions in Oman. It mainly dealt with meanings, notions, definitions, characteristics and a description of things, and was qualitative in its nature. Four main methods were used for data collection: documentary analysis of policy documents and reports related to induction at higher education institutions in Oman; focus group discussions with teachers of English (local and expatriate), coordinators and heads of department; interviews with senior managers, including deans; and new teacher surveys.

The results of the study reveal the importance of effective induction programming, because many newly hired faculty are often "strangers" to the context they are coming to, and enter it with their unique personal and professional experiences, which are different in background, volume and kind. However, as these faculty members seek to achieve excellence in their teaching practice, they will have to be able to respond to local, state, and national policies within a widely different contextual milieu.

According to the results of the study, all newly hired faculty benefit from formal or programmed localized induction offered at higher education institutions in Oman. Across the country, such programs are aimed at a) helping newly hired teacher socialize, smoothly adjust to the higher education environment in Oman and develop effective teaching practices for diverse students, and b) assisting them with acclimating themselves to the higher education institution, its priorities, initiatives and communication, classroom set-up and lesson planning, etc. However, currently existing induction programs look very different from one setting to another, depending on the institution (e.g., public, private, large, small, isolated, part of a cluster, etc.) and its internal policies and regulations. Consequently, induction programs can have multiple objectives and emphases, e.g. teacher socialization, adjustment, development, and assessment. The duration of induction can be different, e.g. from one week to one semester. In addition, the structures of induction programming may vary, and include such components as orientation that focuses on familiarizing newly hired teachers with the higher education establishment's structure, procedures, regulations and culture, curriculum/content, pedagogy and instructional strategies, learning environment and classroom management, assessment and evaluation strategies, and teacher evaluation.

According to the results of the study, the most important features of induction include a) a range of professional development opportunities; b) emphasis on practice-focused professional learning; c) active support and commitment from administrative bodies and peers; d) observations and evaluations of teaching; e) an environment that is collaborative, welcoming, and one of mutual respect and trust. As for professional support, the key people and groups primarily responsible for overseeing induction include a) the higher education establishment's administration, e.g. heads of departments, program coordinators; b) induction programs/committees; c) individuals selected to serve as the point of contact for induction of newly-hired educators.

The possible impact of effective induction programming includes teacher commitment and retention, teacher classroom instructional practices and student achievement. To become effective, the induction programs should be tailored to individual needs; relate to teachers' needs and teaching matters; address the needs of both new and more experienced teachers; be formal, organized and well-structured; include regular observations of teaching practice and opportunities for the newly hired teacher to observe their colleagues; have time for 'learning conversations' where feedback is provided and critical reflection by the teacher on their practice is facilitated; have formal written records documenting professional discussions, observations and feedback, critical reflections and any other professional development; be resourced appropriately and meet the contractual obligations of the employer; include access to external networks and professional development opportunities, and be part of wider professional development and learning available to all staff. In addition, it is important to ensure that induction at higher educational institutions is a formal structural element of professional development, which is well planned and consistent, and is subject to systematic monitoring and regular review to help ensure consistency of implementation and ongoing improvement.

Living Healthy with Chocolate

Dr. Jumana Saleh - Biochemistry Department

In ancient civilizations chocolate was only consumed as a bitter beverage made from beans from the cacao tree. Originally, chocolate was found to improve mood and increase happiness. It was believed to have spiritual qualities and used in religious ceremonies. It was appreciated even before knowing its major benefits through modern science. It wasn't until 1847 that the solid edible chocolate bar was created by the British chocolate company J.S Fry & Sons using cocoa butter and sugar. In the late 1800s, manufacturers as Hershey, Cadbury and Mars were formed. Cocoa beans are believed to contain more than 300 compounds beneficial to health. Chocolate is packed with flavanoids and flavanols that are antioxidants that prevent from diseases such as heart disease, cancer, diabetes and accelerated aging. The darker the chocolate, the more flavanoids and flavanols it contains. Cocoa beans also contain dopamine and serotonin known to promote feelings of well-being and happiness. In 2014, a study, published in the Journal of Agricultural Food and Chemistry, suggested that flavanol may protect against obesity and type 2 diabetes. Others suggested that cocoa's beneficial role may be obtained by enhancing the structure of mitochondrial powerhouses. It was also found that cocoa may help lower blood pressure and reduce the amount of bad cholesterol. In 2013, researchers from Harvard Medical School suggested that drinking two cups of hot chocolate each day may protect from memory decline at older age by preserving blood flow in certain areas of the brain. A recent study by Prof. Stranges and colleagues analyzed data on 1,153 participants aged 18-69 who were part of the Observation of Cardiovascular Risk study in Luxembourg. They investigated data from food frequency questionnaires filled by the participants. The researchers found that 81.8% of the study participants consumed almost 25 grams of chocolate daily, and participants who ate chocolate every day, had reduced insulin resistance and improved liver enzyme levels. In a study published in the journal Heart, researchers from the UK claim eating up to 100 g of chocolate daily may reduce the risk of heart disease. Prof. Stranges suggested that the knowledge of chocolate benefits may lead to recommendations by healthcare professionals to encourage dark chocolate consumption in moderate amounts. Unfortunately however, manufacturers add excessive quantities of unhealthy ingredients such as sugar, full-fat cream, cholesterol and additives to chocolate products. Therefore, eating excessive amounts of chocolate leads to weight gain and related disorders. It is important to distinguish between chocolate that contains natural cocoa and processed chocolate high in calories. A spokesperson of the British Dietetic Association Alison Hornby said: "As an occasional treat, chocolate can be part of a healthy diet. Eaten too frequently, it is an unhealthy choice. Fortunately, chocolate products are appearing in the market with low sugar and increased cocoa content reaching 70-80 %. In light of growing knowledge of chocolate health benefits, some raise the question: Could a doctor's visit someday lead to prescription of chocolate as a delicious medicine?

Reference: collection of articles by Honor Whiteman in Medical News Today

EFL in Omani Schools in A conference Paper

Two SQU academics recently attended the Pedagogy Congress 2017, which was held in Havana, Cuba. They gave a presentation on how EFL supervisors evaluate English communication in Omani public school English classrooms in terms of student-teacher talk time. The research methodology followed a procedure whereby 139 Omani EFL supervisors were asked to evaluate communication in English in observed classes by using a two-part checklist. The checklist asked participants to indicate teacher and student talk time and the kinds of activities teachers and students frequently engaged in. The research was conducted by Dr. Rahma Al Mahrouqi – DVC for PSR – and Dr. Christopher Denman. It concluded that classrooms were characterized by high levels of teacher talk time and teacher-centered activities, such as explaining and correcting. Results indicate that EFL teachers in Omani schools generally talk for more than 60% of the entire class time and that they often used this talk time for explaining, correcting students, giving examples, commenting on student work, and demonstrating. They only sometimes asked questions, repeated students' responses, gave directions and advice, and responded to questions. Students, on the other hand, were reported as often working individually, and only sometimes or rarely working in pairs or groups, and explaining or asking teacher questions.

This suggests that one of the reasons associated with Omani school graduates' weaknesses in English may be the continuation of traditional classroom practices in which teachers "impart knowledge" through lecturing, and learners act as passive recipients of that knowledge.

The researchers found that students talk much less than their teachers, and that they generally only speak when spoken to, which suggests that the Basic Education curriculum's support for the creation of communicative classrooms is not being transferred into actual practice. In such an environment, it may be possible to envisage students feeling that communication in English, whether among themselves or with the teacher, is not encouraged as the development of genuine communication skills is secondary to completing the curriculum.For students to successfully develop their English language proficiency to the levels required by the workforce and by higher education institutions, the researchers argue that it is important they see

the classroom as a place where they are encouraged to communicate in English and to understand that participating in classroom activities will benefit them both now and in future. Therefore, it is necessary for Omani EFL teachers to provide learners with opportunities to use English in a scaffolded, meaningful, manner and to build their confidence in using the language for genuine communicative purposes. For this to be achieved, however, it may be necessary for the teacher training, both pre-service and in-service, that EFL instructors receive to be re-examined in order to help equip them with the skills required.

A new Approach to Modeling Language Evaluation: a Conference Presentation

An SQU academic presented a paper at the 121st International Academic Conference on Development in Science and Technology (IACDST) held in Bali, Indonesia, on 13-14 January 2017. The paper suggested a component-based approach to build a modeling language evaluation process.

In his work, "Toward acomponent-based development process for modeling language evaluation," Dr. Naoufel Kraiem – Department of Computer Science, College of Science – first defines a process component repository that capitalizes and implements solutions for modeling language evaluation. Basic prerequisites are discussed and an overview of different architectural views is given, which can be utilized for the evaluation process. On this basis, he outlines the general process of evaluating software architectures and provides a taxonomy of existing evaluation methods. To illustrate the evaluation of software architectures in practice, he presents some of these methods in detail.

The evaluation of software architectures is crucial for ensuring the design of software systems meet the requirements. In recent years, component-based development has become an established approach. Component-based Software Engineering (CBSE), that deals with the entire lifecycle of component-based products, has focused on technologies that are related to the design and implementation of software components and systems which are built from software components. The experience has shown that pure technologies alone are not enough. A CBSE approach requires certain changes in the development and life cycle processes. However, very few CBSE studies, either theoretical or practical, have addressed these topics. It is worth mentioning that the conference brought together leading academic scientists, researchers and research scholars from different countries to exchange and share their experiences and research results about all aspects of developments in science and technology.

Factors Associated with Recurrent Abortions in Pregnant Omani Women

Dr. Mohammed Al-Balushi - College of Medicine and Health Sciences

Recurrent abortion is the loss of three consecutive pregnancies within 20 weeks from gestation. It affects 15 % of all pregnancies worldwide and around 0.8 % of pregnant women in Oman. The causes for recurrent abortions are still under investigation. However, these causes can be classified into six main groups, which are: infections, autoimmune factors, genetic factors, anatomical factors, endocrine factors and unknown factors.

In this regard, Dr. Mohammed Said Amer Al-Balushi, from the College of Medicine and Health Sciences, has investigated different factors that could contribute to causing recurrent abortions in Omani women from an immunological point of view. Among these factors, he examined the associations of different types of autoantibodies troponin I, anti-helicobacter pylori antibodies and vitamin D with recurrent abortions.

According to the researcher, the participants were classified into three groups. The first group involved samples collected from Omani married women with a history of three or more abortions. The second group involved samples collected from healthy Omani married women who had normal childbirth with no history of abortions. The third group included non-married Omani women.

He found an association between the recurrent pregnancy loss and anti-extractable nuclear antigen antibodies, "ENA". The prevalence of this antibody increased with pregnancy and it was significantly higher in the group who had recurrent abortions. He noted that there was no reliable gold standard marker to predict the clinical outcome of women with recurrent miscarriages in order to give them better treatment and health care during pregnancy. Therefore, he further investigated the other markers, such as cardiac troponin cTnT. He found that the mean of the cTnT level was significantly lower in the recurrent abortion group compared to the healthy pregnant control group and non-married group. The findings suggest that there is a reverse relation between the cTnT level and abortions, which could be used as a predictive biomarker for recurrent abortions.

He added: "Then on the same subject, we investigated whether there is an association between H. Pylori infection and recurrent abortions among pregnant Omani women. Our findings from this study suggest that infection with H.pylori is linked to the increase in the prevalence of recurrent abortions among Omani women. In addition, the prevalence of H.pylori increased as the age increases among women who are suffering from recurrent abortions."

Due to the increased number of Omani women who have a low level of vitamin D, Dr. Al Balushi decided to look for a link between vitamin D deficiency and pregnancy loss in these women. The results from this study are under analysis. The overall findings, he concluded, suggest that recurrent abortions are associated with a high level of ENA antibodies, high level of H.Pylori antibodies, low level of troponin cTnT and low level of vitamin D in Omani women.

The Features of Omani Cultural Heritage in Five Thousand Years: Cultural Heritage in the Understanding and Achievements of Sultan Qaboos Bin Said

In this edition, we continue our review of the series of "The Features of Omani Cultural Heritage in Five Thousand Years", compiled by Professor Fathi Abdul-Aziz Al-Haddad. The series comprises three volumes published by the Department of Academic Publication and Outreach (DAPO) at Sultan Qaboos University. In the previous editions, we talked about the first and second volumes and here we review the third volume that covers the cultural heritage in the understanding and achievements of Sultan Qaboos Bin Said.

The third volume, "Cultural Heritage in the Understanding and Achievements of Sultan Qaboos Bin Said", runs to 250 pages. It is divided into three parts and nine chapters. Part I deals with the revival of heritage and principles in the understanding of H.M. Sultan Qaboos Bin Said; Part II introduces the tangible and intangible heritage in H.M.'s understanding; Part II sheds light on heritage in outreach and employment in H.M.'s understanding

The book highlights H.M.'s attention to the cultural heritage of Oman during the Omani renaissance era, which has been marked by great achievements since 1970, thanks to his wise leadership and the mindfulness of the people. It points out that the achievements have been realized through calm dialogue between the leader and his people, through a serious lasting partnership in all actions and events, to achieve their aspirations. The book underlines that the Omani leadership has always been aware of the value of heritage, both the tangible and intangible, in the early modern renaissance.

His Majesty inaugurating Royal Opera House

Genuine Arab upbringing

In Part I, Chapter I, the book points out that H.M. Sultan Qaboos bin Said grew up in an environment rich in the values of genuine Omani, Arab culture. He learned a lot about religion, history and civilization, acquired traditional Arab hobbies and associated himself with Oman's beautiful milieu and clear skies. Such ancient legacies have shaped H.M.'s favourite hobbies which have developed into a deep interest in the Omani, Arab

culture. H.M. has appreciated Omani cultural heritage, calling on Omanis to consider it as a source of pride, ethics, art and architecture, a real source of creative crafts and an important instrument to inform the world about our genuine Arab values and morals.

Adhering to Islamic teachings

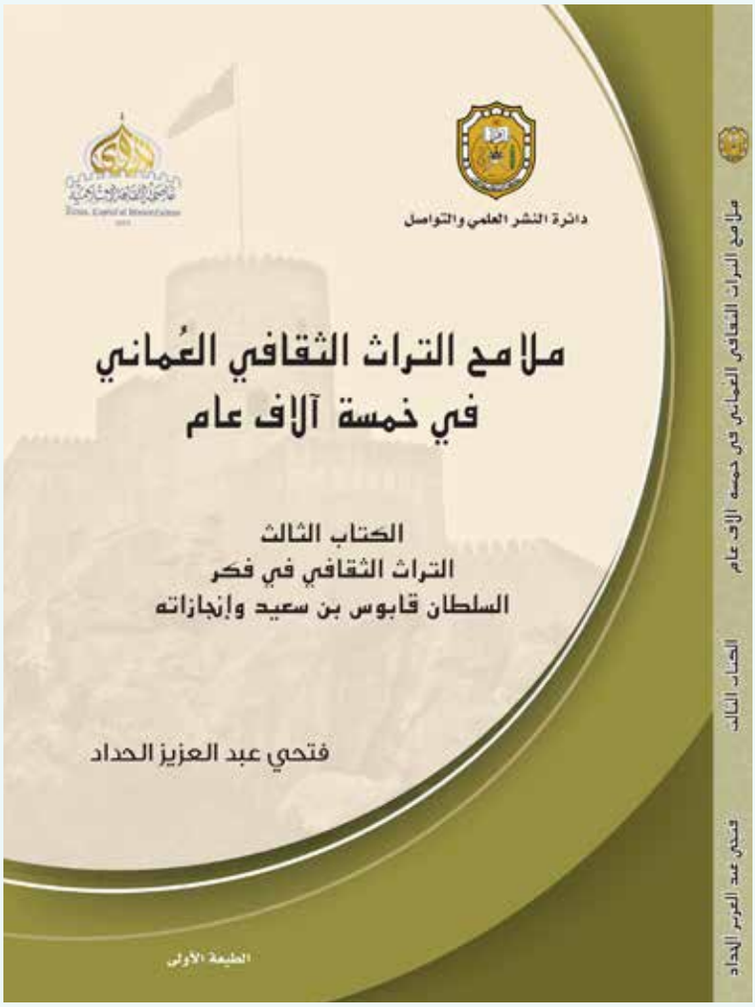
Chapter II suggests that it has become evident in H.M.'s understanding that he has adhered to the teachings of Islam, urging Omanis to invoke its principles and strictly observe its guidelines in all their conduct, transactions and responsibilities. This has been clearly demonstrated in the many speeches he has given on several occasions. In this context, H.M. has always highlighted the strong social and national cohesion of Omani society for the benefit of the country.

An overall scientific vision

In Part II, Chapter I, the book discloses that H.M. has adopted a comprehensive outlook for Omani cultural heritage by providing an accurate definition of the components of heritage. Such a definition includes all the cultural manifestations, for example, forts, castles, monumental sites and other tangible objects. There are also elements of intangible cultural heritage, such as customs, traditions, knowledge and arts, which are transferred across generations. Ever since the dawn of the modern Omani renaissance, the Sultanate has witnessed a great movement to revive Omani civilization, as a source of national pride, by preserving and sustaining the Omani historical monuments.

Promoting culture

Chapter II mentions that H.M. has always called for harnessing Oman's raw materials in maintaining traditional crafts, and thus creating new jobs in this domain. There is also a reference to H.M.'s positive position on the important role played by the women's associations in raising awareness in this regard, and promoting social development.



Interest in music

Chapter III demonstrates how Omani folkloric music has flourished, thanks to H.M.'s continuing encouragement. This has been envisaged in calling for preserving Omani folklore and creating a mixture of traditional and western classical music. Such creativity in music composition has always been applauded, besides the modern forms of music. Just like other forms of Omani cultural heritage, the traditional artistic heritage has received its share of attention from H.M. This has been shown in encouraging various troupes and encouraging them to conduct symphonies and concerts at local, regional and international theatres. Thanks to H.M's encouragement, music has become an academic discipline which is taught in Oman, a great art which is appreciated by Omanis.

Membership in international agencies

In Part III, Chapter I, the book states that the Sultanate has managed to be a member of many regional and international organizations following H.M.'s directives in this regard. This has enhanced Oman›s cooperation with international organizations, which has had a great impact on preserving and developing all forms of cultural heritage with the technical, scientific and material support the Sultanate has received from those agencies. Such dialogues are in line with international standards.

The leader meeting his people

The book reports on H.M.' tours across the country, whereby he met with Omani citizens, listening to their stories firsthand and addressing their concerns and requests. on those visits, H.M. has met with people from different walks of life,, the elderly, citizens and dignitaries, both in the Royal camp, which is held in Al-Saouh where H.M. usually stops, or in other meetings during his private visits.

Great cultural contributions

Chapter III sheds light on H.M.'s invaluable role in promoting the cultural sector through creating and supporting cultural and environmental projects. For instance, he has given significant directives on initiating the Silk Road study, and created research chairs and cultural centres. There are also prizes granted in specific areas, for example, the Sultan Qaboos Award for Culture, Arts and Literature and the Sultan Qaboos Prize for Environmental Preservation.

Profound wisdom

The last chapter explains how the wisdom of H.M. Sultan Qaboos bin Said has manifested itself in the way H.M. has outlined the general trends in tourism and cultural heritage investment in the Sultanate, and how to utilize its cultural, human and natural resources for

They won the Best Sustainable Product Award 2016

SQU Students Design Two Innovative Products: 'Plant Coffee' and Self-watering Plant Pot

Sultan Qaboos University has always encouraged students who have shown extraordinary ideas and multifaceted accomplishments in their specific fields of study. They rise to scientific challenges, with learning and innovation as their slogan.

In this edition of Tawasul, we are shedding light on two such achievements made by a group of students who looked around and found some materials that could have many environmental uses, and thus address the needs of the community. They decided to establish ECONAS, a student-run company, which is specialized in designing products for sustaining the environment and agriculture.

They established their company, ECONAS, and plan for a factory

Two new products

Made up of eleven students, ECONAS has created an eco-friendly liquid manure that could help plants grow faster. It said that this first-of-its-kind product would help Omani farmers grow their flowers and vegetables more efficiently. The product has been given the name "Plant Coffee". According to the students, farmers in Oman currently use solid manure, which takes more time to blend with the soil and is more expensive. The new "Plant Coffee", however, provides better nutrition to the plant as its ingredients consist of only organic and waste material.

The liquid manure technology aims to reuse organic waste and livestock manure in a better economical and hygienic way to produce an effective liquid fertilizer, which could be used by plant nursery owners and farmers. The liquid manure also reduces the need for continuously watering a plant and enhances its immunity during both cold and hot weather.

The second product is a syphon, a self-watering plant pot. The idea is simply to water the plant for about three weeks and without the need for frequent and daily watering of the plant. In this technique, the syphon, recycled and manufactured materials such as cotton fabrics are used to water the plant. Omani pots are also used to encourage the craft business to enter the field of investment.

Challenges

The students had to overcome a few hurdles before they translated their products into reality, and, hopefully, into the consumers' hands. They had to find safe tools and materials necessary for producing the Plant Coffee. They also had to seek further knowledge in this field in order to ensure the product is of good quality.

SQU support

It is worth noting that SQU has provided all forms of support and assistance to the students in their project. This is part of its mission to promote innovation and entrepreneurship among students. It makes all efforts to invest in their competencies, urging them to come up with innovative ideas that are conducive to modern businesses. Support came through providing continuous academic supervision, logistical facilities such as labs and halls, guidance and instructions from academics, experts and technicians.

SQU provided all kinds of support

Future plans

ECONAS has both short- and long-term plans. The short-term plans include the establishment of a company that delivers a host of

high-quality products, building a temporary factory, winning contracts from several institutions, having retail outlets in the Sultanate, and building partnerships. In the long term, the students hope to increase their company's products in both quality and quantity, build a permanent, big factory, get external contracts, create branches, and finally make profits.

They overcame big challenges

Advice

In a word of encouragement and advice for the Omani youth, the students called for hard working order to overcome the potential challenges encountered on their road to success. They underlined that there will always be light at the end of the tunnel. Resources should be utilized in a rational manner in order to achieve progress and prosperity in the Sultanate. Innovation and entrepreneurship should be encouraged, and creative ideas should be translated into useful products for the benefit of Oman.

They urge the youth to come forward with constructive ideas

Invention: Control and Measurement Training Device

A device has been invented by a group of Omani researchers to be used for control and measurement training purposes. The device is an innovative learning tool that can help students design, implement, and test different control and measurement strategies.

The control and measurement training device was developed by Dr. Saif Abdullah Al-Hiddabi, from the Research Council, and Ph.D students, Omar Said Al Abri and Asia Mohamed Al-Busaidi, from the College of Engineering, SQU.

The apparatus includes a beam pivotally mounted upon a support at one end, with an actuator attached to the opposite end to adjust the slope or tilt of the beam. A ball travels along the beam, and is retained on it by raised stops at opposite ends, and by lateral wires extending along the length of the beam. An optical sensor, e.g. a webcam, is used to sense the position and/or the velocity of the ball as it travels along the beam when the beam is tilted. The two end stops of the beam have different colored tags on them, with the ball being in a third color. A control system and software are provided to adjust the beam to the slope, and level the beam to stop the motion of the ball and position or center the ball on the beam.

Embodiments of the control and measurement training device provide a low-cost educational kit that addresses the problems of complexity and lack of portability of conventional laboratory educational equipment for teaching process control engineering. The device includes a visual position information sensor, such as a webcam or camera, which is interfaced with image processing software to detect visual position information of the position of a freely moveable object, such as a ball, on a beam to implement different control strategies. The embodiments are desirably relatively light and compact, and can provide portability, so as to facilitate classroom use, or for ease of transport, so as to enable use of the device away from a school environment, to enable performing homework assignments, for example. The device can therefore provide an economical and portable optical ball-on-beam platform for control and measurement systems, for teaching and/or training.

Bohlin Rheometer

A Research Device

The Malvern Bohlin Gemini HR Nano Rheometer offers the ultimate in instrument capabilities for rheological characterization of low viscosity, low volume and weakly-structured systems. The Gemini HR Nano offers advanced technology that is simple and straightforward in operation. The instrument enables the measurement and control of nano-torque levels, enabling users to probe weak or sensitive material structures, yet retains a continuous torque range to 200mNm. The patented Rotonetic 2 drive technology brings an unsurpassed range and sensitivity to control torque and speed across all steady, dynamic and transient modes. This enables the Gemini HR nano Rheometer to perform perfect strain controlled tests, as well as all stress controlled tests. The HR Nano is a high performance, modular rheometer system, with a wide range of measurement geometries and accessories. EasySwap temperature controllers include integrated Peltier devices, a forced gas oven with optional liquid nitrogen cooling, electrical heating and a range of fluids circulators. The Gemini HR nano can be quickly and easily configured to allow testing across a full range of materials and applications.

Soon