Project South Texas
Academic Program Working Groups
Final Report

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Working Group Name	UTeach
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Executive Summary

The UTeach program at The University of Texas-Pan American (UTPA) and The University of Texas at Brownsville (UTB) is an excellent avenue toward success in achieving the goals of improving education in the Rio Grande Valley (RGV) of Texas. UTeach trains high quality STEM teachers who could train current educators in subjects they are assigned to teach. The program addresses the need for high-quality educators and provides UTeach students a secondary teacher career option in addition to their respective degrees in mathematics or science. In addition, these well-trained STEM teachers will have a great effect on student performance in secondary schools across the LRGV and the state. UTB and UTPA are working together not only to fulfill the goals of the program, but also to help develop a better future for residents of the RGV.

UTPA and UTB are two of seven universities in the State of Texas replicating the UTeach model developed at The University of Texas at Austin in 1997. The UTeach Institute was established in 2006 in response to national concerns about the quality of K-12 education in the STEM fields. Since 2006, the UTeach Institute has supported the replication of UTeach at 35 Universities across the United States and has led efforts towards continuous improvement of the UTeach Model. According to enrollment statistics for fall 2013 released by the UTeach Institute, the combined enrollment of UTB and UTPA was 365 which places this total ahead of all other replicating universities in the State of Texas. Considering that UTPA and UTB began implementation two years ago while the other two, University of North Texas and University of Houston, began their UTeach program six years ago, this indicates a great potential for the training of high quality STEM teachers for the RGV, the State of Texas, and the country. With this potential it is possible that UTRGV could easily become a leader in training high quality, UTeach STEM educators. Expectations are for these UTeach educators to become leaders in transforming public education in the RGV to a student-centered learning environment.

The nationally renowned and highly successful UTeach model was implemented at both UTB and UTPA in fall 2012. This STEM-based, secondary teacher preparation program was a response to critical shortage of qualified mathematics and science teachers in schools across South Texas. The two institutions committed to providing institutional resources and development office staff to assist in seeking external funding for the programs during the replication phase and to develop an endowment fund for the continuance of the program after 2016. Expectations for the UTeach program, by graduating high quality STEM teachers, are to play an important role in assisting the youth of the Rio Grande Valley to become skilled in high-tech, cutting-edge careers that will benefit not only the Rio Grande Valley but the entire State of Texas. There is a need to recruit top students to the UTeach program so that they can teach in high-need schools by providing paid internships or scholarships to these recruits. The recruitment of these top students will enhance this clinically intensive program in partnership with local school districts, integrating disciplinary and pedagogical instruction, and taught by clinical and academic faculty, including two years of post-graduation induction services. These internships could allow UTeach students to do touring as part their field experiences, particularly, in community centers located in colonias throughout the RGV.

The UTeach group recommends working with school districts in the RGV that do not already have T-STEM high schools in creating high-tech schools within their districts. These high-tech schools are to focus on the future STEM fields, science, technology, engineering and mathematics. The schools are to serve as models for inquiry- and project-based learning environments which are different than the traditional setting. In this project-based environment learning is student-driven and offers engaging and collaborative opportunities for learning. These high schools are to serve all

students, particularly, underrepresented groups and the economically disadvantaged. More importantly these schools will have technology integrated across the curriculum and could serve as training for our UTeach students as they do the required field experiences throughout the program.

The UTeach program, by design, supports a student-centered learning and teaching environment. Since UTeach will be the only method of preparing STEM teachers in the RGV, it is necessary to train in-service teachers in inquiry- and project-based learning and teaching methodologies. There is a need for qualified educators in our school districts to mentor our UTeach students. Consequently, there is great need to have teacher training workshops to enhance mentoring skills. UTeach will take a leadership role in seeking funding to provide this training for current classroom teachers. Plans are to provide two intensive workshops each semester, fall and spring, and one workshop in August before the beginning of the academic school year. These half-day Saturday workshops, or possibly full-day sessions during the week, will be conducted at the beginning of each semester with a follow-up workshop towards the end of each semester. These mentors will be trained on all reporting and mentoring requirements of the UTeach program which will occur in the August workshop. In addition, they will receive training on developing inquiry- and project-based lessons which they can implement in their regular classrooms. Expectations are for these trained mentors to transition from a teacher-centered classroom to a student-centered environment. Another important component of the workshops will be to train teachers in providing constructive feedback to UTeach students. Also, these UTeach mentors could become leaders in their schools in training other teachers in a student-centered learning environment. They could easily become recruiters of other mentor teachers for our program. These mentors need to be experience, high quality teachers who are open to different pedagogical methods. They will be recruited by using regional and district contacts, university mathematics and science faculty, principals, and direct contact with teachers. The UTeach program will have a leading role in training current teachers as well as assist with the necessary paperwork in order for them to receive continuing education credit.

Since UTeach will graduate the first three high quality STEM teachers in May 2014, there is a need for induction services for these graduates. Induction support will be provided to UTeach graduates during the first two years of teaching. These services include mentoring, the use of curriculum materials, the use of program technology, and professional assistance by clinical and program faculty. In addition, Teach For America-RGV is open to collaborating with UTeach in providing induction services.

The UTeach program is collaboration between the College of Science and Mathematics and the College of Education. Also, it collaborates with the various STEM departments and the College of Engineering. The UTeach working group is planning on expansion of the program to all four RGV counties. There are plans to collaborate with area community colleges to have courses taught by program clinical faculty at their respective campuses. Agreement has already been signed with South Texas College to offer Step 1 and Step 2 UTeach courses at the STC Pecan campus. Agreements will be sought with Texas Southmost College and Texas State Technical College to offer classes at their campuses. Thus, by design UTeach is trans-disciplinary involving various collaborations.

UTeach at UTB and UTPA are currently housed in the Colleges of Science and Mathematics in collaboration with the Colleges of Education. UTeach will be the only STEM teacher preparation program in the RGV; thus, it is essential to phase out the traditional program as per agreement for the implementation of the program. UTB will phase out the traditional program at the end of the 2014 spring semester and UTPA will do likewise within the next two years. Therefore, the group recommends that UTRGV continue replicating this highly successful UTeach model with high fidelity.

The UTeach Working Group is keenly aware and sensitive to the cultural roots of South Texas. Contributions from all groups are part of the UTeach courses at the content and pedagogy level. The group is supportive of the idea of a bilingual, bicultural, and bilateral university and is ready to meet the challenges of transforming the STEM educational (and general education) landscape of the RGV in order for our graduates to compete and be successful in today's modern technological world.

Working Group Meetings

Date	Location/Format
November 25, 2013	Colletti's Restaurant, Harlingen
January 7, 2014	Colletti's Restaurant, Harlingen
January 22, 2014	Colletti's Restaurant, Harlingen

Current Academic Programs

UTB	UTPA
BS Biology 4th – 8th Grade Teaching	BS Chemistry with Teacher's Certification (7th – 12th Grade)
BS Biology 8th – 12th Grade Teaching	BS Life Science with Teacher's Certification (7th –12th Grade)
BS Chemistry 8th – 12 Grade Teaching	BS Mathematics with Secondary (7th – 12th) Teaching
BS Environmental Science 8th – 12th Grade Teaching	BS Physical Science with Teacher's Certification (7th – 12th)
BS Mathematics 4th – 8th Grade Teaching	*BIS Middle School Science (4th – 7th Grade)
BS Mathematics 8th – 12th Grade Teaching	*BS Mathematics with Middle School (4th – 7th) Teaching
	* These degree programs will be approved by UTPA in spring 2014.

Current Academic Programs to be Offered Fall 2015

Bachelor's Degrees	Master's Degrees	Doctoral Degrees
BS Biology/Middle School Science 4th – 8th Grade	N/A	N/A
BS Biology/Life Science 7th – 12th Grade		
BS Chemistry 7th – 12th Grade		
BS Environmental Science 7th – 12th Grade		
BS Mathematics/Middle School 4th – 8th Grade Teaching		
BS Mathematics/ Secondary School 7th – 12th Grade Teaching		
BS Physical Science 7th – 12th Grade		
Preference: 4-8 and 8-12 Grades		

New Academic Programs for Fall 2015 (Please indicate with an asterisk (*) your top 3 priorities.)

Bachelor's Degrees	Master's Degrees	Doctoral Degrees
BS Engineering and Mathematics 7th – 12th Grade		
BS Engineering and Physics 7th – 12th Grade		
BS Computer Science 8th – 12th Grade		

New Academic Programs for Fall 2017 (Please indicate with an asterisk (*) your top 3 priorities.)

Bachelor's Degrees	Master's Degrees	Doctoral Degrees

New Academic Programs for Fall 2020 (Please indicate with an asterisk (*) your top 3 priorities.)

Bachelor's Degrees	Master's Degrees	Doctoral Degrees
	UTeach MS in Engineering Education	

New Academic Programs for Fall 2025 (Please indicate with an asterisk (*) your top 3 priorities.)

Bachelor's Degrees	Master's Degrees	Doctoral Degrees
		PhD in Mathematics Education
		PhD in Science Education

Examples of innovative programs

Identify institutions and/or programs that are organized in an innovative way. In what ways are the programs innovative? How does this organization promote student success and/or scholarly activity?

The UTeach program is already recognized nationally as an innovative, rigorous teacher preparation program. The program employs pedagogy and content courses specifically designed to train pre-service teachers to teach science and mathematics. The UTeach model emphasizes the use of hands-on activities, projects, and research for middle school and high school curricula. Furthermore, pre-service teachers are exposed to the teaching profession early in their academic program and have field-based experiences in elementary, middle and high schools prior to apprentice teaching. This early field-based experience begins the first semester and continues with every course in the UTeach curriculum. Our UTeach program will investigate the feasibility of incorporating the flip-classroom and the virtual classroom to the UTeach model.

By design the UTeach program supports student-centered learning and teaching. The program teaches students to think critically, solve problems, evaluate evidence, analyze data, and generate and test hypotheses, which are essential in mastering content in a STEM field. It encourages students to reflect, analyze and critique what they are learning and how they are learning the content. It motivates students by giving them some control of the learning process, which allows them the opportunity to say how a class is conducted and also to create assessment criteria. It allows students to collaborate in their learning and begin to see that learning individually and collaboratively is an important goal in any education experience. Since UTeach will be the only method of preparing STEM students in the RGV, it is imperative that we train not only pre-service teachers, but more importantly the in-service teachers, many of whom will serve as mentors to our students. The program proposes to provide training workshops for these in-service teachers in inquiry- and project-based teaching and learning. This training will allow them to enhance their mentoring skills as they mentor our UTeach students and also their teaching skills as they transition from a teacher-centered to a student-centered learning environment. Thus, it is important for the UTeach program to promote a change in the teaching and learning, not only in the STEM field, but in educating all the students in the RGV and beyond.

The group recommends that the UTeach program work with local schools that do not have T-STEM high schools in creating high-tech schools within their districts. These schools should focus on the future fields of science, technology, engineering and mathematics (STEM). The schools are to serve as models for inquiry- and project-based learning environment which is different than the traditional setting. In this project-based environment learning is student-driven and offers engaging and collaborative opportunities for learning. These high schools are to serve all students, particularly, underrepresented groups and the economically disadvantaged. More importantly these schools will have technology integrated across the curriculum.

Induction support will be provided to UTeach graduates for the first two years of employment as STEM teachers. The group proposes to team-up with other successful programs such as Teach for America in providing this much needed support for first- and second-year teachers. This support for UTeach graduates as they enter the teaching profession is necessary to enhance retention and professional development through activities such as online mentoring programs, advise, classroom visits, use of program materials and equipment, provide regularly scheduled professional development workshops at the university, and the opportunity to obtain advanced degrees.

The UTeach program was implemented at UTB and UTPA in fall 2012 after a year of planning, 2011-2012. Enrollment at both institutions has exceeded expectations in recruitment and enrollment of UTeach students. The rolling out of the seven UTeach pedagogy courses and three content courses was to be completed by spring 2016; however, UTB will be rolling all of these courses by the end of spring 2014. Three students at UTB are scheduled to graduate in May 2014. Meanwhile, UTPA has been able to work out an agreement to offer the first two UTeach courses, Step 1 and Step 2, at the South Texas College campus in McAllen. The plan has already been implemented at the STC Pecan Campus this spring 2014 semester by offering three sections of UTCH 1101, Step 1, being taught by UTPA clinical faculty. The group has also discussed the possibility of UTPA students enrolling in an UTeach course at UTB campus, if the course has not yet been rolled out at UTPA. The earliest this could happen is fall 2014. Hence, within the next two years, there will be a number of UTeach graduates in RGV schools.

Possible consultations

Identify campuses that faculty and administrators who are engaged in further planning may wish to study or visit and/or leaders/scholars that planners may wish to consult.

Possible consultations are with two Texas universities that have completed the implementation of the UTeach program and are now considered to be UTeach institutions, i.e., the University of North Texas and the University of Houston. These institutions are currently graduating a substantial number of secondary school teachers.

Trans-disciplinary Opportunities

Describe the trans-disciplinary opportunities that extend beyond your group of disciplines.

The UTeach program at UTB is housed in the College of Science, Mathematics and Technology. Similarly, UTeach at UTPA is housed in the College of Science and Mathematics. Both programs have academic relationships with their respective College of Education. Thus, by design UTeach degree programs are inherently trans-disciplinary. In addition, the UTeach – Pan American program has an academic relationship with the Department of History and Philosophy within the College of Arts and Humanities. We would like to develop new trans-disciplinary relationships with the College of Engineering and Computer Science to develop UTeach Teacher Certification programs in Engineering and graduate programs in Engineering

Education. Due to the limited number of engineering jobs in the RGV, many Engineering graduates seek employment as mathematics or physics teachers. There is a great need for highly-qualified mathematics and physics teachers in the area. Giving Engineering students the option of Teacher's Certification with either Mathematics or Physics would enable them to more easily gain employment and fill a critical teaching shortage. Also, UTB is currently working with computer science to develop a degree plan with secondary teacher certification. UTB is currently seeking National Council for the Accreditation of Teacher Education (NCATE) status through its specialized program area, National Science Teachers Association. The UTB UTeach program has been submitted to NCATE and a site visit is scheduled for April 2014. UTeach – Pan American program is partnering with the national AVID for Higher Education Teacher Preparation Initiative. The program provides content and pedagogy professional development for UTeach faculty, mentor teachers, and pre-service teachers, as well as support for integrating research-based strategies into our undergraduate UTeach content and pedagogy courses. Professional development starts in the 2014-2015 academic year.

Bicultural/ Biliterate/Bilingual

Describe how the proposed academic programs reflect the bicultural/bilingual/biliterate mission of the new university and culture of our region.

The UTeach Working Group is keenly aware and sensitive to the cultural roots of the South Texas region. We also recognize that students from other nationalities, ethnicities, and other languages will be part of the new university, UT-RGV, and the UTeach program. Contributions from all groups should be part of each course offered by UT-RGV and UTeach at the content and pedagogical level. Even though the new university will be regionally-grounded, our thinking, teaching, and research should be globally-focused. We have a major responsibility to our Texas borderland Hispanic students to instill a new culture that will prepare them for the new technologies, global competitiveness, and cultural trends that will radically alter the way we live in the Lower Rio Grande Valley throughout decades to come.

The UTeach group also believes that bilingualism is a choice and not an obligation. Several universities around the world that are labeled "bilingual" are characterized for "sharing a linguistic space;" that is, two or more languages are spoken in the classroom, offices, and/or the languages spoken are common in everyday life. The new university will serve not only a population that is already bilingual (meaning that they can read, write, comprehend, and speak diverse languages) but also students who may want to become bilingual during their academic experience at the university. Since the new university is located in a region that is already bilingual and bicultural, we need to consider the following:

1. Support our local students to increase their academic language proficiency either in English, Spanish, or both.
2. Support the development of other foreign languages to our students; say French, Chinese (Mandarin), Japanese, German, etc.
3. Offer undergraduate and graduate courses in languages other than English; this will attract a greater number of foreign students to come to UT-RGV.
4. Propose an elaborative survey of faculty who would like teach their current courses in different foreign language(s).
5. Increase multicultural activities by having foreign renowned speakers on campus, inviting foreign faculty as "Visiting Faculty" to teach courses in their foreign language, etc.

The UTeach group supports this exciting, innovative idea of a bilingual university; however, there are many challenges that need to be addressed in order for the new university to become fully bilingual, bicultural, and biliterate.

Community Engagement

Describe how the proposed academic programs reflect the community engagement mission of the new university.

The UTeach model is ideal for providing tutoring at local schools and community centers. However, the program needs to seek private funding sources to provide internships so that UTeach students can provide this much needed services to our elementary, middle and high school students. These internships will enable UTeach students to work in nonprofit educational activities such as tutoring and curriculum development. In addition, serving as interns will enhance their portfolios as they seek employment in our RGV schools and elsewhere.

Academic Structure

Describe the academic structure you are recommending for your group of disciplines.

UTeach programs are constrained by requirements of the Texas Teacher's Certification Program and the UTeach Institute based at The University of Texas at Austin. The academic structure of housing these programs in the College of Science and Mathematics, with significant input from the College of Education, is the typical arrangement for UTeach universities. The UTeach model also suggests that the program operate like a department in the College of Science and Mathematics. Thus, we see no reason to alter this successful model in structure or operating procedures. In addition, UTeach faculty and staff need to be transitioned to the university budget so that when grant funds are exhausted their salaries and benefits will be picked by UTRGV. Since UTeach will be the only STEM teacher preparation program in the RGV, it is essential that this transition begins soon.