UT Health San Antonio
Linking Interprofessional Networks for Collaboration

Fifth Year QEP Impact Report

Overview

The University of Texas Health Science Center at San Antonio (UT Health San Antonio) is comprised of six schools: the Joe R. and Teresa Lozano Long School of Medicine, the Graduate School of Biomedical Sciences, the Schools of Dentistry, Health Professions, and Nursing, and the UT School of Public Health San Antonio, which will begin enrolling students in fall 2024. Collectively, we enroll roughly 3,500 students on an annual basis in nearly 70 degree and certificate programs across the health professions and biomedical sciences. We seek to produce the next generation of healthcare leaders, including biomedical scientists, dental hygienists, dentists, medical laboratory scientists, nurse practitioners, nurses, occupational therapists, physical therapists, physician assistants, physicians, public health professionals, respiratory therapists, and speech-language pathologists.

Since its approval in 2018 by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC), the Quality Enhancement Plan (QEP) at UT Health San Antonio—*Linking Interprofessional Networks for Collaboration, or LINC*—has contributed to a proud tradition of institutional excellence by rapidly advancing campus-wide interprofessional education (IPE), defined as students from two or more professions learning about, from, and with one another to enable effective collaboration and improve health outcomes. Given the complexities of implementing IPE in a population of learners as large and heterogeneous as ours, we focused our QEP on developing first a university-wide infrastructure (Figure 1), then leveraging that infrastructure to increase IPE experiences for students, integrate the best of those IPE experiences into curricula, measure student IPE learning outcomes systematically, and share those outcomes with our peers through high-quality scholarship (Figure 2).

Figure 1. LINC Operating Model

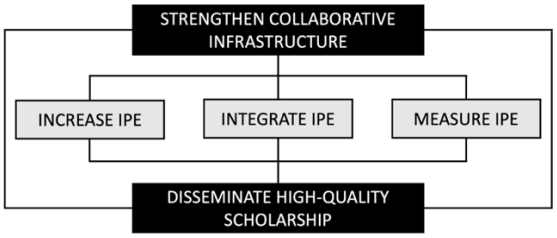
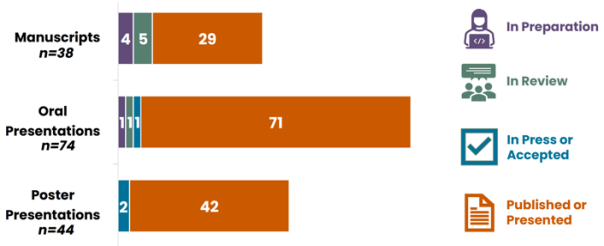


Figure 2. LINC Scholarship Summary (n=156)*



*Last updated December 30, 2023

Reflecting on five years of progress and the incredible productivity and impact evidenced in Figure 2, we believe the success of our approach is a replicable model for academic health centers to employ, including those accredited by SACSCOC. Importantly, several of the nation's leading educational organizations have validated this belief. For our work through LINC, for example, UT Health San Antonio and contributors to the QEP have been recognized with the following prestigious national awards:

- Association of Schools Advancing Health Professions (ASAHP): **2022 Award for Institutional Excellence and Innovation in Interprofessional Education and Collaborative Health Care**, recognizing the comprehensive scope of LINC's university-wide collaborative infrastructure, connection to institutional mission and culture, and commitment to outcomes assessment and scholarly dissemination;

- American Association of Colleges of Nursing (AACN): **2022 First Place Award** in the Quality Improvement and Evidence-Based Practice poster category, recognizing an analysis of student learning outcomes from the LINC Common IPE Experience—an annual university-wide IPE activity completed by roughly 1,000 students at the beginning of their educational programs; and,
- Interprofessional Education Collaborative (IPEC): **2023 Best Poster Award** in the Simulation IPE category, recognizing an analysis of student learning outcomes from the LINC Simulation IPE Experience—an annual university-wide IPE activity completed by roughly 1,000 students at/near the middle of their educational programs.

Initial Goals and Intended Outcomes of the QEP

The **primary intended outcome of the QEP was to develop a new university-wide collaborative infrastructure** to facilitate interprofessional connections, strategic partnerships, and idea exchange; forge consensus; catalyze innovation; and advance IPE models and knowledge through experimentation, robust project evaluation, and scholarly dissemination. This new entity—**the LINC Incubator**—was envisioned as a place where faculty and students would work communally to centralize common IPE experiences intended to develop students who are able to contribute to interprofessional teams; collaboratively introduce, reinforce, and assess the integration of IPE instruction and experiences through a coordinated and shared approach among all schools; provide faculty development and networking opportunities; and offer a recognition program for individuals who lead IPE efforts.

Once the LINC Incubator was developed, contributors would utilize the IPEC core competencies—the country's leading IPE competency framework—to (1) realign disparate IPE activities occurring throughout the institution's schools; (2) weave IPE activities throughout students' educational programs; (3) identify student learning outcomes and assessment strategies; (4) increase IPE knowledge and skills of faculty, students, and staff; and (5) advance the priorities and intended outcomes described in Table 1.

Table 1. Initial Priorities & Intended Outcomes

Deliverable	Description	Year 5 Intended Outcomes
LINC Incubator	See description above.	• Functional collaborative infrastructure with total investment of $2.036M
Database of IPE Activities & Opportunities	Centralized, online, multi-functional database for listing all approved IPE events/opportunities and managing faculty and student participants, including communications, check-in, impact management, data collection, and assessment.	• 25 approved IPE activities with 50%+ teaching faculty participation • 3,300+ students completing approved IPE activities annually
Assessment Tools	Set of tools to assess students' attainment of IPEC core competencies across Kirkpatrick's Four Levels of Evaluation.	• 4 approved IPE activities utilizing LINC assessment tools annually
Required IPE Training Video Modules	A series of online professional development training videos based on the IPEC core competencies.	• 25 training videos with 100% faculty and student completion
Seed Grants	Small grants for faculty and students to develop IPE activities that have a clear plan for sustainability and scholarship.	• 41+ seed grants awarded with total investment of $164,000+
IPE Symposium	Institution-wide IPE symposium hosted every other year to highlight IPE activities throughout the schools and programs that have demonstrated success.	• 700+ attendees (350+ students/350+ faculty) and 20+ IPE projects presented at each offering
Scholarly Productivity	Dissemination of scholarly products contributing knowledge of how best to develop high-performing healthcare teams.	• 20+ scholarly articles/posters submitted or presented

Changes Made Including Rationale

Change #1 — Refinement of Organizational Model

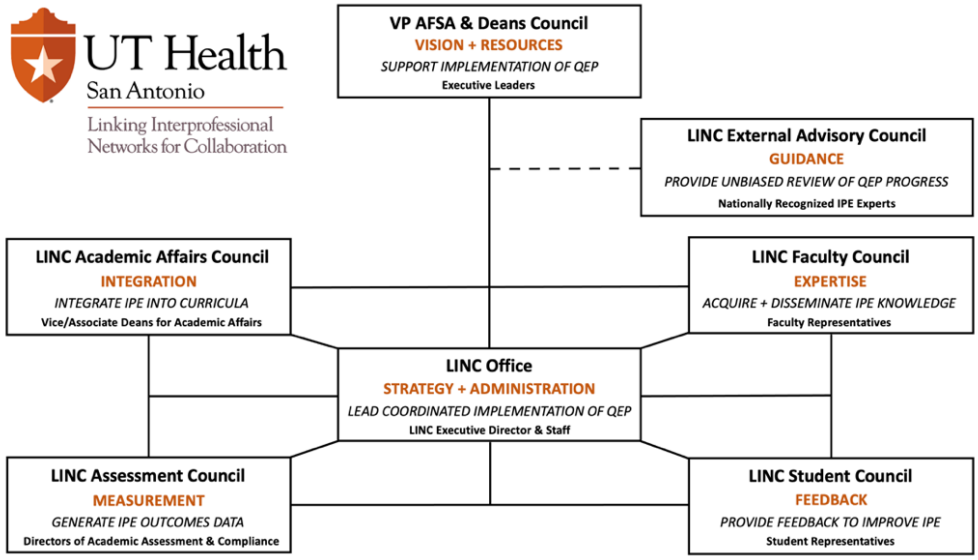
The initial organizational chart proposed for the LINC Incubator emphasized a small core team—a full-time LINC Director and an IPE Faculty Council comprised of five faculty representatives: one from each school contributing 0.2 FTE effort each—supported by internal and external partners, including the President's Office, Vice President for Academic, Faculty & Student Affairs (VP AFSA), Deans & Deans Council, Schools, Office of Institutional

Effectiveness/Institutional Research, Office of Student Life, Library, an External Review Committee, and the Texas IPE Task Force (now called the Texas IPE Consortium).

Early discussions across the LINC Incubator revealed a need to recruit and formally activate additional partners to achieve the goals and intended outcomes described above. For example, we identified academic deans as critical to realigning disparate IPE activities, providing common IPE experiences, and integrating IPE throughout educational programs. We recruited assessment specialists to optimize student learning outcomes measurement strategies through development of a coordinated program of assessment. The importance of formalizing students as essential partners within the LINC Incubator also emerged during early consensus-building discussions. To maximize impact—specifically related to increasing IPEC-based knowledge and skills—the IPE Faculty Council elected to organize their communal work using a "team of teams" structure. Each member would lead their own initiative comprised of faculty and staff recruited from all schools to increase IPE opportunities by directly developing, implementing, evaluating, and disseminating IPE innovations. A centralized LINC Office was identified as critical to coordinate across this growing list of stakeholders and teams.

The organizational model depicted in Figure 3 represents the resulting collaborative infrastructure of LINC, which now exceeds 80 individuals who contribute in a formal and recurring capacity. **VP AFSA & Deans Council** functions in an oversight capacity similar to an Executive Committee to ensure the QEP vision remains in focus over time and that resources are procured for success. This group of executive leaders signals institutional commitment to the UT Health San Antonio community and beyond. Nationally recognized IPE experts serving on the **LINC External Advisory Council** provide perspective, insights, and guidance through review of progress every 12-18 months, validating successful approaches, helping us redirect as appropriate, and lending credibility to our efforts.

Figure 3. LINC Organizational Model



The **LINC Office** establishes strategy, facilitates interprofessional connections and partnerships, coordinates idea exchange, forges consensus, aligns efforts, and provides support across four LINC Councils that collectively represent the nucleus of our IPE incubator. The **LINC Academic Affairs Council** (AAC) is responsible for integrating IPE into curricula/program requirements and functions like a steering committee for strategic and annual planning. Primary responsibility for increasing IPE rests within the **LINC Faculty Council** and its associated Initiatives, which collectively work to advance in-person and virtual IPE for students based in classroom, simulation, clinical, and co-curricular settings, as well as IPE- and teamwork-related professional development for faculty, staff, post-doctoral trainees, and clinical scholars. The **LINC Student Council** provides feedback to improve the quality of IPE programming and also leads targeted university-wide efforts to increase IPE opportunities for students and faculty, including the IPE Symposium. The **LINC Assessment Council** is responsible for generating, analyzing, and reporting university-wide IPE student learning outcomes.

Change #2 — Adoption of Health Professions Accreditors Collaborative National Guidance

In 2019, just a few months after the QEP was approved, the Health Professions Accreditors Collaborative (HPAC) and National Center for Interprofessional Practice and Education published *Guidance on Developing Quality Interprofessional Education for the Health Professions*. Comprised of accrediting bodies in the health professions, 24 HPAC members—including the accrediting bodies that regulate educational programs in our Long School of Medicine and Schools of Dentistry, Health Professions, and Nursing—endorsed an expanded definition of IPE that emphasizes "active participation and the exchange of information between learners of different professions" in synchronous, co-located environments. HPAC also recommended that each educational program develop an IPE plan—described as a program-level strategic plan to not only meet profession-specific IPE accreditation mandates, but also to signal to internal and external partners where opportunities for interprofessional collaboration might exist. HPAC recommended that IPE plans include four components:

1. **Rationale:** articulates a vision, framework and justification;
2. **Outcome-based Goals:** stated in terms that will allow the assessment of students' achievement of objectives and interprofessional competencies for collaborative practice;
3. **Deliberate Design:** intentionally designed and sequenced series of classroom, extracurricular, and clinical learning activities integrated into the existing professional curriculum and longitudinal in nature, spanning the entire length of the program; and
4. **Assessment and Evaluation:** methods to assess individual learners' mastery of interprofessional competencies and to evaluate the IPE plan for quality improvement purposes.

HPAC endorsed the IPEC core competencies for outcome-based goal setting and development of assessment/evaluation strategies, making their recommendations a natural fit to advance QEP goals and outcomes. They also endorsed the 2015 Institute of Medicine (IOM) Interprofessional Learning Continuum (IPLC) Model for assessment/evaluation, which includes a modified version of Kirkpatrick's Four Levels of Training Evaluation with IPE student-focused learning outcomes progressing from learners' reactions (level 1) and modification of attitudes/perceptions (level 2a) to acquisition of knowledge/skills (level 2b) and behavior change (level 3).

The LINC AAC adopted HPAC's recommendations in 2019 as a roadmap to achieve QEP goals focused on increasing, integrating, and measuring IPE. **As a result, the LINC AAC spearheads the annual development and approval of 12 IPE plans across UT Health San Antonio**; one for each educational program regulated by an HPAC accreditor, plus one for all educational programs in our Graduate School of Biomedical Sciences. Operationalizing the HPAC guidance has led to the creation of new IPE infrastructure in many schools; for example, formal, bylaw-driven IPE standing committees, curriculum and assessment IPE sub-committees, and IPE task forces. All IPE plans utilize a template that emphasizes HPAC's expanded definition of IPE and include two key features: (1) mutually agreed upon university-wide IPE experiences led/managed by LINC, around which more targeted IPE activities led/managed by the schools/programs are aligned, and (2) a mutually agreed upon university-wide assessment strategy based on the IOM IPLC model to be developed and administered by the LINC Assessment Council. Each year, the LINC AAC creates an annual workplan with priorities based on assessment of progress and analysis of synergies and opportunities across newly updated and approved IPE plans.

The decision to endorse the HPAC guidance led to our full embrace of HPAC's expanded definition of IPE and their recommendation to invest authority over IPE-related decisions with school/program leaders. As a result, we made two major revisions in QEP deliverables. First, we redirected resources from production of training videos intended to be completed in isolation to the development of IPE activities, programs, and projects intended to be completed synchronously by interprofessional learners. Additionally, we reimagined the database of IPE activities and opportunities as an online, up-to-date, searchable catalogue of all known IPE activities at UT Health San Antonio. Instead of centralizing authority and oversight within LINC for the vetting, approval, management, and data collection associated with all IPE activities at UT Health San Antonio, individual schools/programs would retain such responsibilities for the more targeted IPE activities led by their faculty/staff. LINC would retain authority and oversight for the development, implementation, evaluation, and dissemination of all foundational university-wide IPE activities conceptualized within the incubator.

Change #3 — Integrating Virtual Learning and Collaboration into Large-Scale IPE and Assessment

Changes #1 and #2 were initiated prior to the COVID-19 pandemic while the LINC Incubator as a physical environment was taking shape. A fixed location within our library was secured, which included a reception area, two private offices, two conference rooms, and communal space capable of accommodating several workstations. Frequent in-person collaboration yielded substantive progress—most notably consensus to include within all IPE plans a university-wide IPE experience that would impact approximately 1,000 first-year students annually and a university-wide assessment strategy that would include roughly 3,000 students annually.

While the pandemic briefly disrupted activity, including the cancellation of our inaugural LINC IPE Symposium in March 2020, the relationships formed in the early months of LINC's development proved consequential to continued progress. Stakeholders stayed connected to their LINC Councils and teams and renewed all pre-pandemic commitments. Given the "new normal" of masking, social distancing, and virtual learning and collaboration—coupled with the uncertainty of how long such changes would persist—all previously planned in-person LINC activities for students, faculty, and staff were changed to virtual and substantial investments of time, effort, and resources were made to ensure their success. Considering the quality of virtual collaborations and the positive learning outcomes described in the next section of this report, the scale of which would have been impossible to achieve otherwise, we have elected to maintain virtual learning and collaboration as our primary mode of operation.

Impact on Student Learning and Intended Outcomes

The refined LINC organizational model, coupled with our shift to virtual learning and collaboration, generated positive student learning outcomes on a scale that far exceeded our initial QEP goals and intended outcomes. The large-scale LINC IPE activities described in this section serve as a unifying foundation at UT Health San Antonio. For some programs, this foundation is sufficient to address profession-specific accreditation mandates for IPE. Others, however, augment this foundation with smaller-scale, more targeted IPE activities to ensure their professional accreditation mandates for IPE are adequately addressed. Similarly, all 12 IPE plans include a unifying, robust assessment strategy that exceeds initial QEP goals and intended outcomes.

IPEC-Derived Student Learning Outcomes

LINC Common IPE Experience
Large-scale, foundational LINC IPE activities leverage the IPEC core competencies to identify student learning outcomes and assessment strategies in accordance with our initial QEP goals. For example, the LINC Common IPE Experience for first-year students—developed in spring/summer 2020 and implemented each fall since—is a series of online modules completed by interprofessional groups of 3-4 students in a synchronous, self-directed manner (977 students in 2020; 1,041 in 2021; 1,057 in 2022; 1,134 in 2023). The LINC Faculty Council designed the modules to achieve five prospectively selected student learning outcomes based on the following IPEC sub-competency statements:

- **Teams & Teamwork:** (1) Describe the process of team development and the roles and practices of effective teams; (2) Reflect on individual and team performance for individual, as well as team, performance improvement; (3) Use available evidence to inform effective teamwork and team-based practices; and,
- **Interprofessional Communication:** (1) Listen actively, and encourage ideas and opinions of other team members; (2) Use respectful language appropriate for a given difficult situation, crucial conversation, or conflict.

The LINC Faculty Council opted for a design that minimized direct faculty facilitation to account for complexities associated with the pandemic. Students, including members of the LINC Student Council, served as pilot testers during the design phase and their feedback—including on a validated student engagement survey and in focus group sessions—was used to make substantive improvements prior to the inaugural university-wide launch in fall 2020. The LINC Assessment Council developed the assessment strategy informed by the selected IPEC sub-competency statements. Table 2 provides examples from 2020-2022 of how IPEC-inspired student learning outcomes data have been derived for quality improvement purposes (final analyses from 2023 are pending). Italicized language links directly to IPEC sub-competency statements selected as outcome-based goals.

Table 2. Examples of IPEC-Derived LINC Common IPE Experience Student Learning Outcomes, 2020-2022[a]

Evaluation Item[b]	Mean (Std Dev)		
	2020 [n=890]	2021 [n=966]	2022 [n=1024]
The LINC Common IPE Experience helped me understand the *process of team development*.	4.39 (.93)	4.33 (.99)	4.30 (.97)
I learned valuable information about *roles and practices of effective teams* by participating in the LINC Common IPE Experience.	4.43 (.91)	4.35 (.99)	4.33 (.96)
The LINC Common IPE Experience provided opportunities for me to *reflect on how to improve individual and team performance*.	4.45 (.86)	4.36 (.94)	4.38 (.92)
Completion of the LINC Common IPE Experience improved my ability to *use available evidence to inform effective teamwork and team-based practices*.	4.35 (.93)	4.28 (1.02)	4.29 (.97)
I was able to practice communication skills during the interprofessional socialization activity (e.g., *active listening, using respectful language, and encouraging others to share opinions*).	4.48 (.90)	4.47 (.91)	4.49 (.84)

Notes. [a]Response rates for each year: 2020, 91% (890/977); 2021, 93% (966/1041); 2022, 97% (1024/1057). [b]All IPEC-derived items shown—rated on a 5-point Likert response scale from 1=Strongly Disagree to 5=Strongly Agree—were selected from the cumulative evaluation except for the last item, which is a recurring item across all modules. Data presented here are from module 3.

Aligned with our goal to disseminate high-quality scholarship, leaders of the LINC Common IPE Experience published a detailed description in the *Journal of Allied Health* that includes teaching and learning strategies, case studies, and full assessment data: **Quinene M, Berndt A, Moote R, Farokhi MR, Ford LA, Krolick KA, Ratcliffe TA, Blankmeyer B, Johnson LD, Zorek JA. Innovation in collaborative online learning yields sustainable model for university-wide interprofessional education. *J Allied Health.* 2023;52(1):16-23.**

Demonstrating Schools' and Programs' Adoption of IPE as a Strategic Priority
All outcome-based goals listed within the 12 annually approved IPE plans are directly based on the IPEC core competencies. Most schools/programs identify desired goals by mapping IPEC sub-competency statements against their program-specific IPE accreditation mandates and/or other profession-specific student expectations (e.g., Entrustable Professional Activities used in the Long School of Medicine). On an annual basis, the LINC AAC studies the 12 IPE plans, exploring the diversity of IPE activities offered and generating a university-wide map of IPEC sub-competency statements covered in order to identify opportunities for quality improvement. In 2022, this process led to the following priority, which represents a prime example of using LINC's collaborative infrastructure to weave IPE activities throughout students' educational programs while increasing knowledge and fostering skills from the IPEC core competencies:

> *"Leverage LINC's infrastructure to initiate development of a longitudinal series of IPE activities intended for all students that progresses along a continuum of learning from basic to intermediate to advanced; for example, from the LINC Common IPE Experience to an IPE simulation to an IPE activity within a clinical learning environment."*

LINC Longitudinal IPE Program
A new LINC team was formed in 2022 to develop, implement, and evaluate—using the same IPEC-driven process described above for the LINC Common IPE Experience—a university-wide simulation IPE activity for students at/near the middle of their respective educational programs. Simultaneously, an existing LINC team was chosen to do the same for a university-wide clinical IPE activity for students at/near the end of their respective educational programs. The LINC Simulation IPE Experience was piloted in fall 2022 and successfully launched university-wide in spring 2023 for 769 students. The LINC Clinical IPE Experience was successfully piloted in spring/summer 2023 and began its university-wide launch in winter/spring 2024. Once fully implemented, these three IPE activities for learners at the beginning, middle, and end of their respective educational programs will reach 2,500+ students annually and will represent, using HPAC parlance, the backbone of each IPE plan's "intentionally designed and sequenced series" that is "longitudinal in nature, spanning the entire length of the [educational] program."

LINC Simulation & Clinical IPE Experiences
The collaborative infrastructure of LINC was successfully used to forge university-wide consensus regarding the purpose, IPEC-derived outcome-based goals, and general pedagogical design elements for the newly envisioned simulation and clinical IPE experiences. Once consensus was reached, teams were empowered to lead efforts with

coordination assistance from the LINC Office and assessment support from leaders within the LINC Assessment Council. Table 3 includes italicized language that links directly to IPEC sub-competency statements selected as outcome-based goals for each of these university-wide IPE activities. To imbue the longitudinal program with a sense of consistency and cohesion, the duration of experience and teaching tools were aligned with the LINC Common IPE Experience. For example, innovative interprofessional case studies pioneered during the LINC Common IPE Experience were carried throughout, leading to the following high-impact publications: (1) **Velasquez ST, Cleveland J, Diaz DO, Ferguson D, Moote R, Parke K, Piernik-Yoder B, Folz G, Zorek JA. A hidden crisis. *N Engl J Med.* 2022;387(13):1157-1159**; and (2) **Ratcliffe TA, Kennedy A, Moote R, Riccio Leach E, Vives M, Folz G, Zorek JA. How to use illustrated storytelling for interprofessional teaching and learning. *Clin Teach.* 2023;e13618**.

Table 3. Examples of IPEC-Derived LINC Simulation and Clinical IPE Experience Student Learning Outcomes, 2023

Evaluation Item	Mean (Std Dev)
LINC Simulation IPE Experience	
I learned how to *engage with others in shared patient-centered problem solving*.[a]	4.21 (1.02)
I learned how to *constructively manage disagreements about values, goals, roles, and actions that can arise between health professionals and patients, their families, and members of the community*.[a]	4.09 (1.08)
During the team planning meeting, I used *effective communication tools and techniques to facilitate our discussion and enhance our team functioning*.[b]	4.53 (.82)
During the standardized caregiver simulation, I took an active role in setting the stage, *building trust, communicating, being patient-centered and avoiding barriers*.[b]	4.45 (.90)
The LINC Simulation IPE Experience helped me *understand the need for effective interprofessional teamwork to inform healthcare plans and decisions*.[c]	4.34 (1.00)
LINC Clinical IPE Experience[d]	
The LINC Clinical IPE Experience demonstrated the importance of using *process improvement methods* (e.g., root cause analysis, fishbone diagrams, etc.) *to increase the effectiveness of interprofessional teamwork.*	4.57 (0.62)
I have a better understanding of the importance of *individual and team performance improvement* after participating in the LINC Clinical IPE Experience.	4.43 (0.82)
The LINC Clinical IPE Experience helped me recognize how *unique qualities of team members strengthen effective interprofessional communication, conflict resolution, and working relationships*.	4.54 (0.68)
The LINC Clinical IPE Experience helped me understand how utilizing the *unique knowledge, skills, and abilities of interprofessional team members optimizes patient care*.	4.57 (0.68)

Notes. Response rates for simulation IPE module 1 assessment items[a], 91% (701/769); module 2[b], 81% (619/769); cumulative evaluation[c], 80% (615/769). [d]Items shown for clinical IPE are from the cumulative evaluation of the pilot, which had a response rate of 74% (28/38).

Modified Kirkpatrick Model-Derived Student Learning Outcomes

To augment IPEC-derived student learning outcomes connected to specific IPE activities and support uniform assessment and evaluation across all 12 IPE plans at UT Health San Antonio, the LINC Assessment Council developed the university-wide LINC Core IPE Measurement Plan in concert with the LINC AAC. Since academic year (AY) 2021-2022, the four valid and reliable instruments listed in Table 4 have been administered to all students covered by IPE plans—unless exempted—at/near educational program entry, mid-point, and exit.

Table 4. Description of LINC Core IPE Measures

Measure	Kirkpatrick's Level	Tool & Brief Description
A [Entry]	Level 1 • Reactions	Interprofessional Reactions Tool (IPRT) • 6 items across 3 sub-scales (Preparation; Relevance; Importance)
B [Mid]	Level 2a • Attitudes/Perceptions	Student Perceptions of Interprofessional Clinical Education–Revised, v2 (SPICE-R2) • 10 items across 3 sub-scales
	Level 2b • Knowledge/Skills	Interprofessional Education Collaborative Competency Self-Assessment Tool, v3 (IPEC-3) • 16 items across 2 sub-scales
C [Exit]	Level 1 • Reactions	Interprofessional Reactions Tool (IPRT) • 9 items across 4 sub-scales (Preparation; Relevance; Importance; Satisfaction)
	Level 3 • Behaviors	Interprofessional Collaborative Competency Attainment Scale–Revised (ICCAS-R) • 20 items across 6 sub-scales plus 1 item assessing change in overall ability to collaborate

The IPRT is administered as a traditional pre-/post-test, while SPICE-R2, IPEC-3, and ICCAS-R are administered as retrospective pre-/post-tests; meaning, each tool is administered once and students rate each item using two reference points: "before you started your program" and "right now." Aggregate pre-post IPRT results continue to accrue, as several educational programs are 3-4 years in length. However, 83% (849/1027) of exiting students administered IPRT in AY 2022-2023 rated IPE to be relevant (4.22 ± .92 [out of 5.0]) and important (4.56 ± .74), with overall IPE satisfaction at UT Health San Antonio rated high (3.98 ± 1.08). Table 5 shows statistically significant positive change ranging in effect size across sub-scales from small to very large for SPICE-R2, IPEC-3, and ICCAS-R. Total instrument scores demonstrate a positive and progressively increasing impact of IPE programming on modified Kirkpatrick-level outcomes, including 84% (788/939) of exiting students administered ICCAS-R who rated their overall ability to collaborate as improved (4.25 ± .79 [out of 5.0]).

Table 5. Aggregate Results from LINC Core IPE Measures, Academic Year 2022-2023

UT Health Aggregate	BEFORE Program Start			RIGHT Now			
SPICE-R2 Sub-scales & Total [N=838]	**Mean**	**SD**		**Mean**	**SD**	***t (p)***	***Cohen's d***
Patient Outcomes (range: 3-15)	12.17	2.22		13.10	2.13	-16.31 (*)	**.43**
Roles/Responsibilities (range: 3-15)	10.94	2.57		12.48	2.34	-20.71 (*)	**.63**
Teamwork/Team-Based Practice (range: 4-20)	16.11	3.15		17.09	3.50	-10.73 (*)	**.29**
SPICE-R2 Total Score (range: 10-50)	39.23	6.72		42.67	7.01	-17.85 (*)	**.50**
IPEC-3 Sub-scales & Total [N=838]							
Interprofessional Interactions (range: 8-40)	31.42	6.64		35.21	5.51	-21.08 (*)	**.62**
Interprofessional Values (range: 8-40)	34.43	5.85		36.83	5.19	-16.57 (*)	**.43**
IPEC-3 Total Score (ranges: 16-80)	65.85	11.90		72.04	10.39	-19.96 (*)	**.55**
ICCAS-R Sub-scales & Total [N=788]							
Collaboration (range: 3-15)	8.91	2.76		11.79	2.40	-30.25 (*)	**1.11**
Communication (range: 5-25)	15.14	4.22		19.48	3.70	-31.22 (*)	**1.09**
Conflict Management/Resolution (range: 3-15)	9.62	2.69		12.10	2.37	-27.69 (*)	**.98**
Patient/Family Centered Approach (range: 3-15)	8.80	2.81		11.96	2.35	-31.56 (*)	**1.22**
Roles/Responsibilities (range: 4-20)	12.10	3.59		15.80	3.08	-29.98 (*)	**1.11**
Team Functioning (range: 2-10)	5.78	1.96		7.77	1.65	-29.07 (*)	**1.10**
ICCAS-R Total Score (range: 20-100)	60.35	16.59		78.91	14.51	-32.58 (*)	**1.19**

Note. All tools utilize a 5-point Likert response scale from 1=Strong Disagree to 5=Strongly Agree. Dependent t-tests were performed to compare "Before" and "Right Now" mean scores; * = $p < .001$. Cohen's d represents magnitude of differences (i.e., effect size) between "Before" and "Right Now" subscale and total mean scores with larger values representing greater differentiation. Effect sizes were interpreted using benchmarks suggested by Cohen (1988): **Small (d = 0.2)**, **Medium (d = 0.5)**, **Large (d = 0.8)**, and **Very Large (d = 1.00)**.

We anticipate that this pattern of progressively increasing positive impact on modified Kirkpatrick model-derived student learning outcomes demonstrated through SPICE-R2, IPEC-3, and ICCAS-R—and overall IPE satisfaction measured using IPRT—will strengthen as the LINC Longitudinal IPE Program matures alongside an ever-increasing number of profession-specific IPE activities offered at UT Health San Antonio (see *LINC Seed Grant Program* and *LINC IPE Activity Repository* below).

Comparison of Year 5 Intended Outcomes Versus Actual Outcomes

LINC Incubator

Developing the collaborative infrastructure of the LINC Incubator was the primary intended outcome of our QEP, through which we planned to pursue all initial goals and secondary intended outcomes at a total investment of $2.036M. As evidenced throughout this report, the LINC operating and organizational models have effectively facilitated interprofessional connections, strategic partnerships, and idea exchange; forged consensus; catalyzed innovation; and advanced IPE models and knowledge through experimentation, robust project evaluation, and scholarly dissemination. In addition to the national awards described in the Overview section, we have also delivered numerous invited presentations that have further affirmed LINC as a national model—a veritable "IPE Institution" among health professions institutions—including two IPEC Faculty Development Institute panel presentations detailing how we transformed the vision of the QEP into sustained institutional excellence. The quality, impact, and scale of our successes would not have been possible without the university-wide collaborative infrastructure of the LINC Incubator. In terms of budget, we have invested $2.239M during these five years of

effort—direct university expenditures totaling $1.439M plus in-kind contributions from the schools estimated at $800,000.

Scholarly Productivity
The original QEP intention was to submit or present 20+ scholarly articles/posters by the end of year five. As described in the Overview section, we built this goal into our operating model (Figure 1), essentially embedding it as a final step in the cyclical continuous quality improvement approach for all LINC Councils and teams established to either increase, integrate, or measure IPE. The result of this intentional effort has been impressive, yielding 29 published manuscripts and 113 delivered presentations to date (Figure 2). Two high-profile national publications—both resulting from invitations to partner with IPEC—are worth noting here in addition to the other citations included in this report. Our experiences at UT Health San Antonio building the LINC Incubator and pursuing intended QEP outcomes directly impacted and influenced these works: (1) **Zorek JA, Ragucci KR, Eickhoff J, et al. Development and validation of the IPEC Institutional Assessment Instrument. *J Interprof Educ Practice*. 2022;29:100553**, and (2) the **IPEC Core Competencies for Interprofessional Collaborative Practice: Version 3**, published November 2023 (https://www.ipecollaborative.org/2021-2023-core-competencies-revision). A full list of LINC citations is available at https://wp.uthscsa.edu/linc/linc-scholarship/.

LINC Seed Grant Program
The original QEP intention was to fund 41+ IPE projects with a total investment of $164,000+ by the end of year five. The LINC Faculty Council designed this program to leverage hypothesis-driven research to identify sustainable IPE activities for integration into educational programs, increase scholarly dissemination of IPE efforts, and use pilot data to secure extramural funding. Over five funding cycles (2019-2023), 48 proposals were submitted and a total of $125,456 was awarded to support 27 IPE projects (11 curricular, 16 co-curricular) involving 95 investigators (93 faculty/staff, 2 students) and 2,500+ student participants. To date, completed projects from the 2019-2022 cycles have yielded 12 sustained IPE activities (six of which have been integrated into curricula/program requirements), produced 26 scholarly presentations and 4 peer-reviewed publications, and contributed to the success of 2 extramural grants. For a more detailed description of the program and its impact on the university, please see: **Kar R, Moote R, Krolick KA, Farokhi MR, Ford LA, Quinene M, Ratcliffe TA, Rockne M, Zorek JA. A university-wide seed grant program accelerates interprofessional education through faculty and staff engagement. *J Interprof Care.* 2023. Online ahead of print.**

LINC IPE Activity Repository
The original QEP intention was to develop a centralized, online, multi-functional database that would include—by the end of year five—25+ IPE activities approved by LINC that 3,300+ students would participate in annually. As described in Change #2, adoption of HPAC recommendations led to a reimagined LINC IPE Activity Repository. This repository currently houses 48 IPE activities aligned using the IPEC core competencies (22 curricular, 26 co-curricular), of which 73% (35/48) are active. Faculty/staff leaders report an estimated number of students who participate each year in their active IPE activities. Currently, this amounts to 3,200+ students annually. The repository can be accessed at https://wp.uthscsa.edu/linc/linc-ipe-activity-repository/.

LINC IPE Symposium
The original QEP intention was to host a university-wide symposium every other year culminating in year five with 700+ attendees (350+ students/350+ faculty) and 20+ IPE project presentations. The LINC Student Council leads this effort and has hosted an annual symposium since 2022 featuring keynote speakers, faculty- and student-led IPE activities, and encore IPE presentations by LINC Councils and teams. The inaugural symposium featured 18 IPE project presentations and included 263 registered participants (203 students, 60 faculty/staff). The 2023 symposium featured 19 IPE project presentations and included 596 registered participants (357 students, 239 faculty/staff). Agendas, speakers, and presentations from each symposium can be accessed at https://wp.uthscsa.edu/linc/linc-ipe-symposium-2/.

LINC Faculty & Staff Development Programming
As described in Change #2, our embrace of HPAC's expanded definition of IPE led us to redirect resources away from production of faculty development training videos. In their place, we deliver 3-5 hours of didactic instruction to faculty and staff annually with a focus on IPE activity development. To date, 163 UT Health San Antonio

faculty/staff have participated. Similarly, we launched an IPE writers' workshop for faculty and staff to encourage dissemination of peer-reviewed manuscripts and we have had 26 participants to date. LINC Faculty & Staff Development programming has served as an important onramp to the LINC Seed Grant Program.

Institutional Lessons Learned

It would be difficult to overstate the sense of pride we feel at UT Health San Antonio as we reflect on our journey executing a well-developed QEP with a level of professionalism and seriousness that has elevated us to national recognition within health professions education. We have thought long and hard about the lessons learned along the way, and have distilled these into the following succinct list that, we hope, will help SACSCOC-accredited institutions succeed in their QEP endeavors, regardless of whether they are specifically focused on IPE:

- **Institutional commitment** to IPE is essential for progress and success, including highly visible projections to the campus community (e.g., inclusion in strategic plans and mission/vision statements, active participation of university leaders) alongside more subtle, less visible demonstrations (e.g., political alignment across schools/programs, budgetary support). We leveraged the synergy of SACSCOC Standard 7.2/QEP and program-specific accreditation requirements to affirm our institutional commitment.
- **Strong interprofessional relationships** within and across LINC Councils and teams is a signature part of our success. Such relationships have engendered a sense of commitment to a common cause that is bigger than any individual, program, or school. Regular engagement of LINC Councils and teams—whether in-person or virtual—has proven paramount to maintaining strong interprofessional relationships.
- **Centralized collaborative infrastructure** that includes representatives from all schools who collectively span the traditional academic hierarchy—administrative leaders, faculty, staff, and students—is essential to build strong interprofessional relationships, forge consensus, implement large-scale IPE and assessment in a uniform manner, and consolidate gains for sustainability. This lesson is particularly salient during periods of transition, both expected (e.g., leadership transitions, faculty/staff retirements, students' graduations) and unexpected (e.g., abrupt faculty/staff career changes). Our experience indicates that physical space in a fixed location is not required for centralized collaborative infrastructure to succeed.
- Generating **meaningful opportunities for faculty and staff to advance their individual careers** by engaging within and committing to the institutional IPE effort as a service to the university is critical. Activities that support faculty members' academic rank promotions (e.g., peer-reviewed scholarship, public recognition, internal and external awards, grant funding, etc.) proved to be highly motivating incentives to advance IPE through, and maintain commitment to, LINC.
- **Succession planning for key personnel** is aided by strong IPE programming that motivates faculty engagement. In our experience, the LINC Seed Grant Program has served this purpose, producing an unexpected outcome whereby past seed grant recipients have stepped into vacated or new leadership roles within LINC.
- To maximize the impact of one-time funding designed to increase IPE, such as through the LINC Seed Grant Program, school/program leaders must have an opportunity to vet proposals and indicate **long-term support** (i.e., willingness to assume associated costs beyond the initial offering). Our experience indicates that, absent such support, it is difficult to sustain new IPE offerings.
- The **IPEC core competencies** are a powerful tool for positive institutional change. We were able to effectively leverage the IPEC core competencies to realign disparate IPE activities, and to ground the development of learning objectives and student learning outcomes assessment strategies for new IPE activities. University-wide embrace of the IPEC core competencies allowed us to map institutional coverage, which was helpful to identify areas of strength as well as opportunities for future growth.
- Adopting the **HPAC guidance** as a roadmap to integrate IPE activities and assessment strategies into educational programs proved consequential to our success. Empowering schools/programs to align their individual commitments to IPE within a profession-specific context (e.g., accreditation mandates, professional competencies/expectations) illuminated areas of university-wide consensus that otherwise would not have emerged; the LINC Longitudinal IPE Program and LINC Core IPE Measurement Plan are prime examples.