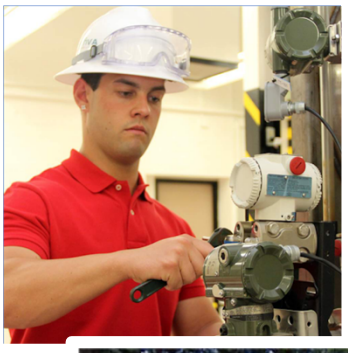


TSUS STEM Student Success Collaborative

Final Report on the TSUS Chancellor's Fellowship Project of Dr. Leslie Huling

May 15, 2021

Submitted by
Dr. Leslie Huling, Professor
Department of Curriculum & Instruction
Texas State University




THE TEXAS STATE UNIVERSITY SYSTEM

Photo credit: www.tsus.edu

TSUS STEM Student Success Collaborative
Final Report on the 2019-20 TSUS Chancellor's Fellowship Project of Dr. Leslie Huling

This report consists of an Executive Summary and a series of Appendices that provide supporting documentation related to Dr. Huling's fellowship project that resulted in the establishment of the TSUS STEM Student Success Collaborative.

Executive Summary

The 2019-20 Chancellor's Project awarded to Dr. Leslie Huling of Texas State University provided support to launch and implement a TSUS STEM Student Success Collaborative for STEM educators from each of the seven TSUS institutions. The purpose of the Collaborative has been to identify and share promising practices and STEM Student Success projects among TSUS institutions and to explore opportunities to learn from and collaborate with one another. Collectively the initiative has consisted of administrator interviews, campus site visits, and a series of online collaborative planning meetings in which a variety of TSUS STEM Student Success initiatives were showcased. A face-to-face conference was planned for April, 2020, but had to be cancelled due to the pandemic and was replaced with additional virtual meetings that occurred in the 2020-21 academic year. A total of 63 TSUS faculty members and administrators participated in the TSUS Student Success Collaborative (Appendix A).

In Fall 2019, Dr. Huling interviewed administrators from each campus and conducted site-visits to six of the seven TSUS campuses (Lamar State College Port Arthur began participating in the Collaborative after the initial visits were conducted). At each campus site visit Dr. Huling and her colleague, Ms. Karen Fabac, spent the day meeting with STEM program coordinators and touring campus facilities, and the persons visited were added to the membership of the Collaborative (Appendix A).

During the 2019-20 academic year, a series of three on-line collaborative meetings were conducted each had good participation and representation from each TSUS campus. These meetings promoted quality cross-institutional dialogue focused on a variety of STEM projects and topics. The initial three online meetings were structured to each highlight three selected STEM initiatives from various campuses and to conduct a large-group discussion on an identified topic. The dates of the 2019-20 Online Collaborative Meetings and the identified discussion topics are as follows: December 3, 2019 (Staffing Challenges and Solutions); February 10, 2020 (Sources of Funding for Your Projects); and March 26, 2020 (Marketing Your Services) (Appendix D).

The culminating event of the 2019-20 academic year was to be a systemwide conference on Promoting STEM Student Success scheduled for April 23-24, 2020 in Austin (Appendix C). Arrangements for the conference hotel were finalized, the program agenda was fully developed, conference speakers had been scheduled, and participants had registered to attend. Unfortunately, due to statewide campus shut-downs related to the COVID-19 pandemic, it was necessary to cancel this conference. Collaborative members, at the March 26 online meeting, requested that the conference be conducted at a later date. Due to these complicating factors, TSUS granted a no-cost extension to continue the SSC into the 2020-21 academic year. As it became clear that the pandemic would continue throughout the 2020-21 academic year, the decision was made to host a series of virtual meetings that would feature the projects that had been planned to be a part of the April face-to-face conference. These meetings occurred on September 30, 2020; October 28, 2020; December 2, 2020; and January 27, 2021. The various STEM Student Success projects showcased at each online meeting are briefly described in (Appendix D).

In order to evaluate the impact of the TSUS STEM Student Success Collaborative, participants completed a 42-item online survey that was designed to capture participant perceptions of various aspects if the TSUS STEM SSC initiative. Twenty-three (23) participants, respresentating all 7 of TSUS campuses responded to the survey. In the survey, participants were asked their perceptions of the importance of the four goals of the Collaborative and their responses are shown in Appendix E. Campus site visits were

made to each campus as a part of the relationship building process and respondents indicated their perception of the importance of this campus site visit (Appendix F).

During the course of the project, 13 projects were showcased in order to increase awareness of STEM support initiatives across the system and to encourage program improvements efforts that could incorporate and capitalize on the promising practices shared. These 13 projects fit into into 5 basic program types:

- Student mentoring, tutoring & academic support initiatives
- Program evaluation initiatives
- Faculty support for instructional effectiveness
- Pre-College STEM initiatives
- Policy and programmatic structures supporting STEM education

Participants had the opportunity to indicate the level of usefulness of the information gleaned from each project in terms of the likelihood that they would utilize the information in refining programs at their own campuses, Appendix G. Appendix H reflects participant perceptions current practices at their campus related to each type of project. Appendix I shows the STEM education challenges identified by survey respondents, while Appendix J indicates various ways in which the participants are interested in collaborating in the future.

The survey results and recommendations were shared with members of the Collaborative at the April 14 culminating meeting. In addition, a conference presentation about the Collaborative and the survey results was made at the Spring virtual conference of the Society for Information Technology and Teacher Education (SITE).

Based on the 18 month TSUS SSC experience and the participant perceptions survey report, the following recommendations are presented to the leadership of TSUS for consideration:

- If TSUS is interested in continuing the STEM Student Success Collaborative and has resources to continue this effort, the coordination of the Collaborative could be transitioned to another faculty coordinator at one of the TSUS campuses. Dr. Huling is willing and available to help facilitate this transition.
- Collaborative participants have indicated that opportunities to engage in cross-campus collabortive efforts are highly valued. TSUS should consider pursuing additional opportunities in STEM and in other academic fields that provide face-to-face and/or virtual cross-campus collaboration.
- TSUS should consider facilitating opportunities for educators to engage in cross-campus visits to enable the sharing of promising practices across campuses and to create opportunities for collaborative cross-campus initiatives.
- If TSUS plans to offer Chancellor's Fellowship opportunities in the future, it might consider encouraging applicants to propose cross-institutional projects that would result in increased communication and collaboration among TSUS insitutions. If it would be helpful, Dr. Huling is willing to help craft the Call for Applications in a manner that would likely result in increased submission of proposals for cross-institutional initiatives.

Appendices

Appendix A: Participating Members TSUS STEM Student Success Collaborative

Appendix B: Participation by Campus TSUS STEM Student Success Collaborative

Appendix C: Conference Agenda TSUS STEM Student Success Collaborative

Appendix D: TSUS Projects Showcased and Discussion Topics Included in Virtual Meetings of the TSUS STEM Student Success Collaborative

Appendix E: Survey of Participant Perceptions of Importance of TSUS STEM SSC Goals

Appendix F: Participant Perceptions of Importance of Establishing Relationships and Building Understandings of the Purposes of the TSUS Collaboration Effort

Appendix G: Categories of Showcase Presentations and Survey Participant Responses to Likelihood of Utilization in Future Program Refinement

Appendix H: Participant Perceptions of Current Practices

Appendix I: Participant Identified Challenges in TSUS STEM Education

Appendix J: Participant Level of Interest in Future TSUS STEM SSC

Appendix A
Participating Members of the TSUS STEM Student Success Collaborative

Lamar State College Port Arthur			
	Pamela	Millsap	Vice President for Academic Affairs
Lamar Institute of Technology			
	Lauri	Arnold-Calder	Department Chair, Business Technologies
	Mary	Sizemore	Department Chair, General Education and Developmental Studies
	Rebecca	Cole	Special Populations Coordinator, Student Services
	Widad	Abedelwahab	Math Faculty
	Sha Nelle	Lawson	STEP Project Coordinator, Student Success
Lamar State College Orange			
	Suzonne	Crockett	Associate Dean of Academic Studies
	Wendy	Elmore	Provost and Executive VP, Academic and Student Affairs
	Thomas	Johnson	President, Lamar State College-Orange
	Ni	Song	Associate Professor, Anatomy, Science
	Elizabeth	Pressler	Director of Learning Cen, Office of Coord for Learning Center
	Barbara	Morrison	Math Specialist, The Learning Center
	Raul	Martin	Peer Tutor Director/Professor of English
Lamar University			
	Jacqueline	Jensen-Vallin	Associate Professor
	Rachel	Hoover	Director of STARS Services
	Misty (Lan)	Song	Coordinator, Tutoring Services
	Erin	Lovelady	Research Office
	Haley	Strahan	Director of Outreach and Student Services
	Reba	Daniels	REDtalk
	George	Saltsman	Director, Center for Educational Innovation and Digital Learning
	Tilisa	Thibodeaux	Assistant Professor, Educational Leadership
Sam Houston State University			
	Brian	Loft	Associate Professor of Mathematics
	Brandy	Doleshal	Associate Director for Development
	Melinda	Holt	Professor of Statistics; Department Chair
	Li Jen	Lester	Associate Director for Assessment
	Clarissa	Stone	Adjunct Faculty
	Taylor	Martin	Associate Professor of Mathematics

Sul Ross – Rio Grande College			
	Dan	Foley	QEP Coordinator, Department Chair, Natural and Behavioral Sciences and Professor Biology MRGC Natural & Behavioral Sciences
Sul Ross State University			
	Rob	Kinucan	Executive Vice President and Provost
	Jay	Downing	Dean, Arts and Sciences, Professor of Psychology

	Michael	Ortiz	Associate Professor of Mathematics
	Bonnie	Warnock	Dean, Agriculture & Natural Resource Sciences; Clint Josey Endowed Chair and Professor of Range Management
	Christopher	Ritzi	Department Chair and Professor of Biology, Geology, & Physical Sciences
	Patricia	Nicosia	Interim MRGC Assistant Provost and Dean and Professor of Mathematics MRGC Natural & Behavioral Sciences
	Dexter	Wakefield	Associate Professor, Agricultural Education
	Kathleen	Rivers	Director, McNair Program
	Angela	Brown	Chair, Department of Computer Science and Mathematics; the Interim Chair of our Department of Biology, Geology, and Physical Sciences
	Amy	Fields	Director, Academic Support Center
	Kathy	Stein	Developmental Education Coordinator
	April	Aultman Becker	QEP Coordinator
Texas State University			
	Araceli	Ortiz	Executive Director, LBJ Institute for STEM Education and Research
	Tania	Betancourt	Associate Professor, Chemistry and Biochemistry
	Yihong (Maggie)	Chen	Associate Professor, Ingram School of Engineering
	Kristina	Collins	NASA EPDC Research and HBCU Strategic Projects Specialist
	Zhijie (Sasha)	Dong	Assistant Professor, Ingram School of Engineering
	Li	Feng	Associate Professor, Finance & Economics
	Michelle	Londa	Associate Professor of Practice, Ingram School of Engineering
	BJ	Spencer	Associate Professor of Practice, Dept of Engineering Technology
	Anthony	Torres	Associate Professor, Dept of Engineering Technology
	Diana	Dolan	Assistant Professor, St. David's School of Nursing
	Cathy	Thomas	Associate Professor, Curriculum and Instruction
	Leslie	Huling	Fellowship Recipient, Professor/LBJ Institute Senior Advisor & NASA EPDC Director
	John	Beck	Senior EPDC Advisor
	Deepika	Sangam	NASA EPDC Education Specialist
	Michelle	Berry	NASA EPDC Education Specialist
	Maggie	Chen	Associate Professor, Flexible Electronics and Photonics Lab
	Monica	Uribe	NASA EPDC STEM Engagement Coordinator
	Karen	Fabac	Grant Specialist
	Stacey	Sanders	Grant Specialist
	Eleanor	Close	Associate Professor, Physics

TSUS - Regents' Professors in STEM - Texas State (2019)	William	Brittain	Chair-Professor, Chemistry and Biochemistry
TSUS Regents' Professors in STEM - Sam Houston	Scott	Chapman	Sam Houston State University Distinguished Professor, and Scholar in Residence, Department of Mathematics and Statistics
TSUS Regents' Professors in STEM - Lamar (2019)	James	Westgate	Professor Emeritus, Earth and Space Sciences
TSUS Regents' Professors in STEM - Sul Ross (2018)	Louis	Harveson	Dan Allen Hughes, Jr. Endowed Director Borderlands Research Institute
TSUS	John	Hayek	Vice Chancellor for Academic & Health Affairs
	Laura	Tibbits	Admin
Others	Christine	Pellerin	Partner at The Normandy Group
	George	Saltsman	Director, Center for Educational Innovation and Digital Learning
	Michael	Dresner	Partner, On Purpose Solutions (Innovation in Digital STEAM Education)

Appendix B
Participation by Campus
TSUS STEM Student Success Collaborative

Institution	Initial Interview	Campus Site Visit	12/3/19 Online	2/10/20 Online	3/26/20 Online	Conf. Reg.	9/30/20 Online	10/28/20 Online	12/2/20 Online	1/27/21 Online	4/14/21 Online	Survey Responces
Lamar State College Port Arthur	17-Sep		1	1	0	0	1	1	0	1	1	1
Lamar Institute of Technology	19-Sep	21-Oct	3	2	1	3	3	2	2	2	3	1
Lamar State College Orange	20-Sep	22-Oct	7	6	3	5	4	4	5	4	3	5
Lamar University	19-Sep	22-Oct	3	4	1	2	3	2	3	2	3	2
Sam Houston State University	16-Sep	23-Oct	4	0	2	5	3	3	2	4	2	2
Sul Ross State University	21-Nov	10-Dec	7	7	4	5	5	4	3	4	4	4
Texas State University	18-Sep	18-Oct	7	4	9	16	4	9	7	8	7	8
Totals			33	24	21	36	23	25	22	25	23	23

Appendix C
Conference Agenda
TSUS STEM Student Success Collaborative

Promoting Student Success in STEM

An Invitational Conference Sponsored by Texas State University System STEM Student Success Collaborative

With Support from the TSUS Chancellor's Fellowship Project

THE TEXAS STATE UNIVERSITY SYSTEM

April 23-24, 2020
Cancelled Due to COVID-19
Hyatt Place Austin/Round Rock
420 Sundance Parkway
Round Rock, TX 78681

The **TSUS STEM Student Success Collaborative** is an informal group of STEM educators from the seven institutions in the Texas State University System committed to promoting the success of students in STEM. The Collaborative originated from and is funded by the 2019-20 TSUS Fellowship Project under the direction of Dr. Leslie Huling. Collaborative activities have included campus site visits, a series of online collaborative showcases and meetings, and this systemwide invitational conference.

Conference Goals include:

1. To identify and showcase promising practices that promote student success in STEM among the TSUS institutions;
2. To provide opportunities for TSUS STEM educators to interact with and learn from each other; and
3. To explore opportunities for future collaborations that could mutually benefit various TSUS stakeholder groups.

PROPOSED CONFERENCE AGENDA

Day 1:

Time	Topic	Presenter	Location
11:30	**Registration and Welcome Lunch**	Conference Staff	Lobby Common Workspace & Kitchen Gallery
12:30	**Greetings and Conference Overview**	• Dr. John Hayek, TSUS Vice-Chancellor for Academic and Health Affairs • Dr. Leslie Huling, Texas State University Professor & 2019-20 TSUS Chancellor's Fellow	Round Rock Room
1:00–2:15	**Panel of TSUS Regents' Professors in STEM**	• Dr. William Brittain, Chemistry, Texas State University • Dr. Scott Chapman, Mathematics & Statistics, Sam Houston State University • Dr. James Westgate, Earth and Space Science, Lamar University • Dr. Louis Harveson, Natural Resource Management, Sul Ross State University • Dr. Leslie Huling, Texas State University, panel facilitator	Round Rock Room
2:15–2:30	**Refreshment Break**		Round Rock Room
2:30–3:30	**Taking A Deep Dive: Lamar Data Collection**	• Dr. Jacqueline Jensen-Vallin, Lamar University	Round Rock Room
3:30–4:00	**Gallery of Project Snapshots**	**RedTalks** (Rachael Hoover & Reba Daniels, facilitators **PEACE Program** (Stacey Bennet, facilitator) "Math Rule" (Melinda Holt, facilitator) **SMART Camps** (Erin Lovelady Lemoine and Haley Strahan, facilitators) **McNair Program** (Kathleen Rivers, facilitator) **Kids2College** (Suzonne Crockett, facilitator) **QEP Evaluation** (Li Jen Lester, facilitator) **STEP Program** (Sha Nelle Lawson) **SWE Sisters Mentoring Program** (Michelle Londa)	Round Rock Room & Lobby
4:00–5:00	**Rising Stars Program: An Innovation Bundle and Comprehensive Data Collection**	• Drs. Araceli Ortiz & Eleanor Close, Texas State University	Round Rock Room

Day 2:

Time	Topic	Presenter	Location
7:00	**Complimentary breakfast**		Kitchen Gallery
8:00 – 9:00	**Sam Houston QEP Initiative: A Commitment to Faculty Development**	• Dr. Brian Loft, Sam Houston State University	Round Rock Room
9:00 – 10:00	**NASA STEM EPDC Digital and Online Learning Opportunities**	• Ms. Michelle Berry, NASA STEM EPDC, Texas State University • Dr. George Saltsman, Lamar University	Round Rock Room
10:00– 10:15	**Refreshment Break**		Round Rock Room
10:15 – 10:45	**Small Group Discussions**	**Challenges and Solutions related to:** • Institutional Quality Enhancement Programs & Intersections with STEM (Brian Loft, facilitator) • Collecting and Analyzing Evaluation Data (Jacqueline Jensen-Vallin, facilitator) • Recruitment, Marketing & Linking Students with Services • Co-requisite Mathematics (Kathy Stein, facilitator)	Round Rock Room & Common Workspace
10:45 – Noon	**Panel on Approaches to Corequisite Mathematics**	• Dr. Kathy Stein, Sul Ross State University • Gwen Whitehead, Lamar State College Orange • Melinda Holt, Sam Houston State University • Laurie Arnold-Calder, Lamar Institute of Technology	Round Rock Room
Noon – 12:30	**Group Discussion Possible Futures for TSUS STEM Student Success Collaborative**	Dr. Leslie Huling, Facilitator	Round Rock Room
12:30	**Lunch & Adjourn**		Kitchen Gallery

Appendix D
TSUS Projects Showcased and Discussion Topics Included in Virtual Meetings of the TSUS STEM Student Success Collaborative

December 3, 2019

RedTalks is a series of one-hour lunch time seminars for students offered by Lamar University on success skills for managing college life on topics such as "picking a major," "managing your finances," "getting the most from your study time." The sessions are particularly well attended, and they provide incentives such as pizza, free t-shirts, etc. RedTalks helps students get acquainted with the Student Success staff and resources available to help them succeed.

PEACE—Pre-Engineering and Career Explorations is a one-week summer camp experience for 9th grade girls offered by Texas State University. The girls stay in the dorms, are provided with engineering-type experiences, and are encouraged to consider a major and a career in STEM. Participants get acquainted with the faculty and the campus and the many career opportunities that will be available to them in STEM.

"Math Rule" is a policy being implemented by Sam Houston State University. For any student who enters with scores that indicate they are "not college-ready" to take college algebra or above are enrolled in the necessary math courses and provided the relevant support services from their first semester and every semester thereafter until they have the skills to take College algebra or above. Without such a policy, what often happens with such students is that they put off taking math for a number of semesters and then have trouble catching up and/or don't have the pre-requisites needed for higher level courses. The Math Rule policy approach prevents students from having a further gap in their math education that exacerbates the problem of increasing barriers to enter or continue studies in STEM related fields.

Group Discussion Topic: Staffing Challenges & Solutions

February 10, 2020

SMART Camps are offered by Lamar to incoming engineering students. SMART camp participants move into dorms a week early. They receive math instruction and review for the week to help make sure they are placed in the correct entry level mathematics course and are prepared to succeed in these courses. The SMART Camp experience helps participants be more successful in STEM courses and helps prevent a situation where they initially struggle and as a result decide to change their major.

Sul Ross McNair Program is a grant funded initiative that provides scholarship support and mentoring to students. McNair scholars are paired with faculty mentors, are encouraged to participate in research projects, and have opportunities to attend and present at professional conferences. Their travel to these conferences is funded by the program. McNair experiences not only help them succeed as undergraduates, but also provide encouragement to students to consider graduate studies.

Kids2 College program is offered at Lamar State College Orange for elementary students in the community. It is a week-long summer experience where students participate in STEM engagement experiences. The camp provides fun learning and helps students be comfortable on a college campus. Students are provided with a message that "college is for you and there are people and resources that can help you achieve your dreams."

Group Discussion Topic: Sources of Funding for your Projects

March 26, 2020

Quality Enhancement Program Evaluation Initiative at Sam Houston State University. This evaluation effort is a comparison study focusing on the selected core courses including accounting, chemistry, English, history, math, and physics for fall 2019 and spring 2020. Faculty and students are invited to participate with a pre- and post-survey. Additionally, the students surveyed, complete a MSLQ questionnaire, to ascertain how students evaluate themselves and to see the degree to which they are motivated with the different types of learning strategies for their own learning environment. The faculty input and student input were then compared to review the differences of active learning perceptions. The QEP evaluation initiative also conducts classroom observations focused on active learning and teaching. In all, it's approximately 3 hours/week of data collected and analyzed in three groups: 1) non-active learning trainees (no training); 2) summer engaging exploration trainees (1-week): and 3) ACUE fellows (1-year) with SPSS.

Taking Education Personally (STEP) Program at **Lamar Institute of Technology:** The STEP project is LIT's QEP (up for reaffirmation). The STEP Project participants are selected following an application process resulting in 30 students from across five departments (technology, business technology, public service and safety, general education and allied health and sciences) selected to participate each fall and spring. Under the program, the students who apply have an opportunity to receive free tutoring in any subject under their major (for tutoring, the students cannot already have another degree), use of computer lab with free printing, as well as campus wide free supplemental instruction. Another piece of the QEP, is Starfish, an early alert system to monitor at risk students. Originally used to monitor the students enrolled in the STEP program, it is now being used across campus in many different aspects of student monitoring.

The **SWE Sisters Mentoring Program** at **Texas State University** is a new mentoring program being developed by the Society of Women Engineers (SWE) Student Organization at Texas State University. It is their mission to empower women to achieve full potential in academics and careers as engineers by demonstrating the value of diversity and inclusion. By establishing near peer mentoring within and between the Texas State University SWE chapter and local high schools and local community colleges, SWE Sisters goal is to improve the recruitment and retention of underrepresented groups in STEM. This goal is in support of the National SWE Strategic Objective 3.2: Expand SWE's sphere of influence to create and promote opportunities to engage more females in the engineering and technology pipeline. It is also in alignment with Texas State University's College of Science and Engineering.

Group Discussion Topic: Marketing Your Services

September 30, 2020

Faculty Development Aspects of Sam Houston QEP Program: Sam Houston State University's Quality Enhancement Program (QEP) is titled Engaging Classroom and focused on increasing active learning and teaching. A core group of faculty members participated in a one-year professional development program focused on active learning sponsored by the Association of College and University Educators (ACUE). These core faculty design and deliver their own course during their training for the ACUE course. The QEP team select one core faculty as a facilitator to design and deliver a one-week summer engaging exploration training for other faculty participants. The university also invested in various classroom resources: Engaging Space to remodel the classroom and provide the furniture that promotes flexible grouping; and Engaging Gear to provide teaching aids that help promote active learning. Survey and class observation data were collected from students and faculty members, and research has been conducted to compare the impact of active learning techniques across three groups of faculty members (those

who participated in the ACUE year-long program, those who received one week of summer training, and faculty who did not receive training in active learning.

October 28, 2020

Panel on Approaches to Co-Requisite Mathematics

Representatives from four TSUS institutions each described how their university is approaching the delivery of co-requisite mathematics in response to the requirements set forth in HB 2223 that specifies 75% of developmental mathematics students must be served through co-requisite (credit-bearing) courses by Fall 2020. For example, institutions were using the first part of the semester for the developmental course and the second part for the credit-bearing course, while other universities/colleges required students to attend 5 days per week with students receiving supported tutoring on Tuesdays and Thursdays. Many had designated co-requisite sections of their entry level mathematics courses, while others had the co-requisite students co-mingled into the regular sections of the courses along with a requirement for a specific number of hours in a tutoring lab. The over-all goal of the panel was to familiarize TSUS SSC members with the advantages of varied approaches so that alternative approaches could be considered as they continue to make refinements in their co-requisite programs based upon the needs of their students.

Dec. 2, 2020

Deep Dive into Evaluation of Mathematics Program at Lamar University

Lamar University has engaged in a multi-year program improvement process to restructure their mathematics offerings and to increase the consistency across sections of mathematics courses. Extensive program evaluation data have been used to identify areas in need and to make course refinements to address these needs. Depending upon the co-requisite students' program of study, they are enrolled in one of five pathways, each of which has a different entry-level mathematics course. Each entry-level course has designated sections for co-requisite mathematics and students are required to enroll in these sections and to attend tutoring in a mathematics lab staffed by Lamar graduate students. Evaluation data is used to monitor student performance in the co-requisite classes, participation in tutoring, and performance in subsequent mathematics courses following completion of their co-requisite course.

January 23, 2021

Using NASA Digital Badges in University Courses

The NASA EPDC Digital Badging System is a free resource that university educators can use to incorporate STEM-related and NASA-related student assignments into their university courses. This session provided an overview of the EPDC virtual learning opportunities that are available and demonstrates how to access these specific resources through the EPDC website. Upon completion of a badge, the student will receive a certificate that he/she can then submit to the professor as evidence that the work has been completed. A secondary benefit of these assignments is that students will be become familiar with NASA Digital Badging site that has badges on numerous STEM topics that the student can pursue at their own pace to further advance their STEM learning.

April 14, 2021

The TSUS SCC Qualtrics online survey results and participant recommendations were shared at the April 14 culminating meeting. (Appendix X)

Appendix E
Survey of Participant Perceptions of Importance of TSUS STEM SSC Goals

	Very Important N (%)	Somewhat Important N (%)	Slightly Important N (%)	Not Important N (%)
Goal 1: Increasing awareness of and recognition of our institution's STEM student success initiatives.	17 (74%)	6 (26%)	0 (0%)	0 (0%)
Goal 2. Building/strengthening relationships between/among TSUS colleagues across TSUS campuses.	18 (78%)	5 (22%	0 (0%)	0 (0%)
Goal 3: Sharing information related to promising/successful STEM student support initiatives	22 (96%)	1 (4%)	0 (0%)	0 (0%)
Goal 4: Opening avenues for future collaborations among TSUS colleagues	19 (83%)	4 (17%)	0 (0%)	0 (0%)

Appendix F
Participant Perceptions of Importance of Establishing Relationships and Building Understandings of the Purposes of the TSUS Collaboration Effort

Participant ratings of the degree to which the initial campus visit by Dr. Leslie Huling and Karen Fabac was beneficial.	Very Beneficial N (%)	Beneficial N (%)	Somewhat Beneficial N (%)	Not Beneficial N (%)	I was not aware of and/or did not participate in this visit N (%)
	15 (83%)	3 (17%)	0 (0%)	0 (0%)	4 (2%)

Appendix G
Categories of Showcase Presentations and Survey Participant Responses to Likelihood of Utilization in Future Program Refinement

For purposes of the TSUS STEM Student Success Collaborative end-of-project evaluation, the 13 projects showcased were categorized into the following 5 project types:

- Student mentoring, tutoring & academic support initiatives
- Program evaluation initiatives
- Faculty support for instructional effectiveness
- Pre-College STEM initiatives
- Policy and programmatic structures supporting STEM education

Participants had the opportunity to indicate the level of usefulness the information gleaned from each project was in terms of the likelihood that they would utilize the information in refining programs at their own campus. The following table depicts participant responses for each project by category type.

Projects by Category Type	**Useful in possible program refinement**	**Interesting but unlikely to utilize in our program refinement**	N
Student Mentoring, Tutoring, & Academic Support Initiatives			
RedTalks (Lamar)	93%	17%	15
SMART Camps (Lamar)	67%	33%	12
SWE (TXST)	85%	15%	13
McNair Scholars (Sul Ross)	80%	20%	10
STEP (Lamar IT)	77%	23%	13
Program Evaluation Initiatives			
QEP Evaluation (Sam Houston)	76%	24%	17
Deep Dive into Mathematics Evaluation of Mathematics Program (Lamar)	83%	17%	18
Faculty Support & instructional approaches			
Engaging Classroom Instruction (Sam Houston)	90%	10%	10
NASA Digital Badging (TSXT)	79%	21%	14
Pre-college STEM Initiatives			
PEACE (TXST)	73%	27%	15
Kids2College (Lamar – Orange)	73%	21%	11
Policy & Programmatic Structures Supporting STEM Education			
Math Rule (Sam Houston)	67%	33%	12
Co-Requisite Mathematics (Panel)	83%	17%	14

Appendix H
Participant Perceptions of Current Practices

	Student Mentoring, Tutoring & Academic Support Initiatives N (%)	Program Evaluation Initiatives N (%)	Pre-college STEM Initives N (%)	Faculty Development Efforts & Instructional Enhancements N (%)	Policy & Programatic Structures Supporting STEM Education
Current practices are sufficient	2 (11%)	2 (11%)	2 (12%)	2 (12%)	3 (18%)
Currently engaged in expanding initive	15 (83%)	12 (67%)	8 (47%)	11 (65%)	10 (59%)
Addressing this initiative is a goal in near future	0 (0%)	3 (17%)	6 (35%)	4 (24%)	4 (24%)
No plans to pursue this initiative	1 (6%)	1 (6%)	1 (6%)	0 (0 %)	0 (0%)
Total	18 (100%)	18 (100%)	17 (100%)	17 (100%)	17 (100%)

Appendix I
Participant Identified Challenges in TSUS STEM Education

Participant Responses:
Increasing the number of students utilizing available learning support services such as free tutoring.
Increasing student use of available tutoring services on their campus.
Currently, students pursuing an academic transfer degree do not declare a discipline specific major (i.e.m they do not declare “Math” or “Biology” as their major; they simply identify as an AA student) so it is not possible to easily idenfity students intending to transfer and major in a STEM field.
Supporting students through the math curriculum.
Budget management.
Many lower-level courses are taught by adjuncts. We have few professional development requirements for adjuncts so it is difficult to get the faculty on the same page about instructional approaches.
Building sustainable mentoring and peer tutoring programs.
Strengthening collaboration/coordination between faculty and learning upport staff (such as learning center tutors) to boost student success and help our campus reach goals.
Because students are not identified as STEM majors, it is difficult to apply many of the ideas of other schools.
Sufficient faculty.
I wonder how students will do in upper-level courses if they have had to take lower-level courses virtually due to pandemic.
Identifying funding sources, beyond federal work-study, to pay peer tutors.
Building and sustaining a peer tutoring program.
Avoiding faculty burnout.
Few opportunities to interact with other faculty from other TSUS institutions causing us to sometimes be quite isolated.

Appendix J
Participant Level of Interest in Future TSUS STEM SSC

	High	**Some**	**Slight**	**None**	**N**
Hosting other TSUS campuses	53%	26%	21%	0%	19
Visiting other TSUS campuses	79%	5%	16%	0%	19
Attending a face-to-face conference	74%	16%	5%	5%	19
Engaging in collaborative research	74%	11%	16%	0%	19
Co-developing with TSUS colleagues proposals for external grant funding	68%	21%	11%	0%	19
Co-authoring publications w/TSUS colleagues	53%	21%	5%	21%	19
Serving on a TSUS Advisory Board	56%	17%	28%	0%	19