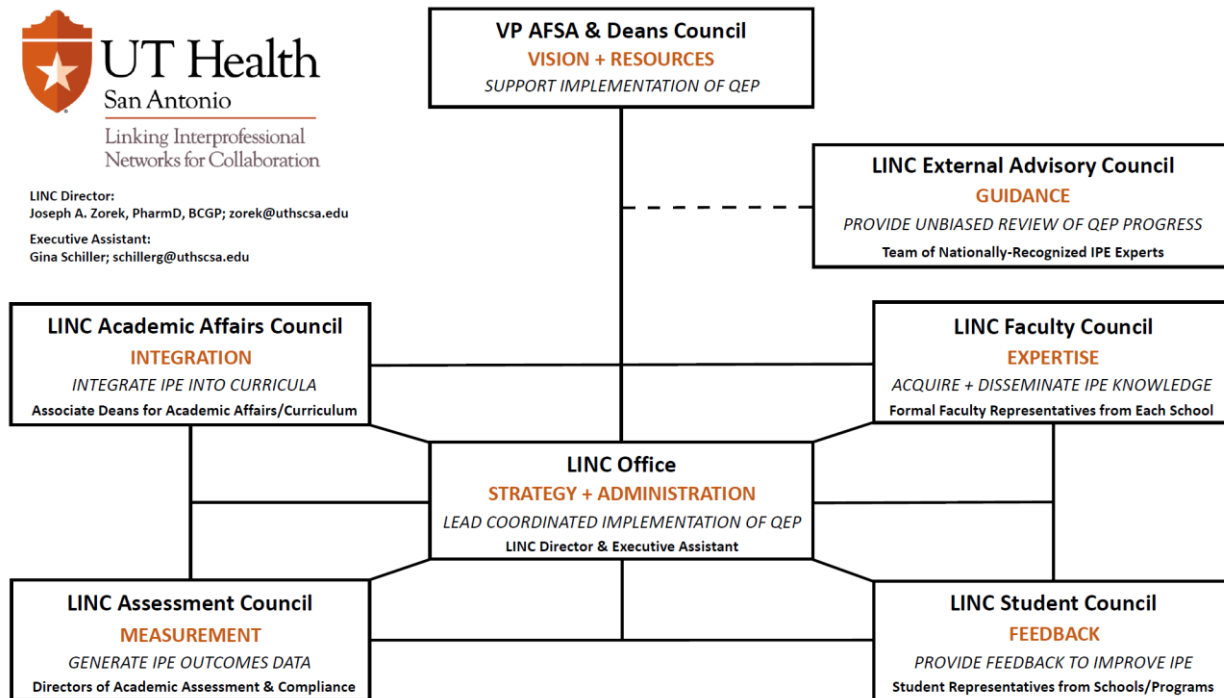


**BACKGROUND**

UT Health San Antonio’s Strategic Vision for fiscal years 2018-2022 identifies Teamwork & Collaboration as a core value, and it also highlights strengthening interprofessional team-based learning opportunities across the organization as a key strategy. The Quality Enhancement Plan (QEP), *Linking Interprofessional Networks for Collaboration (LINC)*, is an institution-wide effort to advance our Strategic Vision by enhancing interprofessional education (IPE) at UT Health San Antonio. The QEP is a requirement for institutional accreditation through the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC). Furthermore, integration of IPE into programs’ curricula is a requirement of many accrediting bodies with regulatory oversight of programs at UT Health San Antonio. Successful implementation of the QEP, therefore, cannot be understated. The QEP/LINC organizational structure is presented in Figure 1 below. Various LINC Council’s were formed with careful consideration regarding requisite stakeholders necessary to achieve the primary goals of the QEP, listed below:

- (1) Increase faculty, student, and staff knowledge and foster skills from the shared IPE framework to create an environment that reinforces the value of interprofessional patient care delivery; and,
- (2) Demonstrate schools’ and programs’ adoption of IPE as a strategic priority through increased instruction and activities integrated into programs’ pre-clinical/pre-licensure encounters coupled with increasing opportunities for student IPE experiences across the institution.

**Figure 1. QEP/LINC Organizational Structure Demonstrating Coordinated Effort to Achieve Institutional Goals**



The LINC Academic Affairs Council is composed of the Associate Deans for Academic Affairs or Curriculum across all five schools, and it was organized to achieve QEP goal #2; specifically, to integrate IPE into programs' curricula. To achieve these goals, the Associate Deans on this Council are leading the development of program-specific IPE plans within their schools in accordance with the recently released consensus national guideline developed by members of the Health Professions Accreditors Collaborative and the National Center for Interprofessional Practice and Education (HPAC, 2019). This guideline calls for the creation of program-specific IPE plans that include the following four characteristics:

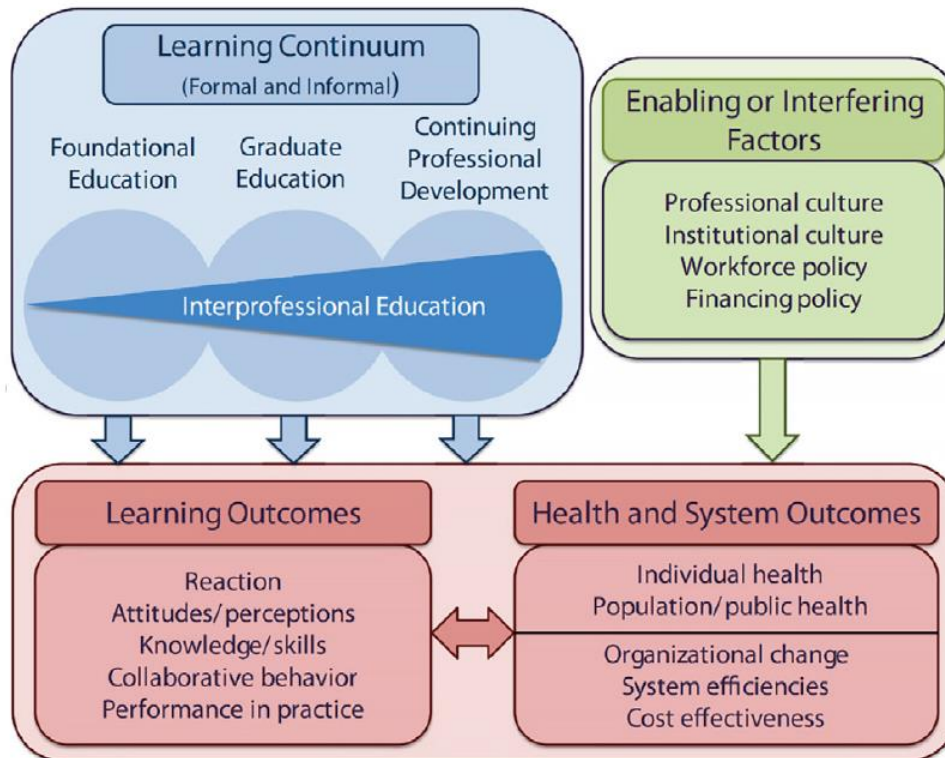
- (1) Rationale: Articulates a vision, framework, and justification for the IPE plan;
- (2) Outcome-based Goals: Stated in terms that will allow the assessment of students' achievement of objectives and interprofessional competencies for collaborative practice;
- (3) Deliberate Design: Intentionally 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 including content and instructional formats appropriate to the level of the learner and to the outcome-based goals; and
- (4) Assessment and Evaluation: Methods to assess individual learners' mastery of interprofessional competencies and to evaluate the IPE plan for quality improvement purposes; and if appropriate, education and practice outcomes research and scholarship.

The final characteristic of IPE plans resonates strongly with UT Health San Antonio's QEP, which places a premium on measuring student learning outcomes in order to evaluate quality and make refinements to IPE activities and programmatic approaches. Importantly, the QEP also aligned with two additional features endorsed by HPAC; specifically, the Interprofessional Education Collaborative Core Competencies for Interprofessional Collaborative Practice and Kirkpatrick's learning outcomes (IPEC, 2016; IOM, 2015). The IPEC competencies formed the basis of the QEP's shared framework (Table 1), while a modified version of Kirkpatrick's model, embedded in the Institute of Medicine's Interprofessional Learning Continuum Model (Figure 2) has emerged as best practice throughout the field of IPE.

**Table 1. Shared IPE Framework at UT Health San Antonio**

IPEC Competency	Description
<b>Values/Ethics for Interprofessional Practice</b> <i>(10 VE Sub-competencies)</i>	Work with individuals of other professions to maintain a climate of mutual respect and shared values
<b>Roles/Responsibilities</b> <i>(10 RR Sub-competencies)</i>	Use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of patients and to promote and advance the health of populations.
<b>Interprofessional Communication</b> <i>(8 CC Sub-competencies)</i>	Communicate with patients, families, communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment of disease.
<b>Teams and Teamwork</b> <i>(11 TT Sub-competencies)</i>	Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population-centered care and population health programs and policies that are safe, timely, efficient, effective, and equitable.

**Figure 2. Institute of Medicine’s Interprofessional Learning Continuum Model**



The LINC Assessment Council consists of experts in assessment, evaluation, and compliance from all five schools at UT Health San Antonio (Table 2). This Council was formed to support achievement of QEP goals through measurement of IPE learning outcomes. The production of valid and reliable IPE outcomes data is essential to not only understand the impact of interprofessional learning, but also to support faculty efforts to refine and strengthen approaches to IPE instruction and the IPE learning environments they create. It is for this reason that IPE Assessment and Evaluation was identified as a vitally important component of IPE plans recommended by HPAC and the National Center. Furthermore, robust data are also required for QEP/LINC reporting to SACSCOC and for program-level reporting to national accrediting bodies. Importantly, stakeholders within the QEP/LINC project aspire to elevate the stature of UT Health San Antonio through IPE research and scholarly activities, and an intimate understanding of IPE assessment and evaluation is essential to maximize opportunities through such endeavors.

**Table 2. Members of the LINC Assessment Council**

Name*	Title	UT Health San Antonio Affiliation
Dr. Debbie Chang	Director, Curriculum Evaluation	Long School of Medicine
Ms. Anne Delgado	Senior Associate Registrar	Office of the Registrar
Dr. Dana English	Assistant Dean for Education and Faculty Development	School of Dentistry
Dr. Jeff Jackson	Director, Curriculum Evaluation	Long School of Medicine
Ms. Nancy Jones	Director, Academic Assessment & Compliance	Graduate School of Biomedical Sciences

Dr. Venessa Kodosky	Associate Director, Academic Assessment & Compliance	School of Health Professions
Mr. Pablo Martinez	Director, Academic Assessment & Compliance	School of Nursing
Dr. Niti Vanee	Statistician, Intermediate	School of Nursing
* Listed in alphabetical order by last name		

**PROCESS**

In academic year 2019-2020, the LINC Assessment Council was charged with developing UT Health San Antonio’s Core IPE Measurement Plan. A framework to guide development of this plan was created in concert with the LINC Academic Affairs Council as a mechanism to support their efforts developing program-specific IPE plans. Since the QEP/LINC is an institution-wide project, a core set of measures for all students at UT Health San Antonio was seen as a valuable and necessary component. Importantly, because all program-specific IPE plans require an assessment and evaluation component, the framework called for the Core IPE Measurement Plan to serve as the foundation of learning outcomes measurement for all program-specific IPE plans at UT Health San Antonio. In other words, the assessment and evaluation components of program-specific IPE plans must be able to build off the Core IPE Measurement Plan. The framework also highlighted the following key considerations:

- All students at UT Health will be required to complete all components of the Core IPE Measurement Plan at times to be determined by the LINC Assessment Council;
- A mix of quantitative and qualitative data will be captured;
- Quantitative instruments selected must be supported by validity and reliability evidence;
- Data captured must target modified Kirkpatrick learning outcomes 1 (reaction), 2a (modification of attitudes/perceptions), 2b (acquisition of knowledge/skills), and 3 (behavior change) in accordance with the IOM Interprofessional Learning Continuum Model;
- Students will complete selected measurement instruments at 3 defined period throughout the course of study: orientation, mid-point, and exit; and,
- Analysis and reporting would be spearheaded by the LINC Assessment Council and completed on an annual basis, and this Council will also develop additional analyses/reports requested by programs for accreditation purposes.

A sub-group of the LINC Assessment Council, led by Ms. Nancy Jones with contributions from Dr. Venessa Kodosky, Ms. Anne Delgado, Dr. Niti Vanee and the LINC Director, Dr. Joseph Zorek, met regularly over the course of several months to build the Core IPE Measurement Plan according to the framework’s specifications. Over 50 validated quantitative measurement tools were screened and vetted during this process, resulting in selection of three tools to measure Kirkpatrick learning outcome levels 2a, 2b, and 3. A unique tool was created to measure Kirkpatrick learning outcome level 1. Progress reports were shared at regular monthly meetings of the LINC Assessment Council throughout this process, and elements of the Core IPE Measurement Plan were modified and improved in an iterative fashion based on the Council’s feedback.

**CORE IPE MEASUREMENT PLAN**

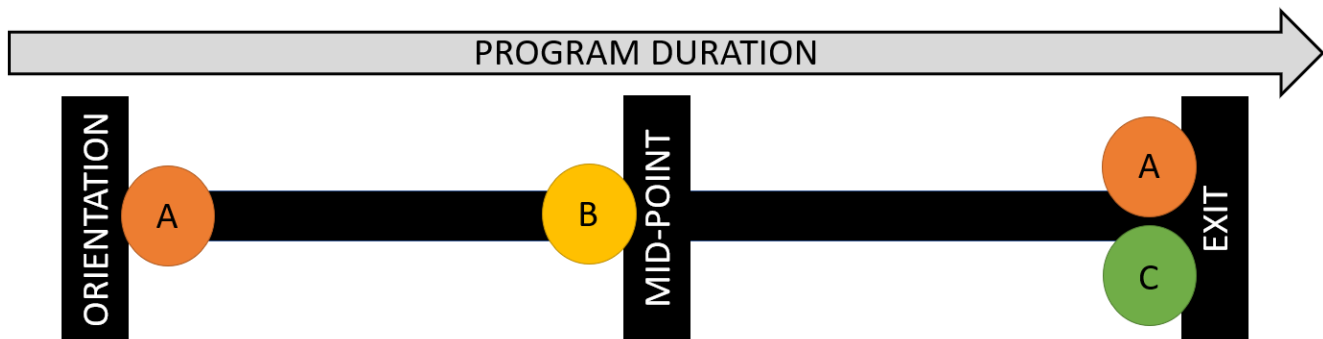
*Overview*

The Core IPE Measurement Plan at UT Health San Antonio consists of four tools administered at three timepoints. Collectively, these tools measure changes in students’ reactions, attitudes/perceptions, skills, and behavior related to interprofessional education and teamwork. Table 3 includes an overview of selected tools, and Figure 2 highlights the administration schedule. Full versions of selected tools are presented as appendices.




**Table 3. Tools and Targeted Learning Outcomes of the Core IPE Measurement Plan**

<b>Level*</b>	<b>Measurement Tool**</b>	<b>Constructs</b>	<b>Items</b>
Level 1 Reaction	Interprofessional Reactions Tool (IPRT)	<ul style="list-style-type: none"> <li>• Preparation</li> <li>• Relevance</li> <li>• Importance</li> <li>• Satisfaction</li> </ul>	13 self-reported items: <ul style="list-style-type: none"> <li>• 9 quantitative items using a 5-point Likert-type response scale; and,</li> <li>• 4 qualitative items soliciting written responses to open-ended prompts</li> </ul>
Level 2a Attitudes/ Perceptions	Student Perceptions of Interprofessional Clinical Education– Revised, Version 2 (SPICE-R2)	<ul style="list-style-type: none"> <li>• Interprofessional Teamwork and Team-based Practice</li> <li>• Roles &amp; Responsibilities for Collaborative Practice</li> <li>• Patient Outcomes from Collaborative Practice</li> </ul>	10 self-reported, quantitative items using a 5-point Likert-type response scale
Level 2b Skills  Level 3 Behaviors	Interprofessional Education Collaborative Competency Self-Assessment Tool, Version 3 (IPEC-3)	<ul style="list-style-type: none"> <li>• Interprofessional Interactions</li> <li>• Interprofessional Values</li> </ul>	16 self-reported, quantitative items using a 5-point Likert-type response scale
	Interprofessional Collaborative Competency Attainment Scale– Revised (ICCAS-R)	<ul style="list-style-type: none"> <li>• Communication</li> <li>• Collaboration</li> <li>• Roles &amp; Responsibilities</li> <li>• Collaboratives patient-family centered approach</li> <li>• Conflict management/ resolution</li> <li>• Team functioning</li> </ul>	21 self-reported, quantitative items using a 5-point Likert-type response scale
* Modified Kirkpatrick levels 2b (skills) and 3 (behaviors) are combined in this table because IPEC-3 and ICCAS-R report to measure both levels ** See Appendices I-IV for complete versions of selected measurement tools			

Figure 2. Administration Schedule of the Core IPE Measurement Plan



**CORE IPE MEASUREMENT PLAN ADMINISTRATION LEGEND**

-  Interprofessional Reactions Tool (IPRT)
-  Student Perceptions of Interprofessional Clinical Education–Revised, Version 2 (SPICE-R2)  
Interprofessional Education Collaborative Competency Self-Assessment Tool, Version 3 (IPEC-3)
-  Interprofessional Collaborative Competency Attainment Scale–Revised (ICCAS-R)

*Data Collection*

The Core IPE Measures will be developed into Qualtrics surveys which will be housed within the LINC Office. Members of the LINC Assessment Council, working in concert with members of the LINC Academic Affairs Council, will lead administration of core measures within their respective schools/programs at designated times.

*Data Analysis & Reporting*

The LINC Assessment Council will complete data analysis and disseminate results to LINC stakeholders annually. Results will also be submitted as addenda to the LINC Assessment Council’s annual report. Members of the LINC Assessment Council will develop school- and/or program-specific reports upon request; for example, in preparation for accreditation self-studies and/or accreditation site visits.

**APPROVAL DATES**

LINC Assessment Council: June 10, 2020 (unanimous)  
LINC Academic Affairs Council: June 11, 2020 (unanimous)

**APPENDICES**

**Appendix I. Interprofessional Reactions Tool (IPRT)**

5-Point Likert-type response scale ranging from 1=strongly disagree to 5=strongly agree	
ORIENTATION	EXIT
<b>Preparation</b>	
1. I feel prepared to collaborate with health professionals and scientists outside of my profession 2. I feel prepared to contribute to the team-based care of patients and/or populations 3. Please provide additional information about how well prepared you currently feel for interprofessional teamwork (open-ended)	1. Based on my interprofessional education experiences at UT Health, I feel more prepared to collaborate with health professionals and scientists outside of my profession. 2. Based on my interprofessional education experiences at UT Health, I feel more prepared to contribute meaningfully to the team-based care of patients and/or populations 3. Please provide additional information about how well your interprofessional education experiences at UT Health prepared you for your career (open-ended)
<b>Relevance</b>	
4. Interprofessional education is relevant to my future profession 5. Interprofessional teamwork is relevant to my future profession 6. Please provide additional information about how relevant you think interprofessional teamwork is to your career (open-ended)	4. The interprofessional education experiences at UT Health were relevant to my future profession 5. The interprofessional education experiences at UT Health highlighted the relevance of interprofessional teamwork to my future profession. 6. Please provide additional information about how relevant your interprofessional education experiences at UT Health were for your career (open-ended).
<b>Importance</b>	
7. Interprofessional education is important for my profession 8. Interprofessional teamwork is important for my profession 9. Please provide additional information about how important you think interprofessional teamwork is to your career	7. Interprofessional education is important for my profession 8. Interprofessional teamwork is important for my profession 9. Please provide additional information about how important your interprofessional education experiences at UT Health were for your career (open-ended)
<b>Satisfaction</b>	
<i>Not Applicable</i>	10. I am satisfied with the variety of interprofessional education experiences I have had at UT Health (e.g., IPE group discussions, IPE simulations, clinical IPE experiences) 11. I am satisfied with how challenging my interprofessional education experiences were at UT Health 12. Overall, I am satisfied with my interprofessional education experiences at UT Health 13. Please provide additional information about your overall satisfaction with interprofessional education at UT Health (open-ended)

**Appendix II. Student Perceptions of Interprofessional Clinical Education—Revised, Version 2 (SPICE-R2)**

5-Point Likert-type response scale ranging from 1=strongly disagree to 5=strongly agree	
Number	Item
01	Working with students from different disciplines enhances my education
02	My role within an interprofessional team is clearly defined
03	Patient/client satisfaction is improved when care is delivered by an interprofessional team
04	Participating in educational experiences with students from different disciplines enhances my ability to work on an interprofessional team
05	I have an understanding of the courses taken by, and training requirements of, other health professionals
06	Healthcare costs are reduced when patients/clients are treated by an interprofessional team
07	Health professional students from different disciplines should be educated to establish collaborative relationships with one another
08	I understand the roles of other health professionals within an interprofessional team
09	Patient/client-centeredness increases when care is delivered by an interprofessional team
10	During their education, health professional students should be involved in teamwork with students from different disciplines in order to understand their respective roles



**Appendix III. Interprofessional Education Collaborative Competency Self-Assessment Tool, Version 3 (IPEC-3)**

5-Point Likert-type response scale ranging from 1=strongly disagree to 5=strongly agree	
Number	Item
01	I am able to choose communication tools and techniques that facilitate effective team interactions
02	I am able to place the interests of patients at the center of interprofessional health care delivery
03	I am able to engage other health professionals in shared problem-solving appropriate to the specific care situation
04	I am able to respect the privacy of patients while maintaining confidentiality in the delivery of team-based care
05	I am able to inform care decisions by integrating the knowledge and experience of other professions appropriate to the clinical situation
06	I am able to embrace the diversity that characterizes the health care team
07	I am able to apply leadership practices that support effective collaborative practice
08	I am able to respect the cultures and values of other health professions
09	I am able to engage other health professionals to constructively manage disagreements about patient care
10	I am able to develop a trusting relationship with other team members
11	I am able to use strategies that improve the effectiveness of interprofessional teamwork and team-based care
12	I am able to demonstrate high standards of ethical conduct in my contributions to team-based care
13	I am able to use available evidence to inform effective teamwork and team-based practices
14	I am able to act with honesty and integrity in relationships with other team members
15	I am able to understand the responsibilities and expertise of other health professions
16	I am able to maintain competence in my own profession appropriate to my level of training

**Appendix IV. Interprofessional Collaborative Competencies Attainment Scale–Revised (ICCAS-R)**

For items 1-20, students rate their ability related to each statement using a 5-Point Likert-type response scale ranging from 1=Poor to 5=Excellent	
Number	Item
01	Promote effective communication among members of an interprofessional (IP) team
02	Actively listen to IP team members’ ideas and concerns
03	Express my ideas and concerns without being judgmental
04	Provide constructive feedback to IP team members
05	Express my ideas and concerns in a clear, concise manner
06	Seek out IP team members to address issues
07	Work effectively with IP team members to enhance care
08	Learn with, from and about IP team members to enhance care
09	Identify and describe my abilities and contributions to the IP team
10	Be accountable for my contributions to the IP team
11	Understand the abilities and contributions of IP team members
12	Recognize how others’ skills and knowledge complement and overlap with my own
13	Use an IP team approach with the patient to assess the health situation
14	Use an IP team approach with the patient to provide whole person care
15	Include the patient/family in decision-making
16	Actively listen to the perspectives of IP team members
17	Take into account the ideas of IP team members
18	Address team conflict in a respectful manner
19	Develop an effective care plan with IP team members
20	Negotiate responsibilities within overlapping scopes of practice
Students respond to item 21 using a 5-point Likert-type response scale ranging from 1=Much Worse Now to 5=Much Better Now	
21	Compared to when you entered your educational program, would you say your ability to collaborate interprofessionally is . . .