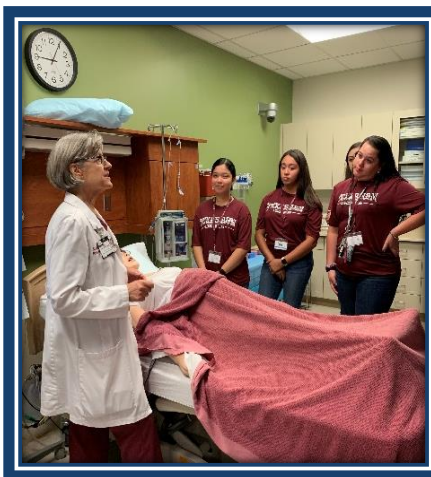


# Evaluation of Project HEAL<sup>2</sup>

## *Health Education for ALL*



Prepared for the U.S. Department of Education  
Investing in Innovation Fund (i3)  
Fall 2021

by:  
EGT Institute, Inc.



Project HEAL2 i3 Evaluation

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## ABSTRACT

Region One Education Service Center (Region One) was awarded an Investing in Innovation (i3) development grant funded by the Office of Innovation and Improvement, U.S. Department of Education, entitled Project Health Education for ALL (HEAL<sup>2</sup>). Project HEAL<sup>2</sup> i3 initiative served a pipeline of high school grades 9 to 12 students in deep South Texas. Region One implemented the Project HEAL<sup>2</sup> program across three independent school districts (ISDs), also referred to as Local Education Agencies (LEAS), and their 11 high schools. The following include the implementation ISDs: Pharr San Juan Alamo (PSJA) ISD, La Joya ISD, and South Texas ISD. All have worked in cooperation with key partners and the greater surrounding community to implement Project HEAL<sup>2</sup> in support of students in their high schools, including: Pharr San Juan Alamo ISD's six high schools: PSJA North Early College High School, PSJA Southwest Early College High School, PSJA Early College High School, PSJA Memorial Early College High School, PSJA Thomas Jefferson T-STEM Early College High School, and PSJA Sonia M. Sotomayor Early College High School; La Joya ISD's four high schools: La Joya High School, Palmview High School, Juarez-Lincoln High School, and Thelma Salinas T-STEM Early College High School; and South Texas ISD's one high school: South Texas High School for Health Professions. The goal of Project HEAL<sup>2</sup> is to increase the Health-integrated (STEM-design) Nursing competencies of low-income and under-represented students, specifically students from minority backgrounds, through creativity, innovation, and engagement activities that promote diversity in education.

The study used a three-year, longitudinal, two Cohort quasi-experimental design (QED) to assess the impact of Project HEAL<sup>2</sup> on students' achievement on: (1) the American College Test (ACT) and (2) a single health education readiness assessment: Health Education Systems Incorporated (HESI) at the end of (Cohort 1 and Cohort 2) program exposure. The ACT outcomes were compared of Project HEAL<sup>2</sup> students with similar students from the same schools that did not participate in Project HEAL<sup>2</sup>. For the study, Project HEAL<sup>2</sup> high school students were matched to comparison high school students at the same school. The HESI outcomes compared Project HEAL<sup>2</sup> high school students with traditional college-level students who were accepted into the same Nursing (ADN) program and were administered the same HESI assessment but did not participate in Project HEAL<sup>2</sup>. For the study, Project HEAL<sup>2</sup> students were matched with traditional ADN nursing program students determined as the comparison students. This study is written to meet What Works Clearinghouse (WWC) Group Design Standards with Reservations. While the results of the study indicated there were no apparent group differences comparing all the Project HEAL<sup>2</sup> treatment group students to all the non-Project HEAL<sup>2</sup> business-as-usual control students, there were instances where Project HEAL<sup>2</sup> treatment group students significantly outperformed controls at certain school districts on the ACT outcome. Secondly, the results of the study also indicated that the traditional ADN nursing program students who formed the business-as-usual comparison group reported a higher HESI outcome than the treatment group. The duration of students' exposure to Project HEAL<sup>2</sup> fidelity of implementation, alignment between Health-integrated (STEM-design) instruction and the HESI (single health education readiness) standardized assessments, and other program-related factors that might have weakened the intervention strength relative to ADN business-as-usual conditions are discussed as possible factors that account for these findings. The report concludes with a discussion and suggestions for future research and implications for education policy.

## **1. INTRODUCTION**

### **1.1. Background:**

An Investing in Innovation (i3) development grant, entitled Project Health Education for ALL (HEAL<sup>2</sup>), funded by the Office of Innovation and Improvement, U.S. Department of Education, was awarded to Region One Education Service Center (Region One) in January 2017. This i3 grant addressed Absolute Priority 1 – Promoting Diversity, Invitational Priority – Improving students’ outcomes, and the Competitive Priority – Novice grantee. Region One is located in the remote tip of South Texas along the Texas-Mexico border, chartered by the State in 1965, and served as the lead and fiscal agent. Region One has developed a reputation for excellence in education and training services, particularly in providing resources, expertise, and high-quality services to school districts in meeting the needs of underserved, isolated, at-risk, low-income, minority students and their parents.<sup>1</sup> Region One includes eight economically depressed counties that consist of over 1,662,710 residents, of which 93% are Hispanic, 40% live in poverty, nearly 77% do not speak English at home. Additionally, 52% of the region’s working-age population do not have a high school diploma, and only 13% of the labor force has a bachelor’s degree or higher.<sup>2</sup> Overall, the region’s demographics include low academic achievement, high poverty, high unemployment, and limited English proficiency.<sup>3</sup>

Further, Region One, sanctioned by the Texas legislature in 1965, serves 48 school districts that include: 13 rural, ten charter institutions, 675 K-12 campuses, 45,098 educators, and over 439,638 students, of which 426,178 are Hispanic, 374,436 are low-income, 164,599 are English Learners (EL), 11,151 are migrant, and 41,865 are students with disabilities. The target population of Region One remains one of the unique populations in Texas, leading in the number of Hispanics, English Learners (EL), migrant, and low-income populations.<sup>4</sup> Schools in the Region One service area face many challenging circumstances such as high poverty, low-student achievement, poor nutrition, high illiteracy, etc.

This area of deep South Texas is home to approximately 24 for-profit hospitals, nine non-profit hospitals and seven public hospitals to meet the medical needs of the residents. In the last decade, hospitals reported 350 unfilled registered nursing positions, 65 unfilled radiology technologist positions, and 45 unfilled licensed practical nurse positions, not to mention the vital need to recruit qualified minority bilingual individuals to occupy these jobs.<sup>5</sup>

Further, health care is one of the fastest-growing sectors of the economy that is predicted to grow as the U.S. population ages. By 2024, healthcare jobs will increase by 19 percent, faster than all other occupational groups.<sup>6</sup> In health care, higher education pays off. Sixty-eight percent of health professional and technical occupations such as dentists, doctors, lab technicians,

nurses, pharmacists, and physical therapists require a bachelor's degree or more. The 2015 median annual wage for such jobs was \$62,610, higher than the \$36,200 median for all jobs.<sup>7</sup>

Like the nation, Texas, specifically deep south Texas, is experiencing strong growth in healthcare jobs. In 2020, the economy gained more than 2 million health professional and technical jobs.<sup>8</sup> At least 1.6 million of those jobs were nurses, 1.2 million Registered Nurses (RN), and 370,000 Licensed Professional Nurses (LPN).<sup>9</sup> While R.N.s can earn a median salary of \$67,500, two-thirds of all healthcare support professionals, such as dental assistants, home health aides, nursing aides, occupational therapy aides, etc., generally require some college or an Associate's degree to earn a median wage of \$27,040.

The Texas Legislature passed a measure creating a new medical mega-university with over 30,000 students in the area, which further promotes the regional growth of health and STEM fields.<sup>10</sup> This legislative action has transformed south Texas into a significant regional health-education hub. Many of these skilled healthcare jobs require specific academic credentials and certifications. This demand is further exacerbated with the global pandemic and drastically increased demand for a skilled medical labor force. Local school districts have launched numerous efforts to fulfill the health-related training pipeline by adopting cutting-edge, innovative programs.

Despite the enormity of barriers and challenges, Region One realized the potential of students and educators and therefore applied, were awarded, and served a high need target population. The Project HEAL<sup>2</sup> i3 initiative targets the student population who attended high schools in Pharr San Juan Alamo (PSJA), La Joya, and South Texas Independent School Districts. Similar to the Region's demographics, the three districts' student populations at the time of the grant implementation consisted of predominantly Hispanic and a high percentage of low-income youth, who are less likely to graduate from high school or go to college. The total student body consists of approximately 75,000 youth, of which 99.6% are Hispanic, 89.14% are economically disadvantaged (free/reduced lunch), 41.50% are limited English proficient, 75.3% are at-risk, 19.3% are English Learners, and 15.3% are students with disabilities.<sup>11</sup> Overall, Region One serves economically distressed schools and students categorized as the hardest to serve in Texas.

## **1.2. Implementation Sites:**

As a result of i3, Region One moved forward an innovative collaboration with Doctor's Hospital at Renaissance (DHR), a renowned medical institution, South Texas College (STC), a highly accredited institution of higher education, and the aforementioned large south Texas established school districts (LEAs): Pharr San Juan Alamo (PSJA) Independent School District (ISD), La Joya ISD and South Texas ISD. The Project HEAL<sup>2</sup> i3 initiative was led by a project team comprised of the Project Director, Lead Health Coach, DHR Instructional Nurses, and support from STC and related

organizations. The program was initially piloted in the 2016-2017 academic year in one large Local Education Agency (PSJA ISD) and thus, with the support of i3 resources, was replicated in two additional LEAs (La Joya and South Texas). Region One and its partners DHR, STC, and three school districts initially intended to serve from 150 to 200 students in 11<sup>th</sup> grade – 1<sup>st</sup> Year of College over the i3 grant period.

Project HEAL<sup>2</sup>, throughout the entire grant period, served a diverse population of 77 students in Year 1, 74 students in Year 2, and 108 students in Year 3 for a total of 259 students from each of the three schools districts coming from eleven (11) high schools, as depicted in Table 1. Project HEAL<sup>2</sup> Cohort 1 (77) and Cohort 2 (74), (151 total) are included.

**Table 1. Project HEAL<sup>2</sup> Implementation Sites**

<i>Project HEAL<sup>2</sup> Implementation</i> Treatment Sites and Student Cohorts					
<b>Independent School District</b>	<b>City and State</b>	<b>Cohort 1 2017-2018</b>	<b>Cohort 2 2018-2019</b>	<b>Cohort 3 2019-2020</b>	<b>Total</b>
Pharr San Juan Alamo ISD	Pharr, San Juan, Alamo, Texas	28	31	83	<b>142</b>
La Joya ISD	La Joya, Texas	24	23	17	<b>64</b>
South Texas ISD	Mercedes, Texas	25	20	8	<b>53</b>
<b>Total Served</b>		<b>77</b>	<b>74</b>	<b>108</b>	<b>259</b>

Project HEAL<sup>2</sup> cumulative target and actual population served are further detailed in Table 2.

**Table 2. Implementation Sites and the Number served for the entire project period:**

<b>Table 2. Project HEAL<sup>2</sup> Target &amp; Actual Data Served by the Project</b> Across Year 3 Implementation Sites						
	<b># of Students</b>	<b># of High-Need Students</b>	<b># of Teachers</b>	<b># of Principals</b>	<b># of Districts</b>	<b># Schools</b>
<b>Target</b>	225 (75 per year)	No Target	15	11	3	11
<b>Actual</b>	<b>259</b>	<b>259</b>	<b>15</b>	<b>11</b>	<b>3</b>	<b>11</b>

**Definition of high-need students:** High-need students are defined by the State of Texas Public Education Information Management Systems (PEIMS) as at-risk students who fall under at least one or more of the following: needing special academic, enrichment, and supplemental support and assistance based upon: 1) students who perform below grade level; 2) students with low-income households; 3) minority and underrepresented students of color; 4) English Learners; 5) students with disabilities; 6) students whose parents have less than a high school education; and 7) dropout students or at-risk of dropping out.

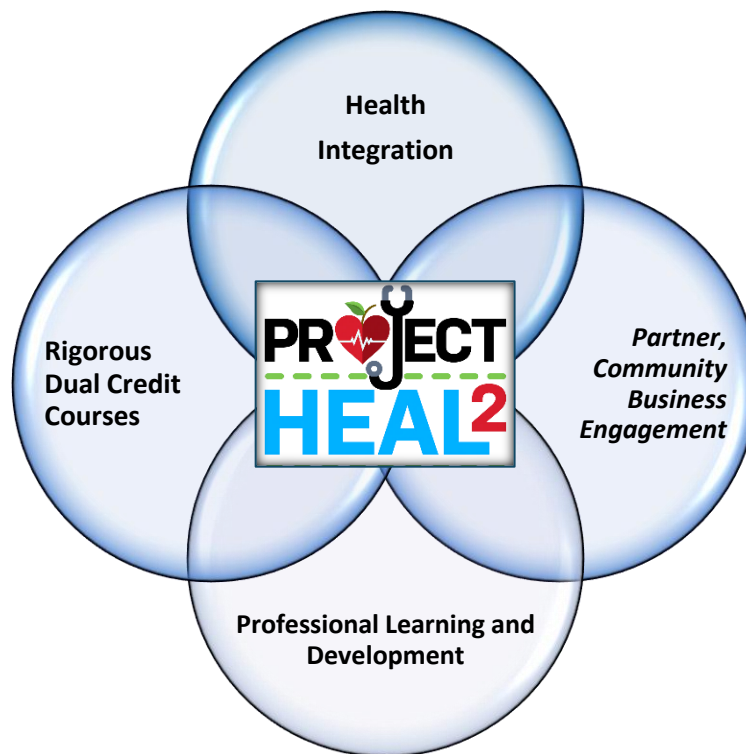
## 2. PROGRAM DESCRIPTION

Project HEAL<sup>2</sup> engaged in innovative methods to reach the goal of increasing the Health-integrated (STEM-design) Nursing competencies of low-income and under-represented students, specifically students from minority backgrounds, through creativity, innovation, and engagement activities that promote diversity in education.

### 2.1. Key Components:

Project HEAL<sup>2</sup> integrated the following key components depicted below to build a pipeline of tomorrow's health care professionals.

**Figure 1. Project HEAL<sup>2</sup> Model**



- **Health Integration:** Design a selection process to provide students instructional practices that connect Health-integrated (STEM-design) Nursing across the general curriculum and instructional approach of Project-and Problem-Based Learning (PBL) with a strong focus upon Math, Health-Science, as well as engage a diverse group of learners in a program of study that develops skills for success in Health-related industry toward achieving an Associate's in Nursing.<sup>12</sup>
- **Professional Learning and Development:** Create high-quality teacher training, professional development, and technical assistance for educators such as Professional Learning Communities (PLCs) collaboration (internal/external) to build their capacity in the area of



Health-integrated (STEM-design) Nursing competencies and support course content connection across all subjects and within core instructional practices;<sup>13</sup>

- **Partner, Community, and Business Engagement:** Design authentic experiences for students with hands-on, real-world Health Professions Nursing Integrated Curriculum by high-quality trained professionals (in hospital and clinically based) and student learning opportunities that enable students to master content while developing 21st-century skills;<sup>14</sup>
- **Rigorous Dual Credit Courses:** Expose students daily to rigorous college-level courses provided by trained nurses/health professionals, such as: rigorous (Math/Science /Technology) coursework, mentoring, counseling, and enrichment activities (Health/Nursing events, college visits, community service learning, etc.) that foster real-world learning and college and career readiness.<sup>15</sup>

## 2.2. Selection Criteria:

Project HEAL<sup>2</sup> began with the design of a complete Health-integrated (STEM-design) Nursing program in three school districts (including 11 high schools) so that Project HEAL<sup>2</sup> students in each participating high school setting were formally accepted into the program as long as they met the section criteria. The following criteria were set and reviewed for Project HEAL<sup>2</sup> participation by a selection committee formed in each participating school district.

- Students enrolled in the eligible target high school were selected with a systematic application process conducted, and selection of Project HEAL<sup>2</sup> students occurred each year of the project.
- Students selected include low-income, minority, students with disabilities, English Learners, gifted and talented, etc.
- An orientation and presentation were conducted at each participating high school campus to provide information and meeting logistics to students.
- Students who attended the Project HEAL<sup>2</sup> session were informed of the following criteria and the deadline (determined by each district on an annual basis) to be considered eligible for Project HEAL<sup>2</sup>. The selection criteria included completion of: student application, student contract (signed by parent and student), obligations of participants form (signed by parent and student), two teacher recommendation forms, a personal academic resume, passing scores on college readiness assessment such as Texas Success Initiative (TSI) or other, student high school and college transcript (GPA: High School 3.5 and College Courses 3.0), completion of a standard “Apply Texas” college application ([www.applytexas.org](http://www.applytexas.org)), high school attendance records, and an essay (three to four paragraphs) on the following topic: career goals and how Project HEAL<sup>2</sup> is expected to help prepare in the pursuit of becoming a nurse.

Principals and counselors were engaged in the Project HEAL<sup>2</sup> presentation and selection. The selection committee reviewed all information, made final recommendations for selection, and informed students and parents of acceptance into Project HEAL<sup>2</sup> via a letter of acceptance and notice of a mandatory parent meeting. The purpose of the mandatory parent meeting was to explain the Project HEAL<sup>2</sup> components, expectations, and support services, etc.

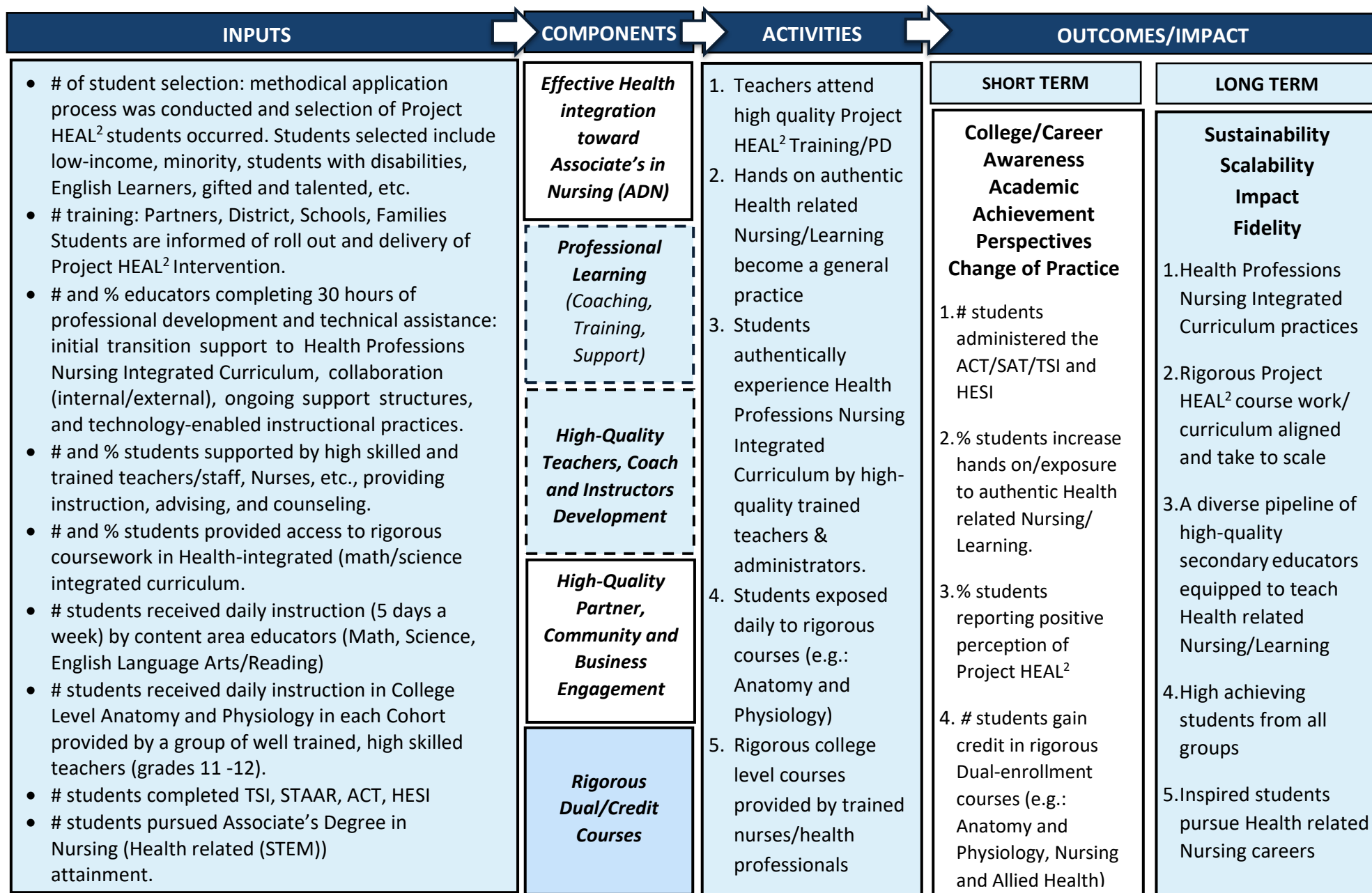
Due to a variety of dual enrollment and health-related career pathways in Project HEAL<sup>2</sup> high schools, students in both the treatment and comparison groups had the opportunity to participate in common programming/courses (e.g., counselor support services, dual-concurrent courses, Anatomy, and Physiology, etc.), tests (ACT, etc.) preparation and administration, support, and dual-enrollment college-level work. Further, both the treatment and comparison groups declared an endorsement as part of their Texas Education Agency (TEA) graduation requirements of Science, Technology, Engineering and Mathematics (STEM)/Public Service (Health Science). Endorsements consist of a related series of courses that are grouped by interest or skill set. They provide students with in-depth knowledge of a subject area.<sup>16</sup>

### **2.3. Logic Model:**

The Project HEAL<sup>2</sup> Logic Model outlined the theory of change. As illustrated by the logic model shown in Figure 2., on the following page, Project HEAL<sup>2</sup> has integrated health (STEM Design) learning into high school general curricula, trained teachers to implement Health-integrated (STEM-design) Nursing competencies, and supported course content connections with involvement of high-quality collaborative partnerships, offered innovative connections to real-world and rigorous dual credit courses to increase student engagement and outcomes in entrance requirements for a postsecondary nursing program, and higher achievement in both ACT and HESI assessments.

The figure further depicts the combination of Project HEAL<sup>2</sup> inputs, components, and activities (e.g., Health Coaching, engage partners (STC (college), DHR (hospital), Health/Science STEM integrated rigorous curriculum/coursework) supporting innovative college/clinically relevant teacher practices, which in turn lead to changes in instructional design, delivery and pedagogical practices that positively influence student outcomes.

**Figure 2. Project HEAL<sup>2</sup> Logic Model**



**Health/Nursing Integration Implementation • Teacher Professional Development (PD) (Training, Coaching Support and Institutionalization) • High Quality Teaching and Learning Application • Partner Collaboration • Rigorous Dual/Credit Course**

## 2.4. Implementation:

Project HEAL<sup>2</sup> was evaluated by collecting data to monitor and analyze the nature of implementation across the three participating school districts (11 schools). Data was collected across various implementation areas to assess the fidelity of the program’s delivery to participants.

**Table 3.** below presents the pre-award implementation and post-award implementation within Project HEAL<sup>2</sup>.

<b>Table 3. Project HEAL<sup>2</sup> Pre-award and post-award Implementation</b>		
<b>Key Strategies</b>	<b>Pre-award Implementation</b>	<b>Post-award Implementation</b>
<b>Implementation Information Captured</b>		
<b>Selection Process</b>	Program Selection Process: <ul style="list-style-type: none"> <li>• Isolated and inconsistent application process.</li> <li>• No systemic review process to select students for college-level programs such as Project HEAL<sup>2</sup></li> <li>• Limited opportunities (no more than 15) student seats offered for Associate’s Degree in Nursing (ADN)</li> <li>• Few opportunities for Health-integrated (STEM-design) Nursing awareness for entry into programs.</li> </ul>	Program Selection Process: <ul style="list-style-type: none"> <li>• Student selection focused and intentional.</li> <li>• Develop and document a systematic process to select students beginning in the 11<sup>th</sup> grade in high school using set criteria.</li> <li>• Selection of up to 75 students per Cohort</li> <li>• Students are provided Health-integrated (STEM-design) <i>Nursing</i> awareness.</li> <li>• Students informed of selection during the Spring/Summer (Cohort 1 in 2017, Cohort 2 in 2018)</li> </ul>
<b>Project Implementation Evaluated</b>		
<b>Health Integration</b>	State adopted standard curriculum implemented. <ul style="list-style-type: none"> <li>• Isolated and inconsistent implementation of <i>Health Integrated/Nursing scope and sequence</i>, units, and lessons.</li> <li>• Limited focus on the integration of career pathways such as Health Integrated/Nursing</li> </ul>	Health Integrated/Nursing Curriculum implemented. <ul style="list-style-type: none"> <li>• Development of Health Integrated/Nursing Framework</li> <li>• Incorporated scope and sequence of academic, co-curricular, and college-knowledge activities focusing on all levels of nursing.</li> </ul>

<p><b>Professional Learning and Development</b></p>	<p>Professional development is offered during the academic year.</p> <ul style="list-style-type: none"> <li>• Professional Development (PD) opportunities provided yet not specialized career pathway aligned.</li> <li>• Limited capacity to offer <i>Health/Medical strategies (pedagogy)</i> ongoing support for instruction.</li> </ul>	<p>Sustained year-round <i>professional</i> development, resources, and support.</p> <ul style="list-style-type: none"> <li>• Teachers participated in 35 hours (minimum) of targeted Professional Development (PD).</li> <li>• Ongoing support structures, technical assistance provided with hands-on opportunities of Health/Medical strategies (pedagogy).</li> <li>• Development of PATHS Central Online Portal with resources, including curriculum frameworks targeting nursing careers, videos of area college deans and professors in the healthcare arenas, and videos of healthcare professionals providing a real-world context to healthcare occupations.</li> </ul>
<p><b>High-Quality Partner, Community, and Business Engagement</b></p>	<p>Partnerships to varying degrees are in place to support college and career readiness efforts, etc.</p>	<p>Sustained partnerships with University and Hospitals</p> <ul style="list-style-type: none"> <li>• Development of Pathfinder Academy</li> <li>• Created an advisor corps of teachers and counselors at the high school level with knowledge and materials needed to guide students interested in healthcare careers.</li> <li>• Designed in conjunction with the UTRGV Schools of Medicine, Nursing, Health Professions, professional development to a targeted group of counselors and teachers regarding all Nursing/Medical programs of study.</li> <li>• Provided Teachers with materials, expertise, and an online bank of materials (housed within <i>PATHS Central</i>) to help students, make good decisions about choosing a</li> </ul>

		path of study and requisite courses at the high-school level, including dual enrollment classes.
<b>Rigorous Dual Credit Courses:</b>	<p>Course sequences and enrollment in college-level dual.</p> <ul style="list-style-type: none"> <li>• Varied dual and concurrent courses offered.</li> </ul>	<p>Systemic and aligned course sequences and enrollment in college-level dual toward a degree pathway.</p> <ul style="list-style-type: none"> <li>• Provided access to a school-based Project HEAL<sup>2</sup> Instructional Nurse taught course curriculum in compliance with the Texas Board of Nursing in academic and career areas.</li> <li>• Developed and implemented academic and career goal plan met for each student supported by Instructional Nurse.</li> <li>• Provided hands-on instruction in the classroom, clinical setting, and advised students toward career goals.</li> <li>• Planned, created, and assessed student performance reports to support students through college (first year after high school).</li> <li>• Engaged Students in college-level health-related/nursing student learning opportunities daily.</li> <li>• Students gained college course credit accrual each semester.</li> <li>• Students attended camps and events, college visits, community-based service learning, intended to foster high levels of real-world exposure, learning, and college and career readiness for all students.</li> <li>• Students supported in assessment and test preparation (HESI A2 and ACT, etc.)</li> </ul>

## 2.5. Fidelity of Implementation (FOI)

The evaluation documented the fidelity of implementation of Project HEAL<sup>2</sup> at three participating school districts (11 schools). Each of the key components of the intervention was measured to determine whether each key component was implemented with fidelity. Table 4. was designed in the first year of the grant to judge adherence to the program model, with a primary focus on measures of fidelity. A set of measures and fidelity indicators are aligned to the components of Project HEAL<sup>2</sup> to evaluate fidelity to each component. Fidelity of implementation was measured of the key components of Project HEAL<sup>2</sup>, assessing teachers receiving training, hours of training sessions, hours of collaborative partners meetings and rigorous courses, etc.

Fidelity of implementation of Project HEAL<sup>2</sup> was rated using criteria that represent: High (2) or Moderate (2) performance toward a fidelity score aligned to percentage on each component. The evaluation examined the extent to which Project HEAL<sup>2</sup> was implemented as intended. In summer 2017, all Project HEAL<sup>2</sup> treatment teachers began intensive training. The implementation activities consisted of approximately 30 hours that 15 Project HEAL<sup>2</sup> teachers attended in summer and throughout the school year, partner meetings, and dual enrollment in rigorous course credit.

A fidelity score was calculated for each indicator (# or %) and for each construct. Fidelity data were collected for three school years, Year 1 2017-2018, Year 2 2018-2019, and Year 3 2019-2020. In the first year of implementation, Project HEAL<sup>2</sup> components 1 and 2 were implemented with fidelity. In Year 3, all 4 out of 4 Project HEAL<sup>2</sup> components were implemented with fidelity.

In the first year, Project HEAL<sup>2</sup> laid the foundation by training teachers in all three school districts. Through the direction and support of the project director, staff, and evaluator, each of the actual targets and thresholds were established on the project components. Project HEAL<sup>2</sup> spent considerable time (5-day summer Health integration training, 30 hours of Health-related Nursing training, etc.) on professional development. The collaboration of partners' engagement and students' engagement in rigorous dual credit courses included several meetings to enroll in one or more dual credit courses.

<b>Table 4. Project HEAL<sup>2</sup> Fidelity Indicator and Measure Data</b>							
<b>Implementation measure</b>	<b>Representativeness of Sample</b>		<b>Fidelity of implementation</b>		<b>Component Level fidelity Implemented with fidelity</b>		
<b>Fidelity Indicator</b>	<b># or %</b>	<b>Target</b>	<b>Threshold</b>	<b>Criteria</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
<b>Threshold/Actual/Level</b>							
<b>Component 1: Health Integration</b>							
1 Dosage % Teachers Received 5-day Summers Health integration training Measure: Training Tracking Tool (logs, attendance and feedback)	15 Project HEAL <sup>2</sup> teachers	15	13.5	High (2): At least 90% of Teachers (13.5) met Threshold Moderate (2) Below (13.5) 90% of Teachers met Threshold	Target: 13.5 Actual: 15 Level: High (2)	Target: 13.5 Actual: 15 Level: High (2)	Target: 13.5 Actual: 15 Level: High (2)
<b>Component 1 Level Score</b>					Met	Met	Met
<b>Component 2: Professional Learning and Development</b>							
2. Dosage # hour Received 30 hours of health-related/nursing training	30 Project HEAL <sup>2</sup> training hours to 15 teachers	30	27	High (2): (90%) 27 or higher  Moderate (1) Below 27 (90%)	Target: 30 Actual: 30 Level: High (2)	Target: 30 Actual: 30 Level: High (2)	Target: 30 Actual: 30 Level: High (2)
<b>Component 2 Level Score</b>					Met	Met	Met
<b>Component 3: Partner, Community, and Business Engagement</b>							
3. Dosage # hours Engaged in 20 hours of partner collaboration, e.g., meetings (face to face/virtual), trainings, phone calls, workshops, emails, etc.)	20 Project HEAL <sup>2</sup> hours of partner collaboration	20	18	High (2): (90%) 18 or higher  Moderate (1) Below 18 (90%)	Target: 20 Actual: 15 Level: Moderate (1)	Target: 20 Actual: 18 Level: High (2)	Target: 20 Actual: 20 Level: High (2)
<b>Component 3 Level Score</b>						Met	Met
<b>Component 4: Rigorous Dual/Credit Courses</b>							
4. Dosage # students engaged in at least 1 (3 hours) Dual credit articulated courses toward Associate's in Nursing Degree.	225 Project HEAL <sup>2</sup> Students	75 per year (225 over 3 years)	68 per year (203 over 3 years)	High (2): (90%) 68 or higher  Moderate (1) Below 68 (90%)	Target: 68 Actual: 52 Level: Moderate (1)	Target: 68 Actual: 75 Level: High (2)	Target: 68 Actual: 73 Level: High (2)
<b>Component 4 Level Score</b>						Met	Met



### **3. IMPACT EVALUATION**

#### **3.1. Impact Comparison Conditions (ACT, HESI)**

The project served a diverse population of students (77 students in Year 1, 74 students in Year 2, and 108 students in Year 3) for a total of 259 students from each of the three schools districts - coming from eleven (11) high schools, as depicted in the introduction, Table 1. All Project HEAL<sup>2</sup> students began in 11<sup>th</sup> grade. Cohort 1 (77) and 2 (74), (total: 151) were examined in the study.

Beginning in Year 1, Region One and partners implemented a carefully orchestrated intentional selection through an application process and methodically determined eligible students so that those accepted to the project have a broad cross-section of students. The selection process assigned eligible (meeting the aforementioned criteria for selection) participating students to a treatment group. The study was planned to investigate the impact of Project HEAL<sup>2</sup> intervention on outcomes for two Cohorts of students [Cohort 1, the treatment group, enrolling Project HEAL<sup>2</sup> in 2017-18 (11<sup>th</sup> grade) and Cohort 2, the comparison group, enrolling in 2018-19 (11<sup>th</sup> grade)], including results on a single college readiness assessment (ACT), for both Cohort 1 and 2, and a single Health Education Readiness assessment measure: Health Education System Incorporated (HESI) exam for both Cohort 1 and 2. The ACT outcomes of Project HEAL<sup>2</sup> students were compared with similar students from the same schools that did not participate in Project HEAL<sup>2</sup>, i.e., Project HEAL<sup>2</sup> high school students were matched with comparison high school students at the same school. The HESI outcomes were compared of Project HEAL<sup>2</sup> high school students with traditional college-level students who were accepted into the same Nursing (ADN) program and were administered the same HESI assessment but did not participate in Project HEAL<sup>2</sup>. For the study, Project HEAL<sup>2</sup> students were matched with traditional ADN nursing program students determined as the comparison students.

Using the measures mentioned above, the statistical analyses examined the difference between Project HEAL<sup>2</sup> students in the treatment group and non-Project HEAL<sup>2</sup> students in the comparison (business-as-usual group).

**Project HEAL<sup>2</sup> Services Comparison Conditions:** Unlike the students in the treatment group, the comparison group did not receive or participate in Project HEAL<sup>2</sup> intervention or services. The three school districts (11 campuses) have Early College and Magnet High School settings in addition to the Project HEAL<sup>2</sup> intervention. Within each of the three districts' 11 designated campuses that house the Project HEAL<sup>2</sup> intervention, the collective student enrollment receives college preparatory curriculum and instruction.

At three districts' 11 high schools, 11<sup>th</sup> -12<sup>th</sup>-grade students in the comparison group were instructed by traditional teachers on campus in a non-Project HEAL<sup>2</sup> setting/classroom. Students

(11<sup>th</sup> – 12<sup>th</sup> grade) attended a regular 7-hour school day with a combination of core academic high school courses, dual enrollment courses, and elective courses that serve in a particular career-related endorsement area.

Note that there are five endorsements as part of Texas graduation requirements. Endorsements consist of a related series of courses that are grouped by interest or skill set. Endorsements are designed to provide students with in-depth knowledge of a subject area. Students must select an endorsement in the ninth grade. Students earn an endorsement by completing the curriculum requirements for the endorsement, including four credits of math and science and two additional elective credits. The five State of Texas endorsements are in the following areas: Science Technology, Engineering and Mathematics (STEM), Business and Industry, Public Service, Arts and Humanities, and Multi-Disciplinary Studies.

All students from the Project HEAL<sup>2</sup> treatment group and the non-Project HEAL<sup>2</sup> comparison group are eligible (9<sup>th</sup> grade) to pursue the Public Service endorsement (Human Services/Health Science). Students selected school-wide elective courses from a school-wide curriculum bulletin (not eligible for Project HEAL<sup>2</sup> courses). The students not receiving Project HEAL<sup>2</sup> services had access to a school-wide curriculum in a College preparatory/Early College High School setting. A campus counselor, teachers, and principals served the academic needs of the non- Project HEAL<sup>2</sup> students. Each high school has a group of (4-7) teachers responsible for students’ academic support. The comparison between those receiving the Project HEAL<sup>2</sup> intervention to the non-Project HEAL<sup>2</sup> students is that they are educated in cohorts with courses in common. Table 4 provides a contrast between the treatment and comparison student groups.

**Table 5.** Contrast between Project HEAL<sup>2</sup> intervention (treatment group) and Business-as-usual (comparison group) services

<b>Table 5. Project HEAL<sup>2</sup> Services Comparison Conditions</b>		
<b>Condition</b>	<b>Intervention (Treatment Group)</b>	<b>Business-as-Usual Student Experience (Comparison/Control Group)</b>
<b>Academic Setting</b>	Integrated health science/nursing career academic setting	Early College/Magnet Academic/classroom setting
	Common Project HEAL <sup>2</sup> instructional methodology – college and clinical setting	Early college instruction with dual courses/endorsement
	Clinical nursing and allied health focus/hands-on projects	Daily, weekly, and unit projects

	Health science/nursing curricula and technology-enabled instructional practices	Technology accessed as a learning tool
	Nursing staff/medical career field experts engaged in real-work experiential learning	Teacher guided and facilitated instruction
	Community and service-learning	
<b>Instruction</b>	A cohort of approximately 25 students per partnering district	Health-related (endorsement) offerings/educators/instruction
	Access to Certified Nurse/counselor	Access to counselor
	Classrooms monitored by i3 Project Director and campus administrator	Monitored by campus administrator (as needed)
	Rigorous coursework linking health science and nursing with core content	Early college/dual health-related endorsement coursework
<b>Assessment</b>	Project HEAL <sup>2</sup> teachers meet daily with students in common to discuss progress	
	STAAR (State Test) Administered	STAAR (State Test) Administered
	ACT Administered	ACT Administered
	HESI Administered	
	Surveyed to collect problem-solving and attitudes towards learning	

Health Education Systems Incorporated (HESI) Assessment: Students in the HESI comparison group did not receive or participate in Project HEAL<sup>2</sup> interventions or services but were administered the same HESI assessment as that of the treatment group. Consequently, a comparison group of South Texas College (STC) Associate’s in Nursing Program students was selected. These students made up the comparison group and administered the HESI assessment at the same time as the treatment group. Students in both the treatment and comparison groups took the HESI administration as an entrance requirement to have the opportunity to participate in college-level health/nursing-related programming/college-level work.

**3.1.1. Baseline**

All baseline equivalence testing was done on the analysis sample. Baseline equivalence was assessed for Project HEAL<sup>2</sup> students and comparison students on a pre-test measure, using the **State of Texas Assessments of Academic Readiness (STAAR®)** End of Course (EOC) program (Math, Science, English Language Arts (ELA 1), English Language Arts (ELA 2), and U.S. History)

outcomes in high school grades 9-12 as well as all other propensity score matching variables. The STAAR EOC scores were the most feasible baseline due to its administration occurring at participating school districts prior to 9<sup>th</sup> grade. All the participating school districts administer the STAAR in the spring of each academic year aligned to the respective academic course a student is enrolled. Using the STAAR-EOC ensured that the treatment and comparison groups were equivalent at baseline. The STAAR Participant groups include: Group (1=Treatment, 2 = Comparison), Districts (1=South Texas ISD; 2=La Joya ISD; 3=PSJA ISD), Gender (1=male, 2=female) and Ethnicity (1=Hispanic, 2=Caucasian, 3=Asian, 4=African American). The following tables outline the baseline STAAR EOC data for the treatment and comparison groups.

**STAAR Math**

<b>Table 6.</b>		<b>Between-Subjects Factors</b>		
		Total N=265	Group 1 N=131	Group 2 N=134
Group	1	131		
	2	134		
District	1	90	43	47
	2	52	38	14
	3	123	50	73
Gender	1	67	29	38
	2	198	102	96
Race	1	242	119	123
	2	13	7	6
	3	6	3	3
	4	4	2	2

**STAAR Science**

<b>Table 7.</b>		<b>Between-Subjects Factors</b>		
		Total N=281	Group 1 N=137	Group 2 N=144
Group	1	137		
	2	144		
District	1	90	43	47
	2	60	41	19
	3	131	53	78
Gender	1	74	30	44
	2	207	107	100
Race	1	257	124	133

	2	14	8	6
	3	6	3	3
	4	4	2	2

### STARR ELA 1

Table 8.		Between-Subjects Factors		
		Total N=294	Group 1 N=141	Group 2 N=153
Group	1	141		
	2	153		
District	1	91	43	48
	2	73	45	28
	3	130	53	77
Gender	1	78	30	48
	2	216	111	105
Race	1	270	128	142
	2	14	8	6
	3	6	3	3
	4	4	2	2

### STAAR ELA 2

Table 9.		Between-Subjects Factors		
		Total N=321	Group 1 N=148	Group 2 N=173
Group	1	148		
	2	173		
District	1	92	45	47
	2	90	47	43
	3	139	56	83
Gender	1	86	31	55
	2	235	117	118
Race	1	296	134	162
	2	15	9	6
	3	6	3	3
	4	4	2	2

**STAAR US History**

<b>Table 10.</b>		<b>Between-Subjects Factors</b>		
		Total N=325	Group 1 N=150	Group 2 N=175
Group	1	150		
	2	175		
District	1	92	44	48
	2	91	47	44
	3	142	59	83
Gender	1	88	33	55
	2	237	117	120
Race	1	299	135	164
	2	15	9	6
	3	7	4	3
	4	4	2	2

The standardized baseline mean the difference between the Project HEAL<sup>2</sup> treatment group and the comparison group were calculated by dividing the baseline treatment-comparison difference ( $\beta_1$  in the level-2 equation) by the student-level pooled standard deviation of pre-test STAAR (Math, Science, English Language Arts (ELA 1), English Language Arts (ELA 2), and U.S. History) scores. Given that we included students’ baseline STAAR scores in the impact analysis model, baseline equivalence was considered to be established if the standardized mean difference between treatment and comparison groups on STAAR scores (Math, Science, English Language Arts (ELA 1), English Language Arts (ELA 2), and U.S. History) scores were less than 0.25. Therefore, the baseline equivalence was met for the model after statistical adjustment.

**3.1.2. Impact Study #1 (ACT)**

**3.1.3. Introduction to Impact Study #1**

The impact portion of the evaluation was conducted across three school districts. Students enrolled in 11 high schools were intentionally selected through an application process in grade level 11 across two Cohorts to participate in the Project HEAL<sup>2</sup> program.

Therefore, the treatment group consisted of Project HEAL<sup>2</sup> Cohort 1 (77) and Cohort 2 (74), (total: 151) students from three partnering school districts and 11 schools. The non-Project HEAL<sup>2</sup> students were selected as a matched comparison group. Within schools, the treatment students were matched one-to-one with similar comparison students.

For impact study #1, student outcomes are based upon a single college readiness assessment: ACT, a standardized test to determine a high school graduate’s preparation for college-level work. The treatment group consisted of Project HEAL<sup>2</sup> students (selection process) from eleven schools in three participating school districts (Cohorts 1 and 2). For (ACT) outcomes, comparable students matched Project HEAL<sup>2</sup> students (125) with a non-Project HEAL<sup>2</sup> comparison group (100) attending the same campus in a similar endorsement.

The student participation in the study includes groups denoted in Table 11. Each characteristic included assigning 1 for Project HEAL<sup>2</sup> intervention/treatment group (125) and 2 for the control non-Project HEAL<sup>2</sup> group (100). The three participating districts are also included in Table 11. below - assigning 1 to South Texas ISD, 2 to La Joya ISD, and 3 to PSJA ISD. Demographic data include gender - assigning 1 to male and 2 to female, and ethnicity - assigning 1 to Hispanic, 2 to Caucasian, 3 to Asian, and 4 to African American.

**Table 11. Project HEAL<sup>2</sup> Group ACT Participation**

<b>Table 11. Project HEAL<sup>2</sup> Group Characteristics</b>				
<b>Characteristics</b>	<b>Descriptive</b>	<b>Total N 225</b>	<b>Group 1 N 125</b>	<b>Group 2 N100</b>
<b>GROUP</b> Project HEAL <sup>2</sup> Treatment (1) and non-Project HEAL <sup>2</sup> Comparison (2)	1	125		
	2	100		
<b>DISTRICTS</b> Project HEAL <sup>2</sup> District (1=South Texas ISD; 2=La Joya ISD: 3=PSJA ISD)	1	38	23	15
	2	85	47	38
	3	102	55	47
<b>GENDER</b>	1	64	28	36
	2	161	97	64
<b>RACE</b>	1	210	117	93
	2	9	6	3
	3	3	1	2
	4	3	1	2

**3.1.4. Results for Study #1**

The Project HEAL<sup>2</sup> intervention services span an entire school year of students’ enrollment in a regular calendar school year. The intervention was implemented and evaluated at a total of three large south Texas established school districts (LEAs): Pharr-San Juan-Alamo (PSJA) Independent

School District (ISD) with six high schools, La Joya ISD with four high schools, and South Texas ISD with one high school. The evaluation examined effects on students’ outcomes.

Table 12. demonstrates both treatment and control groups assigning (1) to Treatment combined Project HEAL<sup>2</sup> two Cohorts of students (Cohort 1, enrolling Project HEAL<sup>2</sup> in 2017-18 (11<sup>th</sup> grade) and Cohort 2, enrolling in 2018-19 (11<sup>th</sup> grade)), and (2) to non-Project HEAL<sup>2</sup> students selected as a matched comparison group or Control. Each school district is denoted as (1=South Texas ISD; 2=La Joya ISD: 3=PSJA ISD).

<b>Table 12. Project HEAL<sup>2</sup> Students and Schools</b>		
<b>Characteristics</b>	<b>Descriptive</b>	<b>N</b>
<b>GROUP</b> Project HEAL <sup>2</sup> Treatment (1) and non-Project HEAL <sup>2</sup> Comparison (2)	1	125
	2	100
<b>DISTRICT</b> Project HEAL <sup>2</sup> District (1=South Texas ISD; 2=La Joya ISD: 3=PSJA ISD)	1	38
	2	85
	3	102

The Project HEAL<sup>2</sup> intervention services (Rigorous Academics, Health-related/nursing Integration, etc.) occurred over an academic year (comprised of six 6-week sessions for a total of 36 weeks or two semesters at the college level) starting with August through May of students’ enrollment into a regular calendar school year. Students in each of the 2017 and 2018 Project HEAL<sup>2</sup> Cohorts were combined. Each school within three districts included eligible students as described in earlier sections and demonstrated in Tables 1 and 2.

Effects were examined on two Cohorts of students (N 125) on ACT outcomes. Students missing ACT outcome data were dropped from the analysis model. Thus, analysis samples include only students with ACT outcome scores. This intervention was implemented at the three participating school districts (Pharr-San Juan-Alamo ISD, La Joya ISD, and South Texas ISD).

### 3.1.5. Study Question #1

The Impact Study 1 Question was: What is the cumulative impact after two years of exposure to Project HEAL<sup>2</sup> intervention on 12<sup>th</sup> grade (college-ready) ACT achievement outcomes as compared to the business-as-usual condition (comparison group)?



### 3.1.6. Analysis Study #1

Statistical analyses were conducted for the ACT outcomes, including the difference between Project HEAL<sup>2</sup> students (two combined Cohorts) in the treatment group and non-Project HEAL<sup>2</sup> students in the comparison group.

Analyses of impacts of the implementation of Project HEAL<sup>2</sup> on students' academic ACT achievement were examined on Cohort 1, Cohort 2, and combined. Groups compared ACT achievement outcomes of students in all schools/districts, and school district interaction was also examined. Information about the cumulative impact of Project HEAL<sup>2</sup> concerning the study research questions was also addressed.

Tables 13. To 15. note differences examined between the treatment group and the (business-as-usual) comparison group on the ACT (composite score) outcome. While there were no clear group differences comparing all the Project HEAL<sup>2</sup> treatment group students to all the non-Project HEAL<sup>2</sup> business-as-usual comparison students, there were instances where Project HEAL<sup>2</sup> treatment group students significantly outperformed controls at certain school districts on the ACT outcomes.

*Performance of Students on ACT Composite Scores:* Groups compared across districts revealed the treatment group performance on mean ACT composite scores of students in the treatment group at La Joya ISD and PSJA ISD was higher than the corresponding comparison group. On the contrary, the mean ACT composite scores of the comparison group at South Texas ISD were higher than the corresponding treatment group. At 95% confidence level, the standard error of the treatment and comparison groups at South Texas ISD than the corresponding groups at La Joya ISD and PSJA ISD, which means that the mean ACT composite scores of both the groups (treatment and comparison) have a higher discrepancy in the sample mean as compared to the population mean at South Texas ISD.

#### Comparison by Group

Table 13.		Estimates		
Dependent Variable: ACT_COMP				
Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	20.110	.330	19.460	20.761
2	19.916	.388	19.153	20.680

When the mean ACT composite scores among the students in the treatment and comparison groups were compared overall across all the three participating districts (South Texas ISD, La Joya

ISD, and PSJA ISD), the students in the treatment groups performed better at 95% confidence level. See Table 14. However, the difference in performance (as demonstrated by the standard error and each group's upper and lower limits) was not significant. The mean ACT composite scores of the treatment group were slightly better than the comparison group.

### Comparison by School-District

<b>Table 14. Estimates</b>				
Dependent Variable: ACT_COMP				
School District	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	23.146	.571	22.022	24.271
2	18.258	.375	17.519	18.998
3	18.635	.342	17.962	19.309

The district-wise ACT composite scores were compared among the three school districts. See Table 14. The mean ACT composite scores at the South Texas ISD were better than the students at the La Joya ISD and PSJA ISD, as demonstrated by the Mean, Standard Error, and the upper and lower bounds. However, note the standard error of the mean ACT composite scores at the South Texas ISD was higher than the other two participating districts.

In Table 15, the overall mean ACT composite scores (the population mean) at each school district were paired with the population mean at the other two districts to assess how significant the differences were between each school district. Students at the South Texas ISD performed better than the students at La Joya ISD and PSJA ISD, as demonstrated by the Mean Difference and the Standard Error on the overall mean ACT composite scores of the student population. The data also reveals that students in the PSJA ISD performed better than those at Loy a ISD in terms of their mean ACT composite scores.

<b>Table 15. Pairwise Comparisons</b>						
Dependent Variable: ACT_COMP						
(I) School District	(J) School District	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lower Bound	Upper Bound
1	2	4.888*	.683	.000	3.240	6.536
	3	4.511*	.665	.000	2.906	6.116
2	1	-4.888*	.683	.000	-6.536	-3.240
	3	-.377	.507	1.000	-1.601	.847
3	1	-4.511*	.665	.000	-6.116	-2.906
	2	.377	.507	1.000	-.847	1.601

### 3.1.7. Impact Study #2

### 3.1.8 Introduction to Impact Study #2

Similar to Study 1 described above, the impact portion of the evaluation conducted for Study 2, was across three school districts. Students enrolled in high school were intentionally selected through an application process in grade level 11 across two Cohorts to participate in the Project HEAL<sup>2</sup> program.

A single Health Education Readiness Assessment (HESI) exam was administered for both Project HEAL<sup>2</sup> Cohort 1 and Cohort 2 (combined) from three partnering school districts (11 schools). The non-Project HEAL<sup>2</sup> students were traditional college-level students accepted into the same Nursing (ADN) program who were administered the same HESI assessment but did not participate in Project HEAL<sup>2</sup>. For the study, Project HEAL<sup>2</sup> students were matched with traditional ADN nursing program students - determined as the comparison students, categorized by race and gender.

For impact study #2, student outcomes are based upon HESI, a single health education readiness assessment measure to determine entrance requirements for college-level health/nursing-related programming/college-level work.

### 3.1.9. Results for Study #2

The student participation in the study includes the treatment group (n=80) and the comparison group (n=81), as denoted in Table 16. Each characteristic had three participating districts - assigning 1 to South Texas ISD, 2 to La Joya ISD, and 3 to PSJA ISD. Demographic data include gender - assigning 1 to male and 2 to female, and ethnicity - assigning 1 to Hispanic, 2 to Caucasian, 3 to Asian, 4 to African American, and 5 to unknown (note: 2 from the traditional students were listed as unknown). Students missing HESI outcome data were removed from the analysis. Thus, analysis samples include only students with HESI outcome scores.

#### HESI Scores

Table 16.		Between-Subjects Factors	
Characteristics	Descriptives	Total N Treatment/Intervention 80	Total N Traditional/Control 81
DISTRICT	1	29	
	2	21	

Project HEAL <sup>2</sup> District (1=South Texas ISD; 2=La Joya ISD; 3=PSJA ISD)	3	30	
GENDER	1	20	19
	2	60	62
RACE	1	72	65
	2	6	1
	3	1	13
	4	1	0
	5	0	2

**3.1.10. Study Question #2**

What is the cumulative impact after two years of exposure to Project HEAL<sup>2</sup> intervention on the HESI achievement outcomes as compared to (college-level) business-as-usual condition?

**3.1.11. Analysis Study #2**

Each analysis incorporates groups assigning 1 for Project HEAL<sup>2</sup> intervention/treatment group (n 80) and 3 assigned to the comparison non-Project HEAL<sup>2</sup>/Traditional ADN (n 81). Interactions (if significant) are denoted, followed by the main effects of the group. The Effect Size (E.S.) and is shown in grey when 0.25 or above. Comparison (non-Project HEAL<sup>2</sup>/Traditional ADN students scored higher on the HESI exam (p=0.002,). The mean HESI scores for the comparison group were higher than the treatment group (85.9 vs. 83.7 respectively), resulting in a lower standard deviation and mean standard error in the HESI scores among the students in the comparison group. However, a two-tailed t-test (F-value = 2.684) revealed that Project HEAL<sup>2</sup> did not significantly differ the HESI outcomes between the treatment group and the comparison group. See Tables 17 and 18.

**HESI Scores:**

<b>Table 17.</b>		<b>Group Statistics</b>			
	Group	N	Mean	Std. Deviation	Std. Error Mean
HESI_SCORE	1	80	83.7009	4.67017	.52214
	3	81	85.9063	3.98685	.44298

<b>Table 18.</b>		<b>t-test for Equality of Means</b>				
F	Sig.(p)	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
2.684	.103	-3.224	159	.002	-2.20542	.68407
		-3.221	154.573	.002	-2.20542	.68474

In summary, this study is written to meet i3 grantee Region One evaluation requirements. While there were no clear group differences comparing all the Project HEAL<sup>2</sup> treatment group students to all the non-Project HEAL<sup>2</sup> business-as-usual control students, there were instances where Project HEAL<sup>2</sup> treatment group students outperformed controls at certain school districts on the ACT outcome (South Texas ISD and PSJA ISD). Secondly, the results of the study also indicated that the non-Project HEAL<sup>2</sup>/Traditional ADN students who formed the business-as-usual comparison group reported a significant higher HESI outcome than the treatment group. There are two sets of study comparison groups: one for the ACT and the other for the HESI.

**4. DISCUSSION**

Project Health Education and Leadership for ALL (HEAL<sup>2</sup>) was designed as an i3 Development grant program by Novice i3 grantee: Region One, a Local Education Agency (LEA), in collaboration with Doctor’s Hospital at Renaissance (DHR), a medical institution, South Texas College (STC), an institution of higher education, and three large south Texas established school districts (LEAs): Pharr San Juan Alamo (PSJA) Independent School District (ISD), La Joya ISD and South Texas ISD, its innovative. The project originally aimed to serve 150-200 students in 11<sup>th</sup> grade through 1<sup>st</sup> Year of College and served 259 over the i3 grant period. The Project HEAL<sup>2</sup> goal aimed at increasing the Health-integrated (STEM-design) Nursing competencies of low-income and under-represented students, specifically students from minority backgrounds, through creativity, innovation, and engagement activities that promote diversity in education.

Project HEAL<sup>2</sup> designed key components, services, and efforts at addressing a national need for a more diverse pipeline of medical/health related candidates for an Associate’s in Nursing degree and beyond in deep South Texas, with methods of implementation that can serve as a model for a comprehensive strategy to support minority and low-income students in a high demand

medical/STEM-related career pathway. Over the course of the entire grant period, Project HEAL<sup>2</sup> accomplished many noteworthy sustainable activities across the Region One area. Key project activities aligned to the goal and components deepened and strengthened student participants' Health-integrated (STEM-design) Nursing competencies.

Key noteworthy areas of impact across the region include creating Work-Based Learning experiences at Doctors Hospital at Renaissance (DHR). Students from all Cohorts could participate in work-based learning simulations with professional nurses and were mentored by healthcare professionals in a hospital work setting. Project HEAL<sup>2</sup>'s Cybermentoring initiative afforded hundreds of students to participate in live, interactive online videoconferences with college and workplace professionals in the healthcare arena. A Nursing Framework was created to incorporate a scope and sequence of academic, co-curricular, and college-knowledge activities focusing on all levels of nursing to be implemented at 9<sup>th</sup> – 12<sup>th</sup> grade. An Intensive Bridge Program supported students to matriculate from high school to a college setting. All Cohort students participated in a 2-week program, designed, and delivered by South Texas College (STC) staff, intended to assist students in transitioning from high school to college. Personalized Counseling, Academic and Content-Based Tutoring was provided to support students. The Region One ESC Project Director and Education Specialist met continually with students to ascertain individual student progress and needs. Regional methods offered such as targeted tutoring, supplementary meetings, counseling sessions, and advisement, were enhanced over the project's life. A HESI Alignment Process was conducted by Curriculum and Instruction specialists that consisted of three distinct phases of work to support increased performance on the (HESI) entrance exam for students identified for the nursing program. The process included a standards alignment, assessment analysis, and professional development academy for participating educators. Collaboration and access to crucial documents, processes and current data will be required to address the program needs effectively. Within the three phases of work, an analysis of the alignment of written, taught, and tested areas were conducted to support increased student performance on the HESI exam. The alignment of the HESI standards with the state assessment standards and the state college entrance examination standards was developed for teachers and content experts at the high school level. This alignment was designed to ensure that the HESI standards are integrated into regular classroom instruction.

PATHS Central Online Portal: This portal was developed with leveraged funds from a companion grant to Project HEAL<sup>2</sup> and made available to students and educators from Project HEAL<sup>2</sup>. Lastly, a web-based portal and online manual for educators were developed and disseminated. This platform titled PATHS Central ([www.pathscentral.org](http://www.pathscentral.org)) provides resources, including curriculum frameworks targeting nursing careers, videos of area college deans and professors in the

healthcare arenas, and videos of healthcare professionals providing a real-world context to healthcare occupations.

In addition to the practices implemented across the deep south Texas region, made available on a state and national level, the Project HEAL<sup>2</sup> implementation study revealed that in the initial year of implementation, components 1 and 2 were implemented with fidelity. In Year 3, all 4 out of 4 Project HEAL<sup>2</sup> components were implemented with fidelity. Project HEAL<sup>2</sup> laid the foundation by training teachers in all 3-school districts (11 schools) in the first year. Through the direction and support of the project director, staff, and evaluator, each of the actual targets and thresholds was established on the project components. Based on the fidelity of implementation findings, Project HEAL<sup>2</sup> spent considerable time (5-day summer Health integration training, 30 hours of Health-related Nursing training, etc.) on professional development. Several meetings were held to ensure the collaboration of partners and students' engagement in rigorous dual credit courses.

Fidelity of implementation study findings provide evidence, with reservations, that Project HEAL<sup>2</sup> developed and implemented high-quality, health integrated lessons, curriculum, Teacher Professional Development (PD), training, coaching support and institutionalization, high-quality teaching and learning application, collaborative partner efforts that enhanced program delivery, student outcomes, and engagement, and lastly, enrollment and completion of rigorous dual credit courses. Project HEAL<sup>2</sup> mapped a comprehensive nursing framework that incorporated a scope and sequence of academic, co-curricular, and college-knowledge activities focusing on all levels of nursing to be implemented in high school from grades 9 to 12. Project HEAL<sup>2</sup> incorporated technology and centered approaches on the real-world, hands-on application for all students. Project HEAL<sup>2</sup> partnerships with DHR Hospital, STC 2-year college, and other organizations played a crucial role in educator understanding, awareness, and implementation of a Health-integrated (STEM-design) Nursing pipeline.

The impact study findings compared the treatment group scores between HESI tests. Although no statistically significant effects on HESI achievement are noted, there was a significant improvement in composite scores from the first attempt to the second for Project HEAL<sup>2</sup> students. Additionally, analyses compared the treatment group (Cohort 1 and 2, combined) versus comparison groups for test scores, specifically ACT. While there were no apparent group differences comparing all the Project HEAL<sup>2</sup> treatment group students to all the non-Project HEAL<sup>2</sup> business-as-usual control students, there were instances where Project HEAL<sup>2</sup> treatment group students significantly outperformed controls at certain school districts on the ACT outcome.

The students' (Cohorts 1 and 2) duration of exposure to Project HEAL<sup>2</sup> might not have been enough to detect an impact on HESI achievement as compared to a traditional ADN student HESI outcomes. Project HEAL<sup>2</sup> contextual factors such as alignment between traditional high school instruction and HESI standardized assessments are another vital consideration in interpreting the study findings related to the degree to which the non-Project HEAL<sup>2</sup> traditional ADN students in the study and their prior high school instruction and experiences.

Project HEAL<sup>2</sup> partnering regional center, hospitals, colleges/universities, school districts, educators, and administrators continue to be recognized by local, regional, state-level, and community members as innovative leaders in education, specifically Health Science Integration/Nursing (ADN) programming that was both rigorous and engaging. In fact, by 2019-2020, aligned to the State of Texas College Career and Military Readiness (CCMR) standards, each participating school district's annual aggregate graduate outcomes demonstrated mastery of college readiness standards used for accountability purposes on the ACT, the SAT, or the Texas Success Initiative Assessment (TSIA). Additionally, many earned an Associate's degree or industry-based certification (or a level I or level II certificate) the fall semester immediately following high school graduation or enrolled at a postsecondary educational institution by the tenth instructional day of the fall semester immediately following high school graduation.

In 2020-2021, COVID-19 cases in South Texas increased at a higher rate than in the rest of the State due to the global pandemic. This pandemic increased the demand for the trained nursing workforce at local hospitals and medical institutions. With this demand, Project HEAL<sup>2</sup> Associate's of Nursing Degree graduates became some of the newest fully trained frontline employees to treat patients' needs and provide COVID-19 vaccines. Region One and collaborating school systems responded to the demand by proposing an expansion of the program in 2020-2021 and beyond with a Texas Education Agency-funded grant program entitled PATHS to include support from 11 schools to 21 schools and earlier intervention at the elementary and middle school levels. Increasing exposure to elementary and middle school students opens the possibility of a longitudinal study to follow the effects of exposure to the health care field as students make decisions regarding pathway studies, decisions about college, and careers. An online platform was created to serve as a resource center for all participating schools. Dissemination of key strategies, information, resources, videos, etc., has been made public by all districts ([www.pathscentral.org](http://www.pathscentral.org)).



## 5. CONCLUSION

In conclusion, this study contributes to the literature with important project, programmatic, and policy implications. Based on the fidelity of implementation findings, it can be concluded that it takes at least two academic years of Teacher Professional Development (PD), training, coaching support, high-quality teaching and learning application to create a comprehensive framework that increases the Health-integrated (STEM-design) Nursing competencies of low-income and under-represented students, specifically students from minority backgrounds. Additionally, two years or more are likely to be needed to institutionalize the infrastructure, procedures, and tools that support the creation of a diverse pipeline of medical/health-related candidates for an Associate's in Nursing degree.

This study adds to prior documented research such as the U.S. Department of Education (Office of Career, Technical, and Adult Education) evolution and potential of career pathways. (April 2015), which indicates large-scale systemic career pathway change requires substantial time.<sup>17</sup> The research of Jobs for the Future Advancing career and technical education in state and local career pathways systems also affirms long-term technical assistance is necessary for educators to change instructional and career and technical education practice.<sup>18</sup>

Parties implementing Project HEAL<sup>2</sup> realized making significant impact on changes in career pathway programming requires a substantial time investment and many conversations with all levels of stakeholders, including community and medical leaders, institutions of higher education, administrators, teachers, school board members, and parents. The program implementers noted key challenges surrounding the amount of time it takes to: (1) create a full level of understanding as well as capturing and codifying the specific support needed by comprehensive school districts in the deep south Texas region when implementing a health science pathway successfully in a large school district; (2) increase systematic communication that currently is limited or does not exist among high school health science teachers, community and technical college faculty, or four-year university faculty; (3) promote joint professional development and dialogue among secondary and postsecondary nursing pathway leaders and faculty; (4) foster a shared sense of urgency regarding the pathway's success; (5) connect health care professionals directly to school districts beyond traditional roles such as doctors and nurses, to fully explore other roles and experience in detail through authentic exposure with job-based career pathways, conferences, medical rotations, clinical practice, etc.; and (6) expose teachers and educators alike to the key differences of the HESI entrance exam as compared to other college entrance (ACT, SAT, TSI, etc.) exams a critical factor in the success of student entering a nursing career pathway.

Based on this study, it may take more than two or three years for comprehensive career pathway programming such as Project HEAL<sup>2</sup> to take hold and translate into significant student gains on standardized college entrance assessments such as the ACT. Furthermore, high school students (especially students from low-income, minority backgrounds) that are immersed in Health-Related Nursing programs of study (ADN, etc.) in grades 11-12 may develop test-taking proficiency at slower rates than traditional Nursing (ADN) college-going students.

Future research should explore pathways that secondary and postsecondary education institutions and employers can adapt to suit healthcare workforce needs. Additional research could investigate programmatic instructional strategies, barriers faced in career pathways education, and steps to support pathways in nursing, health care, and other high-demand career pathway fields. Region One will pursue this line of research to expand options and widen educational reach for its target population.

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