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28 Feb. 2018

Texas A&M at Qatar hosts STEM education workshop for local teachers

Texas A&M University at Qatar recently hosted a workshop for local teachers as part of its efforts to nurture excellence in STEM (science, technology, engineering and math) education in Qatar.

The workshop, “Enhancing STEM Education for a Knowledge-based Society,” featured a keynote talk by renowned STEM education expert Dr. Michael de Miranda, a presentation on Qatar’s educational strategy from the Ministry of Education and Higher Education, and a panel discussion featuring educators, policy makers and industry stakeholders who discussed the development of educational pathways in STEM disciplines for meeting Qatar’s workforce needs toward the goals of Qatar’s National Vision 2030.

De Miranda is head of the Department of Teaching, Learning and Culture in the College of Education and Human Development at Texas A&M University in College Station, Texas, USA. His expertise is in the development of young STEM educators, specifically in learning, cognition and instruction in engineering and technology education.

During his presentation, de Miranda discussed the increasing importance of preparing young learners for STEM subjects, particularly in nations that are leading technological advances. De Miranda said, the sustainable growth and development of tomorrow’s thought leaders is happening in our schools and classrooms today, and educators must act to transform classroom lessons into educational experiences for students. The problem, de Miranda said, is that STEM concepts are often abstract and disconnected from the real world, so STEM learning must be applied in the classroom to create contextually authentic learning and doing.

“Humans are born designers,” he said. “We change our environments to meet our needs and wants, and we must use engineering and design to engage young students. But learning depends on perspective, and our role is to clarify this perspective by integrating STEM subjects to see how they work together. Seeing the whole picture helps students learn, so we must connect the STEM dots in a unified

knowledge base. If we don't connect the STEM dots, we create in students an aversion to learning basic STEM concepts."

De Miranda also emphasized the importance of transforming STEM classrooms into learning communities where students can share and exchange learning and ideas. Most importantly, though, de Miranda challenged teachers to unleash the power of engineering to create powerful STEM learners.

"Engineers fail more than we succeed," he said. "In a STEM classroom, we should reward failure as long as our students can figure out why they failed. We must get students to reflect on what they don't know."

Following de Miranda's talk, Nouf Al Kaabi from the Ministry of Education and Higher Education presented the Education Strategy for 2017-2022 and how the educational entities are developing a world-class K-12 education system that will help to meet several objectives, such as increasing the number of students enrolled in preschool programs, improving the performance of school students in the state of Qatar in national and international assessments, and increasing the number of Qataris graduating from schools by 2022.

Al Kaabi said, "It is important to understand what is driving educational aspirations and career expectations in general and specifically related to STEM fields so we can target evidence-based programs that educators can implement to build a future pipeline."

The workshop concluded with a panel discussion featuring Dr. Eman Fituri, director of educational initiatives at the Qatar Computing Research Institute; Dr. Ayman Bassil, capacity building manager for QNRF; Dr. Gregory J. Moncada, director of the QF STEM school, PUE; Dr. Rashid Bendris, assistant dean for student recruitment, outreach and foundation programs at WCQ; Abdulrahman Sultan Al Darwish, QAPCO strategic Qatarization manager; Dalia Abdalhameed, English language standards specialist in the Office of the Assistant Undersecretary for Educational Affairs at the Ministry of Education; and Dr. Ahmad El Guindy, associate professor of mathematics at Texas A&M at Qatar.

The workshop was part of Texas A&M at Qatar's STEM outreach efforts that aim to motivate young Qataris to choose educational pathways for careers in fields related to science, technology, engineering and mathematics (STEM). The initiative supports both teachers and students through a broad portfolio of programs and workshops.

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About Texas A&M University at Qatar

Since 2003, Texas A&M University has offered undergraduate degrees in chemical engineering, electrical engineering, mechanical engineering and petroleum

engineering in Qatar Foundation's Education City, and graduate degrees in chemical engineering since fall 2011. Texas A&M at Qatar has awarded 870 degrees. All four undergraduate engineering degree programs are accredited by the Engineering Accreditation Commission of ABET. Faculty from around the world are attracted to Texas A&M at Qatar to educate the next generation of engineering leaders in Qatar and to conduct research valued at more than \$248.2 million that address issues important to the State of Qatar. Visit www.qatar.tamu.edu.