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STEAM in Arabia

Troy Bickham
Texas A&M University at Qatar

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Abstract
In late 2014 Texas A&M University at Qatar, which is a small branch campus focusing on engineering, launched its own STEAM initiative. Its goals are to better integrate the liberal arts into the engineering curriculum and to demonstrate the relevance of the arts to STEM-based education and research. What follows is a description of the initiative and the reception it has received.

Author/Artist Bio
Troy Bickham is Professor of History at Texas A&M University and the Assistant Dean for Academic and Student Services at Texas A&M's branch campus in Qatar, where he also serves as the Director of the campus's STEAM Initiative.

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When I first came to Texas A&M University's branch campus in Qatar (TAMUQ) six years ago on leave from my home Department of History at Texas A&M's main campus, I was confronted with students who challenged many of my assumptions. Most memorable, however, was how they debunked my notion that engineering students were committed to being engineers. In Texas, the rigors of engineering, range of alternative majors and different cultural dynamics meant that most engineering students I met embraced their majors with an abundance of gusto. While the students at TAMUQ are as academically capable as their main campus counterparts, the enthusiasm was less predictable. During my second semester of teaching, before the start of class a group of students who recently returned from a competition in Texas described the students they encountered there as "geeky" (this despite the fact that they just been discussing robot designs and had, I believe, won the competition). When pressed, the students explained that what distinguished them is that many did not necessarily want to become engineers. When I asked about the careers they would like to pursue if practical matters could be set aside, the most common answers were 'poet', 'artist' and 'photographer'. We spent the rest of the period discussing how these passions were not mutually exclusive to engineering. I then spent the next several years with colleagues developing a way to find a campus-wide approach. Launching a STEAM initiative in 2014 has been one successful answer.

TAMUQ is a branch campus of Texas A&M's flagship campus in Texas and part of Qatar Foundation's Education City campus, which is also home to five other similarly-modeled American branch campuses—each with its own specialization. We have just over 500 students,

all of whom are studying engineering (the vast majority at the undergraduate level). Our student body is global with just over half being citizens of Qatar and the rest hailing from over two dozen countries, primarily from the MENA (Middle East and North Africa) region but also from North America, Europe and Asia. Like engineering faculties throughout the U.S., the faculty at TAMUQ is global, with its members originating from around the world but almost without exception receiving their doctoral degrees from North American and European institutions. A key difference is that our student population has greater gender equity, with over 40 percent being female (twice the U.S. average for engineering majors).

Because our degrees are awarded by our home campus, our curriculum and institutional accreditation are one and the same. For students, this means taking a host of largely unexpected arts, social science and humanities courses, including visual and performing arts and the Texas-mandated courses in state politics and U.S. history. In fact, liberal arts faculty make up roughly one quarter of the campus's 80 full-time faculty.

Launched with a generous allocation from the university, the TAMUQ STEAM Initiative primarily aspires to work closely with STEM disciplines, especially engineering, to better the educational experiences of our students. STEAM has been an effective way for liberal arts faculty to assert the relevance of their disciplines and associated courses in institutional and regional cultural environments that often treat non-STEM field course as luxuries, at best, but most often as distractions. This is a familiar challenge for arts and humanities faculty at the over two hundred North American branch campuses globally, whose host populations are primarily interested in STEM and business fields and are often surprised by the inclusion of liberal arts courses in the degree requirements. As in most countries, students in Qatar's state-supported

secondary education system interested in STEM fields typically do not have significant time allocated for the arts and humanities.

To that end, we have focused on using STEAM as an umbrella for supporting a number of programs that demonstrate how the liberal arts, broadly defined, can enhance critical thinking and effective communication. For example, in Spring 2014, English faculty launched *Best Writing*, which is an annually published student writing anthology that showcases the various kinds of writing students do in their courses and private lives. The response was overwhelming with upwards of 20 percent of students submitting pieces. The most recent volume included a design competition for the cover, which local alumni and industry partners judged. The launch parties featured selected student readings in Arabic and English and were campus-wide events that attracted fellow students, faculty, former high school teachers, industry partners and family members. Inside the classroom, a great example of STEAM at work is the inclusion of team-based Rube Golberg projects in our technical communication classes as a way to intermingle communication, design and collaborative learning. Another example is the use of a student-led oral history project to encourage students to explore and preserve local artistic and culinary heritage—especially poignant in a society in which the native population is now less that 15 percent of the total resident population. Finally, many Liberal Arts faculty adapted the Ignite presentation format (20 PowerPoint slides auto-advancing every 15 seconds) in a number of classes to improve verbal communication and visual design skills. To follow-up on that, we are launching an IgniteDoha competition in 2016 to allow students to showcase the skills developed in classes.

What we have found has been a comfortably, if not surprisingly, warm reception both within TAMUQ and Qatar. Our industry partners are especially keen to have critical thinkers and effective communicators as employees, and many have reacted enthusiastically to STEAM as a way to help achieve this goal. STEM colleagues have gone from mild skeptics to partners, encouraging elements of the arts to collaborate in the K-12 STEM outreach programs TAMUQ provides for the wider community, largely through a partnership with Maersk Oil. This semester TAMUQ launched its first Transformative Educational Experience internal competitive grant program to encourage faculty, staff and students to develop unique ways to provide greater high-impact learning experiences for our students across the curriculum and both inside and outside of the classroom. Many of the proposals were collaborations between engineering and liberal arts faculty that serve to highlight how STEAM is taking hold. For example, one is a collaboration between English and Mechanical Engineering professors to create children's pop-up books in Arabic and English to explain basic engineering ideas, such as the combustion engine. Especially rewarding is that this idea came from our students, who sought a way to combine their artistic and engineering interests to create something for their community. In fact, most gratifying is that the students have been amongst the first to embrace the notion that not only are poetry and engineering not mutually exclusive, they can be complementary. Thus in many ways TAMUQ is an idea place for testing STEAM-related ideas, particularly with regard to engineering—multi-national classrooms, near gender parity amongst students, and a small campus that makes exchange of ideas across the faculty easier. We are looking forward to seeing these ideas develop and exploring new ones in the years to come.