

## Supplemental Materials

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### Baseline Data on Students

The three partnering schools have a total annual enrollment of more than 1,900 students (80% Hispanic, 78% economically disadvantaged). Beginning 2012, the state of Texas has begun implementation of a new STAAR state assessment program. No data is available on STAAR results for 2012, so we report mathematics and science assessment results from the most recent (2011) statewide assessments, the Texas Assessment of Knowledge and Skills (TAKS).

#### *Browne Middle School (TEA#: 178904043): Percent met TAKS 2011 Standard*

	Mathematics Grades 6-8	Science Grade 8
Campus	80	64
African American	79	57
Hispanic	79	61
White	92	90
American Indian	*	*
Asian	99	*
Pacific Islander	*	*
2+ Races	75	*
Econ. Disadvantaged	70	60
Special Education	78	62
Limited Eng Profic.	63	*

\* Some results are not reported due to small numbers to protect student confidentiality

#### *Kostoryz Elementary School (TEA#: 178904118): Percent met TAKS 2011 Standard*

	Mathematics Grades 3-5	Science Grade 5
Campus	77	82
African American	81	56
Hispanic	76	84
White	80	*
American Indian	*	*
Asian	*	*
Pacific Islander	*	*
2+ Races	*	*
Econ. Disadvantaged	82	75

Special Education	76	84
Limited Eng Profic.	79	43

\* Some results are not reported due to small numbers to protect student confidentiality

*Kostoryz Elementary School (TEA#: 178904118): Percent met TAKS 2011 Standard*

	Mathematics Grades 3-5	Science Grade 5
Campus	87	81
African American	95	91
Hispanic	85	83
White	91	64
American Indian	*	*
Asian	80	*
Pacific Islander	*	*
2+ Races	99	*
Econ. Disadvantaged	90	44
Special Education	84	76
Limited Eng Profic.	60	*

\* Some results are not reported due to small numbers to protect student confidentiality

## Baseline Data on Participating Inservice and Preservice Teachers

About half of teachers at the partner schools are Hispanic, the vast majority are Female, and (partly due to a 2-year hiring freeze brought on by state funding cuts), most have been employed at CCISD for 2 or more years.

### *Ethnicity, Gender, and Experience of Participating Inservice Teachers*

	Browne MS (2011-2012)	Kostoryz ES (2011-2012)	Schanen ES (2011-2012)
<i>Teacher Count (FTE)</i>	43.1	35.4	26.3
African American	4.6%	0.0%	0.0%
Hispanic	40.2%	56.0%	53.3%
White	50.5%	44.0%	46.7%
American Indian	0.0%	0.0%	0.0%
Pacific Islander	0.0%	0.0%	0.0%
Two or More Races	4.6%	0.0%	0.0%
Male	26.4%	0.1%	1.7%
Female	73.6%	99.9%	98.3%
Beginning Teachers	5.4%	0.0%	0.0%
1-5 Years Experience	42.4%	16.3%	34.2%
6-10 Years Experience	13.9%	29.9%	39.6%
11+ Years Experience	38.4%	53.8%	26.2%

Institutional records indicate generalist preservice elementary education teachers tend to be more than 50% Hispanic, about 93% Female, and (partly due to in their Junior or Senior years.

### *Enrollment Counts of Generalist Elementary Education Majors at TAMUCC*

	Fall 2009	Fall 2010	Fall 2011	Fall 2012
<i>Total Count</i>	699	737	668	588
Male	6.4%	8.1%	7.5%	7.5%
Female	93.6%	91.9%	92.5%	92.5%
African American	2.6%	3.9%	3.7%	3.6%
White	45.6%	43.3%	41.5%	41.5%
Hispanic	49.6%	50.5%	52.2%	52.9%
All Other Ethnicities	2.0%	1.8%	1.9%	1.4%
Freshman	15.3%	17.6%	16.9%	13.8%
Sophomore	17.0%	15.6%	16.3%	19.4%
Junior	25.0%	26.3%	22.9%	22.8%

Senior	41.6%	39.6%	43.1%	43.5%
Post-baccalaureate	1.0%	0.8%	0.7%	0.5%

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## Background on Existing Preservice Teacher Education Partnerships

The objective of the Educator Preparation Program at Texas A&M University-Corpus Christi and its core-partnership schools with Corpus Christi ISD is to create a community of learners demonstrating educational best practices whereby the preservice teacher:

1. Develops a rich knowledge base of content, pedagogy, and technology so that learning is relevant and meaningful for all students;
2. Collaboratively identifies the needs of the students and plans, implements, and assesses instruction using technology and other resources;
3. Addresses issues of equity in order to design instruction appropriate to a diverse groups of learners;
4. Demonstrates effective professional and interpersonal communication skills;
5. Becomes a reflective practitioner continuing to learn the knowledge and practices dedicated to the success of all students; and
6. Maintains professional ethics and personal integrity.

The field-based nature of the TAMU-CC Educator Preparation Program lends itself to unlimited, authentic cooperative efforts in the context of our core-partnership schools. Site professors regularly engage in cooperative efforts with the faculty and administration of their core-partnership schools as well as with university colleagues from The College of Liberal Arts and the College of Science and Engineering. Common activities across partnerships include:

- Facilitating fifth grade science labs six times per week during spring semesters;
- Math Mentoring for grade 3 and 4 students at risk of failing TAKS (Texas Assessment of Knowledge and Skills);
- “Spooky Science Family Night,” and “Spring into Math Family Night;” (see PTEP)
- Attending and participating in school-wide professional development;
- Judging Science Fairs;
- Participating in assemblies; chaperoning field trips;
- Attending PTA functions, Parent Conferences; Decorating, preparing for and attending Open House PTO Nights;
- Tutoring after school; Attending Faculty meetings each week;

Some of the accompanying cross-campus professional development at partner schools include:

- Mentoring the Beginning Teacher: Dr. Denise Hill, Site Professor, TAMUCC, 2003-2008 (*conducted in August each year for all new Clinical Teachers (CTs) in the Partnership*);
- Utilizing Math Manipulatives: Judy Sablatura, Teacher (CT), Schanen Estates, 2005
- Working with the Student of Risk/Potential: Troy Nickleson, Prevention & Intervention Specialist, Corpus Christi Independent School District, 2005 & 2006;
- “Preservice Teachers Learning to Engage Hispanic Parents in Mathematics and Science (PTEP):” Dr. Cherie McCollugh, Associate Professor, College of Science & Technology, TAMUCC. (Annually, 2006-2008).
- Project Wild: Dr. Margaret Bolick, Dr. JoAnn McDonald, & Dr. Denise Hill, Faculty, TAMUCC, 2002-2008;
- Science Process Skills: Dr. Denise Hill, Site Professor, TAMUCC, 2007;
- Let’s Get Physical: Sound, Light, and Heat: Dr. Denise Hill, Site Professor, TAMUCC, 2007;
- Science Lab Safety and the Scientific Method: Dr. Denise Hill, Site Professor, TAMUCC, 2008;

One exceptional professional development that occurred at the partnership school, Schanen Estates Elementary involved the acquisition of a local grant. A one-day workshop funded by the Texas A&M University System Regents Initiative Grant, valued at \$3,995 was acquired by Dr. Denise Hill, the site professor, and the Educator Preparation Program. The *Activities in Math & Science (AIMS) Workshop* was funded, including the *AIMS* facilitator stipend and travel, and publications and manipulatives valued at \$45-55 (depending on the grade level) for the 30 teachers at Schanen Estates Elementary. As a previous mathematics/science middle school teacher in Texas, Dr. Hill, site professor, created and presented twelve hands-on science labs involving experiments and/or hands-on activities to approximately 75 fifth graders during the Spring semesters of 2005 and 2006. The intent of the science labs was to improve the scores on the Science portion of TAKS (Texas Assessment of Knowledge and Skills) in Grade 5 and to expose both current teachers and preservice teachers to the critical necessity of hands-on science activities.

This project represented a complete PK-16 “cycle” of science instruction. It involved students in a PK-5 grade elementary school, University preservice teachers, grade 5 teachers, and a college professor with 18 years of previous experience in the Texas public schools. Utilizing preservice teachers as facilitators, the professor presented hands-on experiential lessons involving the Grade 5 science TEKS (Texas Essential Knowledge and Skills) strands to three classes of Grade 5 students while the current in-service teachers observed. Grade 5 student achievement improved from 78% passing the Science TAKS in 2003-2004 to 86% passing in 2004-2005 to 93% in 2005-2006. The percentage of Hispanic students passing increased from 68% in- 2003-2004 to 82% in 2004-2005. Beginning the 2007-2008 school year, fifth grade teachers decided to departmentalize, and now one teacher conducts numerous science labs each week to the fifth grade students and achievement continues to improve (Hill, 2007).

During the 2007-2008 academic year, 7 of our 10 field sites were among the top 25 schools within our proximal zone of professional impact at each level – high school, middle school and elementary. 36.4% of Miller’s FTEs were graduates of the TAMUCC educator preparatory program. Forty-seven percent of Driscoll Middle School’s FTEs were our graduates. Webb Elementary, Clark Elementary, Zavala Special Emphasis Elementary and the Early Childhood Development Center included TAMUCC graduate FTEs of 51.4%, 46.6%, 44.8% and 42.2%, respectively. But the largest percentage was employed at Schanen Estates Elementary with 76.7% FTEs of TAMUCC graduates. For the 2008-2009 academic year, 46.9% of the new teachers employed by our core-partnership district were graduates of the TAMUCC undergraduate, ASCENT or MAC program (Center for Research, Evaluation and Advancement of Teacher Education [CREATE], 2009).

Percentages of Students at EPP Schools Who Met TAKS Standards in **Mathematics**

	Math TAKS 2007	Math TAKS 2008	Math TAKS 2009
State	77	80	82
District	73	76	77
Barnes	88	91	92
Kostoryz	90	91	92
EDCD	89	72	96
Schanen Estates	88	93	86

Webb	94	94	98
Zavala	79	76	79

Ninety-four percent of the Mathematic scores among our six elementary sites scored at or above the district and state levels. Five of the six sites scored 15-21 percentage points higher than the district in 2007; four of the six sites scored 15-18 percentage points higher than the district in 2008; and all six sites scored higher than the district with a range of 2 – 21 percentage points difference in 2009. In 2007, Webb was identified, and in 2008, both Schanen (69.2% econ. disadv.; 82.1% minority) and Webb were identified among the 30 highest achieving elementary schools in Math in the proximal zone of professional impact (CREATE, 2009).

**Percentages of Students at EPP Schools Who Met TAKS Standards in Science**

	Science TAKS 2007	Science TAKS 2008	Science TAKS 2009
<i>State</i>	66	74	78
<b>District</b>	<b>60</b>	<b>68</b>	<b>71</b>
Barnes	76	84	92
Kostoryz	-	-	-
EDCD	83	84	94
Schanen Estates	81	77	91
Webb	94	86	99
Zavala	56	44	82

Eighty-seven percent of the Science scores among the five applicable elementary sites scored higher than the district and state levels. Four of the five applicable sites have significantly performed with more success on the Science portion of TAKS in 2007, 2008 and 2009. In 2007, the partnership sites scored 16-34 percentage points better than the district. In 2008, the partnership sites scored 9-16 percentage points better than the district. And in 2009, all five of the sites scored 11-28 percentage points better than the district; and more importantly, note the significant improvement of 38 percentage points at Zavala SE from 2008 to 2009.

Eighty-three percent of the scores for all tests among the elementary sites scored higher than the district and state levels. Five of the six sites have performed with significantly more success on all of the TAKS tests in 2007, 2008 and 2009. In 2007, the five partnership sites scored 9-29 percentage points better than the district. In 2008, the partnership sites scored 5-22 percentage points better than the district. And in 2009, all five of the sites scored 12-27 percentage points better than the district. Currently at Schanen Estates Elementary, 50% of the third, fourth and fifth grade teachers were preservice teachers at Schanen Estates Elementary and have from 0-5 years of experience. Approximately 25% of the TAKS grade level teachers at Webb Elementary were preservice teachers in our program and have from 1-5 years of experience.

## **Background on Prior Middle Levels STEM Certification Preparation Workshops**

As part of a recent grant-funded STEM teacher recruitment effort (see Prior NSF Funding), TAMUCC offered middle and high school content preparation workshops for inservice teachers in South Texas who were interested in adding mathematics or science certification. There was very strong demand among local teachers, with **399 certified teachers applying for the Spring 2012 workshops**. Unfortunately, funding limits allowed for just 18% acceptance of the mathematics applicants and just 12% acceptance of the 181 science applicants. In fact, a number of teachers offered to participate in the workshops at their own cost. Besides development of curriculum and instruction strategies for the workshops in the proposed program, the results of workshop participants suggests the plausibility of preparing non-specialists teachers for passing state certification exams in mathematics or science:

1. The Science 4-8 passing rate (76%) for workshop participants was above the overall Science 4-8 TExES passing rate (74.7%).
2. The Math 4-8 passing rate (63%) for workshop participants is similar to the overall Math 4-8 TExES passing rate (66%).
3. The 25 workshop participants who passed grades 4-8 mathematics or science certification nearly doubled the number of newly prepared middle levels STEM teachers at TAMUCC during 2011-2012.



## Project Timeline

Major activities in the ETEAMS program are aligned to Project Objectives (see Annual Benchmarks and Goals) as well as the Key Features of all MSP Targeted Partnerships: (1) Partner Driven, (2) Teacher Quality, Quantity and Diversity, (3) Challenging Courses and Curriculum, (4) Evidence-based Design and Outcomes, and (5) Institutional Change and Sustainability.

<i>Term</i>	<i>Major Activities</i>	<i>Key Feature(s)</i>
Summer 2013	Recruit Cohort 1, begin STEM research experiences, collect baseline program data, select teacher-leaders & graduate student, hire program manager, design and create website	3, 4
Fall 2013	Implement new field placement processes, collect baseline quantitative data, establish new school partnerships, begin Science Thursdays, pilot peer-assisted instruction	1, 4, 5
Spring 2014	Deliver certification workshops, continue Science Thursdays, begin analysis of research data, begin articulation of program model, contribute classroom ideas to website	2, 3, 4
Summer 2014	Cohort 1 complete certification, recruit Cohort 2, continue STEM research projects, analyze Year 1 data, write research publications, refine program model	2, 3, 4
Fall 2014	Implement revised field placement processes, improve new school partnerships, continue Science Thursdays, implement full peer-assisted instruction program	1, 4, 5
Spring 2015	Deliver certification workshops (with peer mentors), synthesize instructional reform efforts, develop preliminary research findings, continue articulation of program model, expand website content, present at research conferences	2, 3, 4
Summer 2015	Cohort 1 complete certification, recruit Cohort 3, continue STEM research projects, analyze Year 2 data, write research publications, refine program model, present at teaching conferences	2, 3, 4
Fall 2015	Implement revised field placement processes, improve new school partnerships, continue Science Thursdays, continue peer-assisted instruction, publish articulated program model	1, 4, 5
Spring 2016	Deliver certification workshops (with peer mentors), synthesize instructional reform efforts, develop preliminary research findings, continue articulation of program model, complete website content, present	2, 3, 4

<i>Term</i>	<i>Major Activities</i>	<i>Key Feature(s)</i>
	at research conferences	
Summer 2016	Cohort 1 complete certification, complete data analysis, complete major research publications, refine program model, present at teaching conferences	2, 4, 5

## Annual Benchmarks and Goals

ETEAMS program activities and evaluation are guided by quantified objectives, outcome goals, and annual benchmarks.

<i>Outcome Goals</i>	<i>Benchmarks Year 1</i>	<i>Benchmarks Year 2</i>	<i>Benchmarks Year 3</i>
<b>Objective #1: Improve the (a) quantity, (b) quality, and (c) diversity of the middle level STEM teacher workforce serving high-need schools in Texas.</b>			
1.a.1. At least three-fourths (90 total) of fellows complete their elementary education degree and pass a state certification exam in science or math for Grades 4-8	30 Year 1 fellows graduate and pass state math or science exam	30 Year 2 fellows graduate and pass state math or science exam	30 Year 3 fellows graduate and pass state math or science exam
1.a.2. At least two-thirds of fellows work as grades 4-8 STEM teachers in TX	26 Year 1 fellows teach Grades 4-8 STEM	26 Year 2 fellows teach Grades 4-8 STEM	26 Year 3 fellows teach Grades 4-8 STEM
1.a.3. At least half (60 total) of fellows work in high-needs schools in TX	20 Year 1 fellows teach in high-needs schools	20 Year 2 fellows teach in high-needs schools	20 Year 3 fellows teach in high-needs schools
1.b.1. Increased math & science content knowledge among fellows	20% increase in composite measures of content knowledge	30% increase in composite measures of content knowledge	40% increase in composite measures of content knowledge
1.b.2. Increased evidence-based STEM instructional practices at participating schools	10% increase in STEM instructional practices	20% increase in STEM instructional practices	30% increase in STEM instructional practices
1.c.1. Three-fifths (72 total) of fellows identify in under-represented ethnic groups	24 Year 1 fellows in under-represented ethnic groups	24 Year 2 fellows in under-represented ethnic groups	24 Year 3 fellows in under-represented ethnic groups
<b>Objective #2: Increase 4-8 STEM (a) participation, (b) interest, (c) self-efficacy, and (d) content knowledge among students and teachers in partnering schools.</b>			
2.a.1. Increase in number of hands-on STEM lab activities & inquiry-based investigations for Grades 4-8	20% increase in STEM lab/enquiry-based investigation	40% increase in STEM lab/enquiry-based investigation	60% increase in STEM lab/enquiry-based investigation
2.a.2. Increased Grades 4-8 student participation in STEM experiences led by	5 STEM experiences (minimum)	5 STEM experiences (minimum)	5 STEM experiences (minimum)

<i>Outcome Goals</i>	<i>Benchmarks Year 1</i>	<i>Benchmarks Year 2</i>	<i>Benchmarks Year 3</i>
mathematicians & scientists			
2.a.3. Increased Grades 4-8 teacher participation in STEM experiences led by mathematicians & scientists	9 STEM experiences (minimum)	9 STEM experiences (minimum)	9 STEM experiences (minimum)
2.a.4. Increased student participation in science fair & mathematics competitions	20% increase in participation in science fair/mathematics competitions	30% increase in participation in science fair/mathematics competitions	30% increase in participation in science fair/mathematics competitions
2.b.1. Increased student, teacher, and fellowship participant interest in STEM disciplines	20% increased interest ratings in STEM disciplines	30% increased interest ratings in STEM disciplines	30% increased interest ratings in STEM disciplines
2.b.2. Increased student & pre-service teacher interest in STEM careers	20% increase in levels of interest in STEM careers	30% increase in levels of interest in STEM careers	30% increase in levels of interest in STEM careers
2.c.1. Increased STEM self-efficacy among students, teachers, and fellows	20% increase in self-efficacy ratings	30% increase in self-efficacy ratings	30% increase in self-efficacy ratings
2.c.2. Improved STEM self-efficacy calibration among students, teachers, and fellows	20% increase improvement in self-efficacy calibration scores	30% increase improvement in self-efficacy calibration scores	30% increase improvement in self-efficacy calibration scores
2.d.1. Increased numbers of Grades 5 & 8 students achieving “proficient” status in state science & mathematics assessments	10% increase of students achieving <i>proficient</i> status	10% increase of students achieving <i>proficient</i> status	10% increase of students achieving <i>proficient</i> status
2.d.2. Increased numbers of Grades 5 & 8 students achieving “advanced” or “recognized” status in state science & mathematics assessments	20% increase in students achieving <i>advanced</i> or <i>recognized</i> status	20% increase in students achieving <i>advanced</i> or <i>recognized</i> status	20% increase in students achieving <i>advanced</i> or <i>recognized</i> status
2.d.3. Minimum of 90% of preservice teachers achieve normalized gains on released items from Grades 4-8 mathematics or science state certification exams	Substantial normalized gains on released exam items (g>.4)	Substantial normalized gains on released exam items (g>.4)	Substantial normalized gains on released exam items (g>.4)
2.d.4. Minimum of 50% of Grades 4-8 teachers achieve normalized gains on released items from Grades 4-8 mathematics or science state certification exams	Substantial normalized gains on released exam items (g>.4)	Substantial normalized gains on released exam items (g>.4)	Substantial normalized gains on released exam items (g>.4)

<i>Outcome Goals</i>	<i>Benchmarks Year 1</i>	<i>Benchmarks Year 2</i>	<i>Benchmarks Year 3</i>
2.d.5. Consistent increases in STEM faculty ratings of fellowship participants' STEM research collaboration products	20% minimum increase in ratings of fellowship participants' products	20% minimum increase in ratings of fellowship participants' products	20% minimum increase in ratings of fellowship participants' products

**Objective 3: Disseminate an (a) well-articulated, (b) scalable, and (c) transformative model for preparing preservice elementary teachers to become middle level STEM teachers.**

3.a.1. Cohesive framework for ETEAMS model developed	a) Empirical/theoretical rationale for model articulated b) Essential features of ETEAM model articulated	Instructional design framework on structure, curriculum, and best practices articulated	Complete model framework, essential features articulated
3.a.2. Template-based recruiting and informational materials developed and disseminated	Developed subdomain on ETEAMS website for teacher educators	recruitment brochures and summaries for general audiences posted to subdomain	Template-based formats for all recruiting and informational materials posted to subdomain
3.a.3. Publications in refereed, math and science teacher education journals	1 journal article accepted (minimum)	1 journal article accepted (minimum)	1 journal article accepted (minimum)
3.a.4. Presentations at state and national STEM teacher education conferences	2 presentations (minimum)	2 presentations (minimum)	2 presentations (minimum)
3.b.1 Documentation of issues affecting ETEAMS scaling	Technical paper on general issues affecting scaling of STEM teacher education programs	Technical paper on specific issues affecting scaling of ETEAMS	Technical paper on strategies for addressing issues that affect scaling of ETEAMS
3.b.2 Completed analysis of potential sites for scaling ETEAMS	Data gathered on 20 potential partnership sites	Feasibility reports generated for 10 potential sites	Information sharing & discussions w/ 5 best-suited sites
3.c.1 Increased participation of STEM faculty and graduate students with preservice	30% annual increase in contact hours	30% annual increase in contact hours	30% annual increase in contact hours

<i>Outcome Goals</i>	<i>Benchmarks Year 1</i>	<i>Benchmarks Year 2</i>	<i>Benchmarks Year 3</i>
elementary teachers			
3.c.2 increased participation in middle level mathematics and science education programs	20% annual increase in course enrollment	20% annual increase in course enrollment	20% annual increase in course enrollment
3.c.3 expanded implementation of vertically aligned math and science curriculum	30% annual increase	30% annual increase	30% annual increase
3.c.4 increased use of evidence-based science and mathematics instructional practices in grades 4-8 classrooms	30% annual increase	40% annual increase	50% annual increase
<b>Objective #4: Contribute to research literature on (a) STEM teaching and learning and (b) K-8 teacher preparation program development.</b>			
4.a.1. Publications in refereed, STEM education journals	Completed literature review and data analysis protocols for Q1 and Q4	1 journal article on Q1 or Q4 accepted (minimum)	2 journal articles accepted on Q1 and Q4 (minimum)
4.a.2. Presentations at state & national STEM education conferences	1 presentation (minimum)	1 presentation (minimum)	2 presentations (minimum)
4.a.3 Policy brief on implications of program findings for middle level STEM teaching and learning	Detailed outline of preliminary policy implications	Revised outline of emerging policy implications with supporting evidence	Policy brief disseminated to MSPnet and ETEAMS website
4.b.1. Publications in refereed, STEM teacher education journals	Completed literature review and data analysis protocols for Q1 and Q4	1 journal article on Q1 or Q4 accepted (minimum)	2 journal articles accepted on Q1 and Q4 (minimum)
4.b.2. Presentations at state & national STEM teacher education conferences	1 presentation (minimum)	1 presentation (minimum)	2 presentations (minimum)
4.b.3 Policy brief on implications of program findings for K-8 teacher education program development	Detailed outline of preliminary policy implications	Revised outline of policy implications with supporting evidence	Policy brief disseminated to MSPnet and ETEAMS website

## **Roles and Responsibilities of Partnership Leadership Team**

### Jim Silliman

**Role:** **Principal Investigator**

**Title:** Associate Professor of Chemistry, TAMUCC

**Commitment:** one calendar month in Years 1 & 2, two calendar months in Year 3

#### Responsibilities:

- communicate vision of the program
- represent the program, including at MSP conference
- coordinate evaluation and reporting
- lead selection of graduate students
- hire and supervise program manager
- organize leadership meetings
- lead recruitment of STEM faculty and graduate students to be involved in the project
- lead internal communication, resolve disputes, make final decisions
- be responsible for all major deadlines
- contribute to publishing and research working groups

### Denise Hill

**Role:** **Co-Principal Investigator**

**Title:** Associate Professor & Chair of Teacher Education, TAMUCC

**Commitment:** two calendar months in Year 1, one calendar month in Years 2 & 3

#### Responsibilities:

- lead to recruitment and selection of preservice teachers
- contribute to recruitment of participating inservice teachers
- coordinate field-experiences of participating preservice teachers
- work closely with the instructional coach
- coordinate weekly in-school professional development activities
- plan and deliver occasional professional development workshops
- help to design and support the peer-assisted instruction program
- support vertically-aligned integrated math/science instruction in participating schools
- lead the design and support of authentic STEM experiences during the academic year
- participate in program leadership meetings
- lead institutional change in the teacher preparation processes
- be the primary connection between CCISD leadership and TAMUCC leadership
- facilitate data collection at CCISD for research and evaluation efforts
- contribute to publishing and research working groups

### Joe Champion

**Role:** **Co-Principal Investigator**

**Title:** Assistant Professor of Mathematics, TAMUCC

**Commitment:** two calendar months in Year 1, one calendar month in Years 2 & 3

#### Responsibilities:

- contribute the publishing and research working groups
- lead the data analysis
- lead the efforts of the instructional coach

- support the evaluation team
- support reporting
- plan and deliver occasional professional development workshops
- contribute to recruitment and selection of preservice teachers
- support graduate student(s) involved in the program
- lead the design and support the peer-assisted instruction program
- lead design and development of project website
- support the design and support of authentic STEM experiences
- participate in program leadership meetings
- support vertically-aligned integrated math/science instruction in participating schools
- facilitate the delivery of certification preparation workshops for middle level math

Cherie McCollough

Role: **Co-Principal Investigator**

Title: Associate Professor of Life Sciences, TAMUCC

Commitment: one calendar month in Years 1 & 2, two calendar months in Year 3

Responsibilities:

- lead the publishing and research working groups
- coordinate IRB and data collection procedures
- contribute to the data analysis
- work closely with the instructional coach
- plan and deliver occasional professional development workshops
- contribute to selection of graduate students
- contribute to recruitment and selection of preservice teachers
- supervise graduate student(s) involved in the program
- help to design and support the peer-assisted instruction program
- lead the design and support of authentic STEM experiences during summer
- participate in program leadership meetings
- support vertically-aligned integrated math/science instruction in participating schools
- facilitate the delivery of certification preparation workshops for middle level science

Pamela Wright

Role: **Co-Principal Investigator**

Title: Principal, Schanen Estates Elementary, CCISD

Commitment: one calendar month in Years 1, 2, & 3

Responsibilities:

- work closely with the instructional coach
- lead recruitment of participating inservice teachers
- contribute to recruitment and selection of preservice teachers
- lead the support of the peer-assisted instruction program
- serve as primary connection to CCISD leadership
- lead reporting of CCISD-based data on teachers and students
- participate in program leadership meetings
- support vertically-aligned integrated math/science instruction in participating schools



## **Disciplinary Partners & Other Key Personnel**

### George Tintera

Role: Key Personnel  
Title: Associate Professor & Chair of Mathematics & Statistics, TAMUCC  
Commitment: one calendar month in Years 1, 2, & 3

#### Responsibilities:

- contribute to the publishing and research working groups
- work closely with the instructional coach
- plan and deliver occasional professional development workshops
- contribute to recruitment and selection of preservice teachers
- help to design and support the peer-assisted instruction program
- contribute to the design and support of authentic STEM experiences
- participate in program leadership meetings
- facilitate the delivery of certification preparation workshops for middle level math

### Lee Smee

Role: Key Personnel  
Title: Associate Professor of Life Sciences, TAMUCC  
Commitment: one calendar month in Years 1, 2, & 3

#### Responsibilities:

- contribute to the publishing and research working groups
- support graduate students' involvement in the program
- plan and deliver occasional professional development workshops
- contribute to the design and support of authentic STEM experiences
- facilitate planning and delivery of STEM experiences
- participate in program leadership meetings

### Kim Moore

Role: Key Personnel  
Title: *Secondary Instructional Coach*, Department of Math & Statistics, TAMUCC  
Commitment: 12 calendar months in Years 1, 2, and 3

#### Responsibilities:

- contribute to the publishing and research working groups
- coordinate peer-assisted instruction program with students and preservice teachers
- coordinate professional development workshops
- contribute to supporting authentic STEM experiences
- support participants in certification workshops for middle level math/science
- support vertically-aligned integrated math/science instruction in participating schools
- organize weekly in-school professional development activities
- work closely with all key personnel
- participate in program leadership meetings
- assist in data collection for both research and evaluation
- serve as a communication hub for preservice and inservice teachers
- lead contributions to, and editing of, the program website

### **Additional STEM Disciplinary Involvement**

The ETEAMS partnership engages two influential and experienced STEM faculty, George Tintera in Mathematics and Lee Smee in Life Sciences. In addition, funds will support 1 science graduate assistantship in each of the three years, as well as engagement of 2 mathematicians and 4 scientists who will be recruited to serve as research consultants on the ongoing the fellowship program's STEM research teams (e.g., preparing and delivering presentations at partner schools, assisting fellowship participants on data analysis techniques or modeling approaches, contributing activity ideas for peer-assisted instruction).

### **Evidence of Commitment to Institutional Change**

As evidence of the strong support for the ETEAMS initiative among leadership at TAMUCC and CCISD, please see the following letters of support:

- (a) Art Hernandez, Dean of the College of Education, TAMUCC
- (b) Frank Pezold, Dean of the College of Science & Engineering, TAMUCC
- (c) Christopher Markwood, Provost & Vice President for Academic Affairs, TAMUCC
- (d) D. Scott Eliff, Superintendent of Schools, CCISD



OFFICE OF THE DEAN  
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December 14, 2012

To Whom it May Concern:

I am pleased to provide this letter of support for the "Elementary Teachers Engaged in Authentic Math and Science" grant proposal to the National Science Foundation. The College of Education at Texas A&M University-Corpus Christi supports the goals and the objectives of this proposal which proposes to increase student achievement through increasing science content requirements for pre-service teachers as well as providing theoretically sound and empirically based pedagogical preparation for elementary and middle school teachers. As a leader in educator development, our college looks forward to this exciting opportunity.

The College of Education has a long history and an excellent reputation for preparing skilled and knowledgeable teachers as well as collaborating with our professional colleagues in contributions to the advancement of the field of education. In particular, we are proud of our history of core-partnerships with the Corpus Christi ISD which are exemplified by, among other things, our joint operation of the Early Childhood Development Center, a dual-language aged 3 to grade 6 laboratory and teaching school, the coordination of preprofessional experiences and the provision of supervision and direction by practicing school district professionals.

The "ETEAMS" grant will provide another avenue for the university to collaborate and expand our outreach in improving the education of elementary and middle school teachers in the Corpus Christi Independent School District, and in Texas; but, even more importantly, recruit and prepare teachers to effectively teach mathematics and science in the middle school grades.

Sincerely,

A handwritten signature in blue ink that reads "Arthur E. Hernandez".

Dr. Arthur E. Hernandez, NCSP, NCC  
Dean

December 11, 2012

To Whom It May Concern:

I am delighted to write this letter of support for the Elementary Teachers Engaged in the Authentic Math and Science (ETEAMS) Partnership that is being proposed by Joe Champion, Denise Hill, Cherie McCollough, Jim Silliman and Pamela Wright. I wholeheartedly endorse this creative partnership with the Corpus Christi Independent School District. This project offers a novel approach to recruiting and training preservice STEM teachers and enhancing math and science curricula in middle schools. It is exciting to collaborate on such a project in our predominantly Hispanic community. Texas A&M University-Corpus Christi is an ideal setting to carry out this project due to our coastal location along the Gulf of Mexico in South Texas to provide preservice teachers with hands-on scientific research experiences.

Not only will today's participants be affected by the activities of the proposed program, but future generations will also be able to enjoy the fruits of this project's activities through teacher training and student involvement. The ETEAMS Partnership will certainly have a positive impact on our South Texas community as well as provide other independent school districts with a distinctive working program that can be adapted to complement their needs.

I hope NSF decides this to be a project worthy of support.

Sincerely,



Frank Lorenzo Pezold  
Dean



TEXAS A&M UNIVERSITY  
CORPUS CHRISTI

CHRISTOPHER L. MARKWOOD

PROVOST AND VICE PRESIDENT FOR ACADEMIC AFFAIRS

6300 OCEAN DRIVE, UNIT 5757

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O 361.825.2722 • F 361.825.5810

December 4, 2012

To Whom It May Concern:

I take pleasure in writing this letter of support for the Elementary Teachers Engaged in Authentic Math and Science (ETEAMS) Partnership that is being proposed as a collaborative effort between Texas A&M University-Corpus Christi and the Corpus Christi Independent School District (CCISD). This project will support NSF's education goals while strengthening our university's mission and goals related to diversity, education excellence, research enhancement, collegiality among faculty and students, and community involvement.

The ETEAMS Partnership is an innovative venture that will bring teachers, students and faculty together to promote pre-service and early teacher training, middle school STEM learning as well as research experiences for pre-service teachers. Its uniquely designed educational and scientific research components will have a lasting impact on the Hispanic-dominated population of South Texas.

We are eager to collaborate with faculty, students and middle school teachers from CCISD to support the ETEAMS Partnership. It will certainly satisfy a great need in public education by creating more effective middle school STEM teachers. We look forward to working with members of this grant to ensure this project's success and to sustain its activities.

Sincerely,

A handwritten signature in blue ink, appearing to read "Chris Markwood".

Dr. Chris Markwood,  
Provost and Vice President for  
Academic Affairs



**Office of the Superintendent**

D. Scott Elliff, Ed.D.  
Superintendent of Schools

**CORPUS CHRISTI INDEPENDENT SCHOOL DISTRICT**

P.O. Box 110 • 801 Leopard Street • Corpus Christi, Texas 78403-0110  
Office: 361/695-7405 Fax: 361/886-9109  
Website: www.ccisd.us

November 18, 2012

Dr. Denise Hill, Associate Professor and Chair,  
Department of Teacher Education  
College of Education  
Texas A&M University-Corpus Christi  
6300 Ocean Dr., FC 239  
Corpus Christ, TX 78412-5818

We are committed to providing the best educational experiences for our students. Participation in this project will strengthen our science curriculum and give our teachers an excellent chance to further develop their research and teaching skills. I am grateful for the opportunity to include some of our elementary and middle school teachers and students in the NSF grant proposal titled "*Preparing Preservice Elementary Teachers for Middle Grades Mathematics and Science Instruction*".

Involving Tom Browne Middle School, as well as Kostoryz and Schanen Estates Elementary Schools, will certainly help us close the achievement gap between minority students and disadvantaged students in our school district.

We look forward to working on this project not only to bolster our math and science teaching component, but also to reinforce the core-partnerships between CCISD and Texas A&M University-Corpus Christi. Participation in this grant will certainly have a great impact on our teachers and students that we hope will translate to other schools in our district.

Sincerely,

D. Scott Elliff, Ed. D.  
Superintendent of Schools