



Interprofessional Teamwork

The TTUHSC Quality Enhancement Plan

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I. Executive Summary

For almost 40 years, the Texas Tech Health Sciences Center (TTUHSC) has developed and implemented educational programs in West Texas and beyond in fulfillment of its mission, which is to improve the health of people by providing educational opportunities to students and health care professionals, advancing knowledge through scholarship and research, and providing patient care and service. In selecting Interprofessional Teamwork (IT) as the topic for its first Quality Enhancement Plan, TTUHSC is building upon this foundation and demonstrating continued leadership in healthcare education.

Vision. The overarching, long-term vision of the Interprofessional Teamwork initiatives is to establish an institutional culture that is committed to the values of interprofessional education and care, including collaboration, communication, and coordination.

Purpose. The primary purpose of the Interprofessional Teamwork is to prepare graduates to be leaders in the dynamic health care environment by promoting the knowledge, skills, behaviors, and attitudes required to provide high quality, safe, individualized care for patients as members of an interprofessional team.

Student Learning Outcomes. The Interprofessional Teamwork (IT) initiatives will be implemented in four stages. Students who participate in all four stages of IT programming will be expected to:

1. Describe the knowledge, skills, behaviors, and attitudes required for an individual to function as an effective member of an interprofessional team.
2. Identify the roles and diverse perspectives of Interprofessional Teamwork, including responsibilities, expertise, background, knowledge, and values of IT members.
3. Demonstrate heightened awareness and appreciation of the potential benefits of Interprofessional Teamwork.
4. Demonstrate evidence-based decision-making while participating collaboratively as a member of an interprofessional team.
5. Demonstrate basic group skills, including communication, negotiation, conflict resolution, delegation, time management, and assessment of group dynamics.
6. Participate as a collegial member of an interprofessional team to coordinate and individualize patient care to ensure excellence, continuity, and reliability, even when team members are in different physical locations.

Focus Areas for Implementation. Achievement of the stated purpose and student learning outcomes will require transformation of the current health professions educational process and environment. Thus, implementation of the Interprofessional Teamwork (IT) initiative will focus on four areas, as follows: 1) Create an *administrative infrastructure* to support interprofessional education. 2) Provide *faculty development* opportunities to support the development and implementation of IT pedagogies and modalities. 3) Establish a *culture of interprofessional education* by developing IT learning opportunities and facilitating the integration of these opportunities into existing curricula. 4) Provide the *technical expertise and infrastructure* necessary to facilitate interconnectivity among individuals even when they are in different geographic locations and/or time zones.

II. Process Used to Develop the QEP

Between the fall of 2006 and the summer of 2008, the Texas Tech University Health Sciences Center developed and implemented an inclusive process for selecting its Quality Enhancement Plan (QEP) topic. The selection process—which included a comprehensive educational and publicity campaign, the solicitation of topics from all members of the TTUHSC community, and a community-wide call for proposals—culminated in the selection of Interprofessional Education as an overarching QEP topic. This topic was later refined and focused to specifically address Interprofessional Teamwork (IT). The process was managed by committees, as described below.

Initial QEP Steering Committee. The initial QEP Steering Committee convened in the fall of 2006 and was composed of the then Associate Vice President for Academic Affairs, the Director of the Office of Institutional Planning and Effectiveness (OIPE), the Associate Director of OIPE, and a faculty member from the School of Nursing. Preliminary discussions focused on establishing a process to ensure successful planning and implementation of the QEP.

QEP Topic Selection Committee. In the spring of 2007, the QEP Topic Selection Committee was established. Committee members were selected based on recommendations from the academic deans and other institutional representatives. To ensure broad-based institutional participation, committee members were selected from all appropriate TTUHSC constituencies, including TTUHSC faculty from each school; administrators, staff, and students from Lubbock and the regional campuses; alumni; and representatives from the broader TTUHSC community of interest. The QEP Topic Selection Committee was charged with developing a process for soliciting topic ideas from TTUHSC's internal and external communities of interest and creating an objective process for narrowing the proposed list of topics submitted for the QEP. A list of QEP Topic Selection Committee members is available in Appendix A.



QEP Educational and Publicity Campaign. Throughout the spring of 2007, both the initial QEP Steering Committee and the QEP Topic Selection Committee worked collaboratively with the Managing Director of Communication and Marketing to develop the QEP educational and publicity campaign. Committee members ultimately selected the theme “What’s the Big Idea?” with the question mark motif as the focus of the campaign. Strategies for the educational and publicity campaign were designed to ensure broad-based community education and participation.

The first phase of the QEP education and publicity campaign began in August 2007 and focused on two themes—“What is QEP” and “Why a QEP.” The second phase of the QEP educational process followed in September with a variety of educational and marketing strategies, including the following:

- Brief presentations about the QEP were made at faculty, staff, and student meetings.
- Several articles were published in the institutional newsletter.
- The QEP website was created and announced via the TTUHSC electronic Announcements Page and via email messages sent to each institutional community member.
- Large red posters with “QEP?” were placed at prominent campus locations.

- QEP t-shirts and caps were distributed to students.
- Committee members wore “Ask Me About the QEP” lapel buttons for several weeks and QEP costumes for several public appearances.

Solicitation of QEP Topics. The next phase of the process focused on soliciting QEP topics. In September 2007, all members of the TTUHSC community were asked to submit individual “Big Ideas” for a QEP topic. By the end of the solicitation phase in mid-October, 141 “Big Ideas” had been submitted by TTUHSC students, faculty, and staff. (See http://www.ttuhscc.edu/qep/documents/qep_topics.pdf for the complete list of topic suggestions.) These topics were reviewed by the QEP Topic Selections Committee and the Institutional Effectiveness (IE) Workgroup. The IE Workgroup is a broad-based committee composed of faculty from all TTUHSC schools, staff, and administrators. It provides guidance on institutional assessment and played a critical role in developing the SACS Compliance Certification Report. Together, the QEP Topic Selections Committee and the IE Workgroup sorted the 141 submissions into three categories based on common themes. The three thematic categories were Interdisciplinary Education, Faculty Development, and Academic Support for Students. (See Appendix B for the QEP Short List and a description of the three thematic areas.)

Call for Proposals. A call for proposals based on the three thematic categories was disseminated in early spring 2008, and several town hall meetings were held to explain the proposal submission process. A total of 10 qualified proposals were submitted by interdisciplinary teams of faculty, staff, and students. The QEP Topic Selection Committee conducted a blind review and scored each proposal using a locally designed scoring rubric. The top four proposals were submitted to the President’s Executive Council for selection of the winning topic. In June 2008, the topic of Interprofessional Education (IPE) was selected; this topic was later refined and focused to the current QEP topic of Interprofessional Teamwork (IT).

Current QEP Steering Committee. During July 2008, the current QEP Steering Committee was formed. Committee membership includes the authors of the top four QEP proposals, the Vice President for Academic Affairs (previously the Associate Vice President of Academic Affairs), the Associate Director of OIPE, the Associate Director for Institutional Assessment, a Faculty Senator, the Student Government Association President, and students, faculty, and staff from Lubbock and the regional campuses. The charge to this committee was as follows:

- Review evidence-based and best practices literature related to interprofessional education;
- Identify human and financial resources to develop, implement, and sustain the QEP;
- Establish strategies for achieving the desired student learning outcomes;
- Develop a timeline and assign responsibilities; and
- Develop an assessment plan for evaluating the effectiveness of the QEP.

At the first meeting of the current QEP Steering Committee on August 19, 2008, committee members self-selected membership on subcommittees for completing the tasks of the charge. Subcommittees met between the scheduled biweekly QEP Steering Committee meetings and reported on their progress at each meeting of the full committee. A list of QEP Steering Committee members is available in Appendix C, and minutes of the committee meetings are available on the QEP website at <http://www.ttuhscc.edu/qep/meetings.aspx>.

III. Identification of the Topic

In the fall of 2008, the QEP Steering Committee refined and focused the selected topic from Interprofessional Education to Interprofessional Teamwork (IT). This decision was based on the following:

- IT's alignment with the TTUHSC mission and strategic plan
- National trends and data identifying IT as a critical issue in healthcare practice and education
- Internal data from student satisfaction surveys and focus groups indicating students' interest in developing the knowledge, skills, behaviors, and attitudes required to work effectively as a member of an interprofessional team.

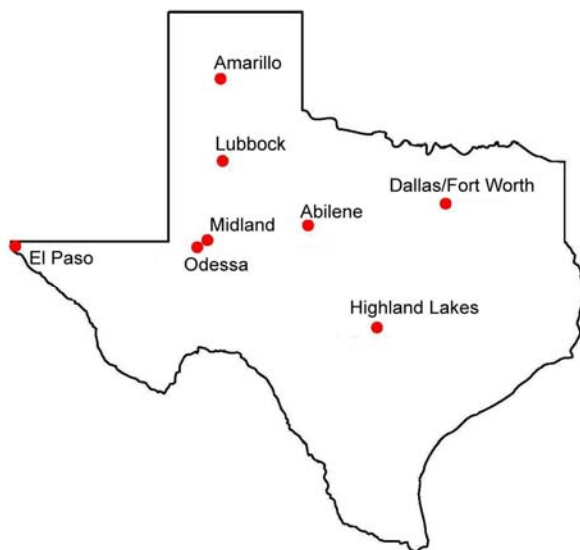
DEFINITION OF INTERPROFESSIONAL TEAMWORK (IT)

In this proposal, IT is defined as collaborative interaction among interprofessional team members to provide quality, individualized care for patients (Appendix D, Definitions). This definition is based on the Institute of Medicine's 2003 publication, *Health Professions Education: A Bridge to Quality*.

ALIGNMENT OF INTERPROFESSIONAL TEAMWORK WITH TTUHSC MISSION AND STRATEGIC PLAN

The TTUHSC is composed of six-schools in eight locations, as follows:

- TTUHSC School of Medicine located in Amarillo, Lubbock, and Odessa
- Paul L. Foster School of Medicine located in El Paso
- School of Allied Health Sciences located in Amarillo, Lubbock, and Midland
- School of Nursing located in Abilene, El Paso, Highland Lakes, Lubbock, and Odessa
- School of Pharmacy located in Abilene, Amarillo, Lubbock, and Dallas/Fort Worth
- Graduate School of Biomedical Sciences located in Amarillo and Lubbock



TTUHSC Mission. The TTUHSC mission is to improve the health of people by providing educational opportunities to students and health care professionals, advancing knowledge through scholarship and research, and providing patient care and service.

TTUHSC is geographically located in an area that is predominantly rural and increasingly elderly and Hispanic. TTUHSC serves the 108 counties of West Texas, which comprise 48 percent (130,000 square miles) of the land mass and 12 percent (2.6 million) of the population of the State of Texas. Since its inception, TTUHSC has established numerous centers and institutes that

have made important contributions to the accomplishment of TTUHSC mission and goals. Centers and Institutes at TTUHSC are multidisciplinary and/or interdisciplinary groups of faculty and their associates who have been brought together for the pursuit of research, education, and/or clinical activities. The goals of each center and institute typically require substantial collaboration and cooperation between two or more disciplines from within and outside of TTUHSC. Centers and institutes that TTUHSC has developed in an effort to meet the needs of the people of West Texas include the F. Marie Hall Institute of Rural and Community Health (which oversees the Center for Telemedicine), the Garrison Institute on Aging, Correctional Managed Health Care, the Southwest Institute for Addictive Diseases, the Southwest Cancer and Research Center, and the Laura W. Bush Institute for Women's Health. Collectively, these collaborative, interdisciplinary centers and institutes have established and evaluated many innovative training and educational programs and implemented other projects requiring effective interprofessional collaboration, communication, and coordination.

Vision of the Interprofessional Teamwork Initiative. The overarching, long-term vision of the IT initiative is *to establish an institutional culture that is committed to the values of interprofessional education and care, including collaboration, communication, and coordination.* The Interprofessional Teamwork initiative aims to build upon the collaborative foundation established by existing TTUHSC centers and institutes and to lay the groundwork for a new institute—the Institute for Interprofessional Scholarship in Practice, Innovation, Research, and Education (INSPIRE).

Purpose of the Interprofessional Teamwork Initiative. The purpose of the IT initiative—to *prepare graduates to be leaders in the dynamic health care environment by promoting the knowledge, skills, behaviors, and attitudes required to provide high quality, safe, individualized care for patients as a member of an interprofessional team*—clearly supports the institutional mission and continues the TTUHSC tradition of providing leadership in health professions education and patient care.

TTUHSC Strategic Plan. Additionally, the Interprofessional Teamwork initiative supports two of the six institutional strategic goals: Goal I, “train competent health professionals and scientists,” and Goal IV, “prepare health professions students for an increasingly diverse workforce and patient population.” The strategic plan also identifies key strategies for achieving its goals, and the Interprofessional Teamwork project is in keeping with Strategy 6, “develop and enhance interdisciplinary, inter-school, and inter-campus programs in education, research, and clinical care.” The TTUHSC Mission and Strategic Plan are provided in Appendix E.

INTERPROFESSIONAL TEAMWORK: A CRITICAL ISSUE IN HEALTHCARE PRACTICE AND EDUCATION

The current complex healthcare environment requires practitioners to assimilate evidence-based scientific knowledge and sophisticated psychomotor skills while participating as team members. As a member of the healthcare team, each individual is expected to promote safe, quality patient care through interprofessional collaboration, communication, and coordination. In its 2003 publication, *Health Professions Education: A Bridge to Quality*, the Institute of Medicine (IOM) identified interprofessional teamwork (IT) as one of the core competencies needed for health professionals to be effective in the twenty-first century. The significance and importance of IT is also indicated by reports from several other organizations interested in healthcare research, practice, and education. Researchers have established that teamwork is critical for safe, quality health care and determined that teams make fewer mistakes than individuals, especially when the members of the team are aware of the different responsibilities of each team

member (Smith-Jentsch, Salas, & Baker, 1996). The Joint Commission on Accreditation of Healthcare Organizations recently reported that almost 70 percent of patient adverse events are associated with the lack of collaboration and communication among providers (Fewster-Thuente & Velsor-Friedrich, 2008), and the National Patient Safety Education Framework (2005) states that safe, quality patient care can only occur when health care professionals know their role in an organization and understand the importance of working with other members of an interprofessional team. IT is also supported by research conducted by the RAND Corporation for the Agency for Healthcare Research, as reported in *Outcome Measures for Effective Teamwork in Inpatient Care* (Sorbero, Farley, Mattke, & Lovejoy, 2008). The RAND report reviewed 16 studies and identified empirical evidence that teamwork behaviors, such as coordination, communication, mutual respect, role clarification, and shared goals, improved patient outcomes.

The IOM also has identified interprofessional teamwork (IT) as an educational imperative, noting that graduates from health professions programs are not prepared to work effectively in interprofessional teams as new health care professionals (IOM, 2003), and in 2005, the National Patient Safety Education Framework stressed that a segregated approach to professional education is no longer appropriate in the current complex, technological health system. Yet the need to implement IT competencies in healthcare education is not new. In 1993, the Pew Health Professions Commission recommended curricula throughout the health sciences be revised to promote teamwork and interprofessional contact. In 2000, the IOM recognized a need for educational reform, stating “most care delivered today is done by teams of people, yet training often remains focused on individual responsibilities and members of health care teams rarely receive interprofessional training leaving practitioners inadequately prepared to enter complex health care settings” (IOM, 2000, p. 132).

Multiple accrediting agencies for educational programs in the health care professions have written standards addressing the competency to function as a member of an interprofessional team. For example, the Accreditation Council for Graduate Medical Education has identified teamwork and leadership as one of its general competencies (Halpern, Lee, Boulter, & Phillips, 2004). Additionally, professional organizations have developed position statements supportive of IT education. For example, the American Association of Colleges of Nursing has identified the need for interdisciplinary education based on “mutual understanding and trust” (AACN, 1995, paragraph 2). In a 2000 joint meeting between the Council on Graduate Medical Education and the National Advisory Council on Nurse Education and Practice, attendees recommended interdisciplinary education and practice as the main approach to promoting patient safety. Further, the inclusion of interprofessional instruction is supported by The American Society of Health-System Pharmacists (2002) and the American Physical Therapy Association (2006).

INTERPROFESSIONAL TEAMWORK (IT): A SIGNIFICANT ISSUE FOR TTUHSC STUDENTS

In addition to reviewing external data, the QEP Topic Selection committee reviewed internal data from student satisfaction surveys and focus groups. Since 2002, the TTUHSC Office of Student Services has conducted a biannual spring survey of all TTUHSC students to assess student satisfaction with available academic support services. In narrative comments attached to the most recent survey, many students expressed a desire for more educational opportunities focused on interprofessional issues. Similarly, when the President of the Student Government Association (SGA) conducted focus groups with SGA leaders on the regional campuses, several students discussed the need for more interprofessional education opportunities. The IT initiative responds to the educational needs and interests of TTUHSC students.

IV. Desired Student Learning Outcomes

Teams of health professionals working together and applying teamwork skills will promote safe, quality health care delivery as indicated by the IOM *Health Professions Education: A Bridge to Quality* (2003), the National Patient Safety Education Framework (2005), and the Institute for Healthcare Improvement (2009). As described in the previous section, the IOM has identified teamwork as one of the core competencies needed for health professionals to be effective in the twenty-first century (IOM, 2003). Furthermore, research has demonstrated that working in interprofessional teams decreases costs, promotes patient safety, and improves patient satisfaction (IOM, 2001; Allen, Penn, & Nora, 2006). Yet, as the IOM cautions, faculty who have not experienced interdisciplinary education themselves may have difficulty accepting and integrating an interprofessional philosophy into the educational curricula. Thus, preparing students of the health professions to function competently in a collegial work environment requires a transformation in current educational processes. To facilitate this transformation, the TTUHSC Interprofessional Teamwork (IT) initiative is designed to improve student learning by creating cultural change within the institution's educational environment. Expected benefits of the project are articulated in the project's vision statement, purpose statement, student learning outcomes, and operational goals.

BENEFITS TO BE DERIVED FROM THE INTERPROFESSIONAL TEAMWORK (IT) INITIATIVE

To participate as a collegial member of an interprofessional team, an individual must understand and respect other team members' knowledge, expertise, and values. The IOM recommends that leaders of academic health centers encourage coordination across disciplines to "remove internal barriers to interprofessional education" (IOM, 2003, p. 116) and "prepare students to work as a team driven by the health needs of patients" (IOM, 2003, p. 48). The vision, purpose, student learning outcomes, and operational goals of the Interprofessional Teamwork initiative are based on these recommendations.

Vision. The overarching, long-term vision of the IT initiative is to establish an institutional culture that is committed to the values of interprofessional education and care, including collaboration, communication, and coordination.



Purpose. The primary purpose of IT is to prepare graduates to be leaders in the dynamic health care environment by promoting the knowledge, skills, behaviors, and attitudes required to provide high quality, safe, individualized care for patients as members of an interprofessional team.

Student Learning Outcomes. The educational programming of the Interprofessional Teamwork (IT) initiative will be implemented in four stages. (More information about this staging process is provided in Section VI, Actions to be Implemented.) Students who participate in all four stages of IT educational programming will be expected to:

1. Describe the knowledge, skills, behaviors, and attitudes required for an individual to function as an effective member of an interprofessional team.

2. Identify the roles and diverse perspectives of IT, including responsibilities, expertise, background, knowledge, and values of IT members.
3. Demonstrate heightened awareness and appreciation of the potential benefits of IT.
4. Demonstrate evidence-based decision-making while participating collaboratively as a member of an interprofessional team.
5. Demonstrate basic group skills, including communication, negotiation, conflict resolution, delegation, time management, and assessment of group dynamics.
6. Participate as a collegial member of an interprofessional team to coordinate and individualize patient care to ensure excellence, continuity, and reliability, even when team members are in different physical locations.

Operational Goals for Implementation. Achievement of the stated purpose and student learning outcomes will require transformation of the current health professions educational process and environment. Thus, implementation of the Interprofessional Teamwork (IT) will focus on the following four operational goals:

- Goal 1. Create an *administrative infrastructure* to support interprofessional education.
- Goal 2. Provide *faculty development* opportunities to support the development and implementation of IT pedagogies and modalities.
- Goal 3. Establish a culture of interprofessional education by developing *IT learning opportunities* and facilitating the integration of these opportunities into existing curricula.
- Goal 4. Provide the *technical expertise and infrastructure* necessary to facilitate interconnectivity among individuals even when they are in different geographic locations and/or time zones.

OBSERVABLE RESULTS: MEASURING STUDENT LEARNING OUTCOMES.

The underlying theoretical framework for the student learning outcomes identified above is the theory articulated by Benner in the 1984 publication, *From novice to expert: Excellence and power in clinical nursing practice*, which in turn is based on the Dreyfus model of skill acquisition. Benner's competency-level definitions are summarized in a 2006 publication by Tomey and Alligood, as follows:

- Novice Stage. Novice stage of skill acquisition is demonstrated by the person who has no background experience of the situation (Tomey & Alligood, 2006, p. 145).
- Advanced Beginner Stage. Advanced Beginner stage is demonstrated by the person who provide a marginally acceptable performance having coped with enough real situations to note, or to have pointed out by a mentor, the recurring meaningful components of the situation. Individuals operating at the advanced beginner level are guided by rules and are orientated by task completion and have difficulty grasping the current patient situation in terms of the larger perspective. The situation is viewed by the participant as a test of individual abilities and the demands of the situation/encounter rather than focused on patient needs and responses (Tomey & Alligood, 2006, p. 145).
- Competent Stage. Competent stage is demonstrated by the person who by considerable conscious and deliberate planning determines the important and unimportant aspects of the current and future situation/client encounter. Consistency, predictability, planning, and time management are considered

important. Mastery is achieved through planning and predictability. New rules and reasoning procedures are devised for planning, while learned rules for action are the basis for determining the relevant facts of the situation/encounter (Tomey & Alligood, 2006, p. 145–46).

- Proficient Stage. Proficient stage is demonstrated by the person who perceives the situation as a whole (total picture) rather than in terms of aspects of the situation/encounter, and performance is guided by maxims (recognizes the most salient aspects of the situation/encounter and has an intuitive grasp of the situation/encounter based on background understanding). A new ability to see changing relevance in a situation/encounter, including recognition and implementation of skilled responses to the situation/encounter as the situation evolves is demonstrated. Preset goals for organization are relied upon and increased confidence in one's knowledge and skills is demonstrated. Much more involvement with the client and family is demonstrated (Tomey & Alligood, 2006, p. 146).
- Expert Stage. Expert stage is demonstrated by the person who no longer relies on analytical principle (rule, guideline, maxim) to connect his/her understanding of the situation/encounter to the appropriate action. An intuitive grasp of the situation/encounter as the ability to identify the region of the problem without losing time by considering a range of alternative diagnoses and solutions is demonstrated. Key aspects of expert performance are as follows:
 - Demonstrating a clinical grasp and resource-based practice
 - Possessing embodied know-how
 - Seeing the big picture
 - Seeing the unexpected

The expert meets the client's/family's actual concerns and needs even if doing so means planning and negotiating for a change in the plan of care (Tomey & Alligood, 2006, p. 146).

The QEP Writing Subcommittee has mapped the Interprofessional Teamwork student learning outcomes to Benner's theory and is developing a rubric to assess progressive achievement of the student learning outcomes. The rubric identifies progressive development from a novice understanding of the knowledge, skills, behaviors, and attitudes (KSAs) required for effective Interprofessional Teamwork toward the higher levels of expertise required to transfer teamwork KSAs to the patient care setting (Appendix F, Novice-to-Expert Interprofessional Teamwork Competency Rubric). While the learner is not expected to achieve the knowledge, skills, behaviors, and attitudes of an expert until after graduation and professional experience, each learner is expected to progress at least to the level of advanced beginner by graduation.

The internally-developed Novice-to-Expert Interprofessional Teamwork Competency Rubric will be used along with several other assessment tools, as needed, to assess achievement of the student learning outcomes. Formative and summative assessment of the Interprofessional Teamwork (IT) initiative will be conducted, and achievement of student learning outcomes will be measured using pre- and post-testing, nationally recognized assessment tools, self-assessments and reflection, case scenario and simulation experience outcome assessments, locally-developed assessment rubrics, locally modified externally developed satisfaction and self-confidence tools, and

externally developed tools. For more information about these assessment tools, please see Section X, Assessment.

RELEVANT AND APPROPRIATE GOALS AND STRATEGIES TO IMPROVE LEARNING

The four operational goals identified above are designed to transform the current health professions educational process and environment at TTUHSC by engaging administrators, faculty, staff, and students in the Interprofessional Teamwork (IT) initiative. Goals 1 and 4 address enhancements to the institution's administrative and technical infrastructure necessary to sustain the IT initiative, and Goals 2 and 3 address the educational core of the initiative, which involves educating and supporting faculty as they learn to integrate IT pedagogies and modalities into the curriculum and delivering IT learning opportunities to students. Each goal is supported by appropriate strategies for implementation, as summarized below:

- Goal 1. Create an *administrative infrastructure* to support interprofessional education.
 - Strategy 1A. Acquire support from TTUHSC administrators for the IT initiative.
 - Strategy 1B. Establish a data management system and processes for the IT initiative.
 - Strategy 1C. Prepare internal and external reports to support the ongoing development of the IT initiative.
- Goal 2. Provide *faculty development* opportunities to support the development and implementation of IT pedagogies and modalities.
 - Strategy 2A. Recruit and train IT faculty champions to lead development and implementation of IT instruction modules.
 - Strategy 2B. Provide regular professional development seminars, presentations, and workshops on IT-related issues for TTUHSC administrators, faculty, and staff.
- Goal 3. Establish a culture of interprofessional education by developing *IT learning opportunities* and facilitating the integration of these opportunities into existing curricula.
 - Strategy 3A. Administer a seed grant program among TTUHSC faculty and students.
 - Strategy 3B. Develop, implement, and assess IT educational programming in four progressive stages.
- Goal 4. Provide the *technical expertise and infrastructure* necessary to facilitate interconnectivity among individuals even when they are in different geographic locations and/or time zones.
 - Strategy 4A. Support ongoing TTUHSC technology initiatives aimed at ensuring interconnectivity.
 - Strategy 4B. Use current distance learning technology and purchase a new virtual online technology platform for use in IT simulations.

Detailed actions and methods for implementing the operational goals and strategies are identified in Section VI, Actions to be Implemented.

V. Literature Review and Best Practices

Throughout the fall of 2008, the QEP Steering Committee compiled and reviewed a compendium of best practices literature related to Interprofessional Teamwork (IT) competencies, IT learning pedagogies, and barriers to IT learning. At the same time, committee members were engaged in a critical analysis of the institutional context in which the IT initiative will be implemented. The following literature reviews and brief summary of the TTUHSC learning environment reflect the work of subcommittees of the QEP Steering Committee.

TEAMWORK COMPETENCIES

The study of teamwork began in the 1950s, focusing predominantly on military teams in an effort to promote effective decision-making under extreme time pressure and stress constraints. Then during the 1960s, research related to teamwork focused on team failures particularly associated with high visibility of the aircraft industry (Ilgen, 1999).

Throughout the 1970s, 1980s, and 1990s, research endeavors focused on identifying specific competencies related to interprofessional healthcare teams. Paris, Salas, and Cannon-Bowers (2000) described an interprofessional team as being more than a group of individuals. An interprofessional team was specified as being composed of healthcare professionals working interdependently to achieve specific, shared objectives. Further, to achieve shared objectives, team members are required to share multiple sources of information, communicate systematically, and demonstrate coordination and cooperation.

The process of transforming a group of healthcare professional learners or experts into an interprofessional team begins with an understanding of the unique dimensions of teamwork. Several teams of researchers have worked to identify and define the dimensions of IT. Paris, Salas, and Cannon-Bowers (2000) identified three primary dimensions of the dynamic nature of Interprofessional Teamwork (IT) as knowledge, skills, and attitudes (KSA). Knowledge, the cognitive dimension, was defined as including identified shared objectives, team role interactions, teamwork skills, role identification, and team orientation. Skill, the behavioral dimension, was defined to include adaptability, shared situational awareness, team performance monitoring, communication, decision-making, interpersonal coordination, and conflict resolution. Finally, attitudes, the affective dimension, were defined as embodying motivation, mutual trust, team cohesion, and recognition of teamwork importance.

Morey and colleagues (2002) identified five dimensions related to team behavior. The dimensions included team structure and climate, planning and problem-solving, team communication, workload management, and team skills improvement. Healey, Undre, and Vincent (2004) identified the five specific teamwork behaviors of cooperation, coordination, leadership, monitoring, and communication. Finally, Salas and colleagues (2008) identified five competencies required for teamwork, including team leadership, mutual performance monitoring, back up behavior, adaptability, and team orientation. Moreover, Salas and colleagues felt each competency was essential and for each team member to demonstrate the competencies, the team needed shared mental models, mutual trust, and closed-loop communication. Closed-loop communication is defined as the exchange of information between the sender and the receiver (Salas, DiazGranados, Weaver, & King, 2008).

Teamwork is organized by expanding human motivation from individual goals pursued competitively to focus on common goals pursued cooperatively. Because work processes have two central actions, thinking and doing, individuals cannot be joined into a team as long as the two central actions of work are divisive. Therefore, Interprofessional Teamwork (IT) requires team members to collaborate and communicate using a shared language to solve complex problems (Drinka & Clark, 2000; Gibson & Sellmer-Bruhn, 2001). Furthermore, for teams to perform well, members must be cognizant of the overall objectives of the team rather than just being responsible for individual tasks (Daily & Bishop, 2003). Additionally, team members must understand how tasks completed by each individual work interdependently with tasks performed by other team members for achievement of desired outcome.

Relevance to TTUHSC IT Initiative. The faculty development opportunities and educational programming to be developed for the TTUHSC IT initiative will be designed to address IT competencies—the knowledge, skills, behaviors, and attitudes (KSAs) necessary to work effectively as a member of an interprofessional team. (For more information, see Section VI, Actions to be Implemented.)

SELECTED INTERPROFESSIONAL TEAMWORK LEARNING PEDAGOGIES

Selected pedagogies for IT learning are summarized below. Each pedagogy can be implemented singularly or in combination with one or more other pedagogies.

Problem-Based Learning. Problem-Based Learning (PBL) is defined as a pedagogy with emphasis on problem solving and critical thinking skills for students to learn *how* to identify *what* knowledge is needed, *where* to get the needed information, and *how* to work together for determining whether solutions developed are correct (Williams & Beattie, 2008). The focus is self-development of knowledge, and self and peer assessment of how well the students worked as a group in achieving the solution.

The role of faculty in PBL is to listen to student discussions and intervene only when students are off-track or stuck. Faculty then ask probing questions, rather than providing answers. Faculty use a case workbook to provide case scenarios to students. Pertinent data from the case workbook are provided by faculty to the group of students as they ask for additional case information and when they provide rationale for the requested data (Williams & Beattie, 2008; Taylor & Mifflin, 2008).

The role of students in PBL is to work as a team through the case scenario to identify knowledge gaps, acquire the needed knowledge, discuss learning by each member, develop a solution for the client problem, and create a plan of care for the case scenario client. While the case unfolds, groups of students progress through the scenario from identifying the disease process for the case client based on client symptoms to planning interventions for disease cure and/or improvement (Williams & Beattie, 2008; Taylor & Mifflin, 2008).

By progressing through the PBL process, students learn the content associated with a disease not by “lecture” pedagogies but through collection of information within the group process to solve a client problem. Graduates educated through PBL tend to cope with uncertainty, apply legal and ethical aspects of health care, acquire communication skills, and develop self-directed continuous learning well in professional practice (Williams & Beattie, 2008).

Case-Based Learning. Case-Based Learning (CBL) is defined as a paradigm for use of “real-life” situations to stimulate problem-based learning by using a case or simulation to encourage knowledge acquisition and skills through student interaction in small groups

(Williams, 2005). Case studies are effective for learning teamwork knowledge, skills, behaviors, and attitudes without overwhelming students during early stages of learning and are cost effective (Bearbien & Baker, 2008). The cases for students are written to identify the problem to be solved. Students are provided case information as needed; related research articles; and lab, radiological, and scan test results. Additionally, sources for case-based learning include health professionals, case databases, and case books (Walters, 1999). Locally developed cases can provide an unlimited number of cases and focus on course-required content. The disadvantage of locally developed cases is the intensive faculty labor required.

Walters (1999) has suggested CBL can be used by a variety of health professionals. Student feedback regarding use of CBL was positive (Lindqvist, Duncan, Shepstone, Watts, & Pearce, 2005). Additionally, CBL experiences are viewed with high satisfaction by students because the pedagogy facilitates interprofessional learning and highlights the importance of effective facilitation of small-group collaborative learning (Curran, Shape, Forristall, & Flynn, 2008).

Thus, both PBL and CBL utilize group learning methodologies, such as generating objectives, finding ways for students to achieve the generated objectives, brainstorming, and developing shared objectives (Hays, 2008). Additionally, both PBL and CBL can be used with other pedagogies to achieve student learning outcomes.

Clearly PBL and CBL are similar. The primary difference between the two pedagogies is that the use of PBL does not require individuals to have previous experience or knowledge of the problem because the focus is on using group-member input to create the solution for the problem. In contrast, CBL does require some level of prerequisite knowledge regarding the problem for deriving the solution (William, 2005; Eshach & Bitterman, 2003).

Comparison of CBL to advanced patient simulation using computerized, physiologically responding mannequins by Schwartz, Fernandez, Kouyoumjian, Jones, and Compton (2007) revealed no significant difference in learning outcomes. The authors concluded advanced patient simulation offered no advantage over use of CBL. (Others, however, have suggested that simulation has specific advantages for IT training, as described under Simulation-Based Learning below.)

Team-Based Learning. Team-Based Learning (TBL) is defined as a method for teaching content and thinking skills through the use of interaction among team members (Michaelsen, Parmelee, McMahon, & Levine, 2008). Faculty use a sequence of events to promote learning. First, students are prompted to engage in an initial exposure to the content before class. Then the majority of class time is spent working as a team on assignments for learning how to apply the pre-class knowledge. Effective team performance and development as team members requires regular and timely feedback on group performance. Timely feedback on application-focused team assignments and from the Readiness Assessment Tests (RATs) is essential for team-based learning. Thus, the outcomes are promotion of learning by team members and team development.

Student roles include being individually accountable for pre-class preparation (assessed via RATs), contributing to team work measured through peer assessment, and production of high quality team performance (Michaelsen et al., 2008). The “product” created by each team is assessed by faculty.

Several important outcomes of TBL are achieved. Some beneficial outcomes include the following (Michaelsen et al., 2008):

- Development of students' higher level cognitive skills, especially in large classes
- Provision of social support for "at-risk" students
- Promotion of interpersonal and team skill development
- Building and maintaining faculty member enthusiasm for the teaching role

Simulation-Based Learning. Simulation-Based Learning (SBL) integrates the principles of active learning in a simulated environment. SBL utilizes the different typologies of simulation to recreate realistic clinical situations. These realistic simulated case scenarios assist the learner in developing the competencies needed to manage a situation when it occurs in the actual patient care setting (Bearbien & Baker, 2008). A simulated learning experience requires the learner to actively engage in the case situation while demonstrating critical thinking and concludes with a period of reflection and/or debriefing. As reflected in best practices literature, opportunities to practice in a simulated "consequence-free" environment where the learner receives constructive feedback are essential to the mastery of team-related skills (Salas et al., 2008; Shapiro et al., 2008). Such learning opportunities need to provide for immediate feedback using the principles of debriefing and/or guided reflection to assist the learner in identifying areas for improvement and determining strategies for this improvement.



The learning environment of a simulated experience can be carefully controlled to achieve established learning goals. The knowledge, skills, behaviors and attitudes of Interprofessional Teamwork (IT) are acquired through simulation using a variety of typologies. Examples include case studies, role playing, standardized patients, advanced patient simulators, and 3D immersive technology. Simulation has specific advantages for IT

training. These advantages include scenarios designed to present specific challenging situations, opportunities for cross-training, and shared debriefing (Gaba, Howard, Smith, & Sowb, 2001). Additionally, Pittini and colleagues determined simulation-based teaching of technical, communication, and interdisciplinary collaboration skills can minimize risks to patients by "shifting the learning curve away from patients and into the laboratory" (Pittini et al., 2002, p. 478). However, Connor, Ponte, and Conway cautioned, "Patient safety cannot be accomplished without interdisciplinary practice approaches" (Connor, Ponte, & Conway, 2002, p. 360). Simulation supported by an advanced patient simulator (APS) can enhance interprofessional communication and team building skills as demonstrated in a study conducted by Maddox, Wakefield, and Bull (2001). Study participants from various disciplines indicated the interprofessional learning experience promoted an understanding of the roles and responsibilities of other health care providers and fostered mutual trust.

Three-dimensional (3D) virtual worlds are being developed and used in health care education. Although empirical research is needed for understanding the pedagogical outcomes and advantages associated with 3D technology, virtual worlds are appearing

on campuses and in the business world. A major strength associated with 3D technology is the ability to design unique learning experiences requiring active learning and social networking (Hansen, 2008). The unique virtual reality (VR) environment allows real-time exploration, manipulation of 3D objects, and learning in situations impossible to achieve in the real world due to patient safety issues. Additionally, programs can be developed to tailor unique situations and can be accessed by the learner multiple times. Further, virtual worlds can be accessed around the clock and advanced communication networks allow simulations to be disseminated independent of distance and/or location constraints (Alverson et al., 2005; Vincent, Sherstyuk, Burgess, & Connolly, 2008).

Research has demonstrated the extent of immersion into VR can impact student learning. Gutierrez and colleagues (2007) identified learners fully immersed in a VR environment using a head mounted display (HMD) demonstrated significantly higher knowledge gain than students partially-immersed using a screen-based VR system. Vincent, Sherstuuk, Burgess, and Connolly (2008) determined learners who participated in a triage training event using a fully immersed VR system with an HMD demonstrated a significant increase in scores and improved self-efficacy between scenarios depicting multiple casualty events. Alverson and colleagues (2005) demonstrated that students can interact simultaneously and collaborate with multiple participants in an immersive virtual environment independent of distance. Additionally, the learners who used VR expressed feelings of increased engagement compared to learners using text-based cases.

Work-Based Learning. Work-Based Learning (WBL) is defined as learning occurring in the work setting and requiring the learner to be self-directed with established readiness to learn. The goal of work-based learning is to improve performance by requiring the learners to translate previously gained knowledge, skills, behaviors, and attitudes to the practice setting. In the practice setting, the learner must recognize knowledge presented in unfamiliar ways and engage in reflection. Purposeful reflection is required for work-based learning to be recognized, analyzed, and assimilated to promote insightfulness and transferability. The faculty role in work-based learning is to function as a facilitator, providing a minimally structured, flexible approach. A range of tools are required to assess work-based learning and may include case presentations and reflective journaling (Brodie & Irving, 2007; Chapman, 2006). Research reflected student learning outcomes of work-based learning include increased feelings of self-confidence, enhanced decision-making, and enhanced teamwork skills (Chapman & Hawkins, 2003).

Blended Modalities of Learning. Only a few studies compared learning supported by PBL, CBL, and SBL. Steadman and colleagues (2006) compared simulation supported by an advanced patient simulator (APS) to PBL in a sample of fourth-year medical students. Students who learned using the APS performed significantly better ($p < 0.001$) than the PBL students in the final assessment. Another multi-site study compared scenario-based learning using paper and pencil to scenario-based learning supported by an APS. Students rated the educational practice of active learning supported with an APS as significantly higher ($p < 0.01$) in importance (Jefferies & Rizzolo, 2006).

The use of APS has demonstrated favorable responses from learners when compared to other teaching modalities. When a simulated operating room experience using APS was compared with experiences in the operating room, fourth-year medical students indicated favorable use of APS (Cleave-Hogg & Morgan, 2002). In a similar study conducted by Hammond and colleagues, 85% of the participating residents (N16) indicated "their time was better spent in the simulator session than in the operating room" (Hammond et al., 2002, p. 1065). Learners (N=14) who participated in an

Advanced Trauma Life Support course indicated the APS was superior to animal models (Block et al., 2002). Moreover, in an experimental study conducted by Morgan and colleagues (2002) comparing teaching with APS to video sessions, fourth-year medical students (N=144) indicated the learning including the APS was more enjoyable and valuable ($p < 0.001$). Further, Morgan and colleagues stressed that both experimental and control groups demonstrated significant learning, using pretest and posttest scores to show there was no significant difference ($p < 0.001$) between the groups.

Carbonaro et al. (2008) compared teaching interprofessional teamwork in a face-to-face classroom setting to a blended modality format utilizing Elluminate desktop virtual classroom and Webcam technology. Results from the five-week Interprofessional Teamwork (IT) course, which used complex case scenarios to teach students of the health sciences team process skills, indicated no difference between groups in achievement of skills, but the blended group indicated greater perceptions related to insightfulness into team dynamics.

Relevance to TTUHSC Interprofessional Teamwork (IT) Initiative. Each of the pedagogies summarized above was analyzed for best fit with the purpose, goals, and student learning outcomes of the TTUHSC IT initiative. The pedagogies selected for use in the IT initiative include case-based learning, simulation-based learning, work-based learning, and blended modalities. Each pedagogy selected will be piloted with a representative sample of students before full implementation. The staged process for implementing the educational programming is described in detail in Section VI, Actions to be Implemented.

BARRIERS TO INTERPROFESSIONAL TEAMWORK (IT) LEARNING

The integration of interprofessional activities into an academic health center can be a daunting task for multiple reasons. Perceived and actual obstructions to interprofessional education identified in the literature included physical, economic, and attitudinal barriers. Thus, challenges include differences in philosophy, including discipline-specific mission statements, inadequate knowledge of other disciplines, and value conflicts; organizational structures, including scheduling, student mix, and financial reimbursement; and academic implications, including the absence of uniform academic calendars, lack of perceived curriculum time, clinical placement issues, administrative support, faculty inflexibility, and geographic locations (Duerst et al., 1997; Yarborough, Jones, Cyr, Phillips, & Stelzner, 2000; Choi & Pak, 2007b).

Despite recognized challenges, the current health care environment and regulatory agencies indicate the need for interprofessional educational experiences to prepare students to work collaboratively with other professionals (Duerst et al., 1997; Choi & Pak, 2007b). Additionally, research has demonstrated the quality of patient care is enhanced, resource utilization improved, patient satisfaction increased, cost decreased, and morbidity and mortality lowered when health care providers function as an interprofessional team (Allen, Penn, & Nora, 2006; Choi & Pak, 2007a).

Student benefits from participating in an interprofessional educational experience were identified as an increased appreciation of the role of other disciplines, improved attitudes toward teamwork (Rice, 2000; Westberg, Adams, Thiede, Stratton, & Bumgardner, 2006) and increased learning (Choi & Pak, 2007a). Faculty at the University of Washington identified “the most visible and profound change” occurring through interprofessional education was a cultural change reflecting “collaboration and resilience” and breaking down of traditional boundaries (Mitchell, Schaad, Odegard, & Ballweg, 2006, p. 895).

Relevance to TTUHSC Interprofessional Teamwork (IT) Initiative. Based on the review of best practices literature, the IT leadership team recognized potential barriers to IT learning at TTUHSC. The strategies of the IT initiative, and associated methodologies, were designed to address such barriers. The barriers and relevant strategies and methods are summarized in Table 3.1.

Table 3.1. Potential Barriers to Interprofessional Learning and Strategies to Address Identified Barriers

POTENTIAL BARRIERS	RELEVANT STRATEGIES AND METHODS
Unprepared and unenthusiastic faculty	<p>Strategy 2A. Recruit and train IT faculty champions to lead development and implementation of IT instruction modules.</p> <p>Strategy 2B. Provide regular professional development seminars, presentations, and workshops on IT-related issues for TTUHSC administrators, faculty, and staff.</p>
Philosophical and academic policy differences	<p>Strategy 1A. Acquire support from TTUHSC administrators for the IT initiative. <i>Method:</i> Strategically involve deans and other TTUHSC administrators in IT advisory groups.</p> <p>Strategy 1B. Establish a data management system and processes for the IT initiative.</p> <p>Strategy 2B. Provide regular professional development seminars, presentations, and workshops on IT-related issues for TTUHSC administrators, faculty, and staff.</p>
Lack of a reward structure Differences in recognition and reward structures among schools	<p>Strategy 1A. Acquire support from TTUHSC administrators for the IT initiative. <i>Method:</i> Develop a reward system to recognize and support faculty's interprofessional education endeavors.</p>
Turfism and financial structures	<p>Strategy 1A. Acquire support from TTUHSC administrators for the IT initiative. <i>Method:</i> Propose release time be provided by schools to support the IT-related work of faculty champions.</p>
Faculty commitment	<p>Strategy 1C. Prepare internal and external reports to support the ongoing development of the IT initiative. <i>Method:</i> Use the IT initiative as foundation for a new TTUHSC institute—the Institute for Interprofessional Scholarship in Practice, Innovation, Research, and Education (INSPIRE).</p>
Over-crowded curricula Structural barriers including physical, calendars, and different points of entry into the profession	<p>Strategy 2A. Recruit and train IT faculty champions to lead development and implementation of IT instruction modules. <i>Method:</i> Faculty champions to identify where interprofessional teamwork educational programming can be integrated into current curricula of each discipline. Faculty champions to determine appropriate levels of learners for integration of IT educational programming.</p> <p>Strategy 3B. Develop, implement, and assess IT educational programming in four progressive stages. <i>Method:</i> Include a range of teaching pedagogies, including problem-based learning, case-based learning, simulation-based learning, and work-based learning.</p>

POTENTIAL BARRIERS	RELEVANT STRATEGIES AND METHODS
Various geographic locations of faculty and students	<p>Strategy 4B. Use current distance learning technology and purchase a new virtual online technology platform for use in IT simulations.</p> <p><i>Method:</i> In IT educational programming, integrate low- and high-fidelity simulations that can be accessed from different geographic locations.</p>
Potentially poor selection of team members Variations in learner age, education levels, and clinical experiences	<p>Strategy 2A. Recruit and train IT faculty champions to lead development and implementation of IT instruction modules.</p> <p>Strategy 2B. Provide regular professional development seminars, presentations, and workshops on IT-related issues for TTUHSC administrators, faculty, and staff.</p> <p><i>Method:</i> Train faculty to use best practices when creating teams, such as creating balanced groups (equal “mix” of members), limiting team size to 10 or less, and promoting team stability.</p>
Language and/or communication barriers	<p>Strategy 2A. Recruit and train IT faculty champions to lead development and implementation of IT instruction modules.</p> <p>Strategy 2B. Provide regular professional development seminars, presentations, and workshops on IT-related issues for TTUHSC administrators, faculty, and staff.</p> <p><i>Method:</i> Train faculty to integrate the use of a nationally recognized communication structure, such as the Situation-Background-Assessment-Recommendation (SBAR) technique, into IT educational programming.</p>
Selection of inappropriate measures or lack of measures to assess the project	<p>Strategy 1B. Establish a data management system and processes for the IT initiative.</p> <p>Strategy 3B. Develop, implement, and assess IT educational programming in four progressive stages.</p> <p><i>Method:</i> Identify, select, and/or develop appropriate tools to assess student learning outcome achievement.</p>
Varying professional practice acts and regulatory boards	<p>Strategy 2A. Recruit and train IT faculty champions to lead development and implementation of IT instruction modules.</p> <p><i>Method:</i> Select one faculty champion from each school to ensure representation of the various health professions in IT educational programming.</p>
Varying professional accreditation standards	<p>Strategy 2A. Recruit and train IT faculty champions to lead development and implementation of IT instruction modules.</p> <p><i>Method:</i> Select one faculty champion from each school to ensure representation of the various health professions in IT educational programming.</p>

INSTITUTIONAL CONTEXT: THE TTUHSC LEARNING ENVIRONMENT

The current learning environment and multiple locations of TTUHSC provide both advantages and challenges for implementing the Interprofessional Teamwork (IT) initiative. As previously described, TTUHSC is composed of six-schools in eight locations, as follows:

- TTUHSC School of Medicine located in Amarillo, Lubbock, and Odessa
- Paul L. Foster School of Medicine located in El Paso
- School of Allied Health Sciences located in Amarillo, Lubbock, and Midland

- School of Nursing located in Abilene, El Paso, Highland Lakes, Lubbock, and Odessa
- School of Pharmacy located in Abilene, Amarillo, Lubbock, and Dallas/Fort Worth
- Graduate School of Biomedical Sciences located in Amarillo and Lubbock



TTUHSC offers course work toward its degree programs through traditional face-to-face instruction and/or through electronic means at its eight locations in Texas. TTUHSC also offers some degree programs that can be completed primarily through online delivery, thereby accommodating students from varying locations throughout Texas and the United States. A table showing TTUHSC degrees, certificates, and diplomas offered by location is available in Appendix G.

A primary advantage of the TTUHSC learning environment for the Interprofessional Teamwork initiative is the representation of multiple health professions in the TTUHSC schools, including medicine, nursing, pharmacy, allied health sciences, and biomedical sciences. While the geographic distance among campuses poses a challenge, TTUHSC has years of experience in bridging distance through the innovative use of

technology. The Interprofessional Teamwork (IT) initiative will build upon existing technological resources and expertise and will use technology to bring together teams of students and faculty from the various TTUHSC campuses. More information on how this will be accomplished is provided in Section VI, Actions to be Implemented.

VI. Actions to be Implemented

Based on a review of best practices literature, TTUHSC has established four overarching goals for the Interprofessional Teamwork (IT) initiative designed to facilitate cultural change. The goals engage administrators, faculty, and students in the IT initiative and acknowledge the importance of having appropriate technological support to facilitate communication and collaboration among students and faculty in geographically separate locations. The following narrative summarizes the methodologies that will be implemented in support of each goal and strategy of the IT initiative.

GOAL 1. CREATE AN ADMINISTRATIVE INFRASTRUCTURE TO SUPPORT INTERPROFESSIONAL EDUCATION.

- Strategy 1A. Acquire support from TTUHSC administrators for the IT initiative.
- Strategy 1B. Establish a data management system and processes for the IT initiative.
- Strategy 1C. Prepare internal and external reports to support the ongoing development of the IT initiative.

Strategy 1A. Acquire support from TTUHSC administrators for the IT initiative.

METHODOLOGY

Successful cultural changes, according to Mitchell et al. (2006) and Sanfilippo, Bendapudi, Rucci, and Schlesinger (2008), require a unique dual top-down and bottom-up approach. The top-down and bottom-up approach at both the University of Washington and Ohio State University Medical Center catalyzed a cultural change that encouraged administrators, faculty, staff, and students to come together around major Interprofessional initiatives that resulted in changes in institutional policies. TTUHSC's inclusive QEP topic selection process described earlier started with the broad-based solicitation of ideas—the “bottom-up” approach—and culminated in the selection of a QEP topic by the President's Executive Council—a “top-down” decision intended to ensure administrative awareness of and support for the Interprofessional Teamwork initiative. Administrative support is also evidenced by the institution's financial commitment of \$250,000 per year for implementation of the IT initiative. To ensure ongoing administrative support for the IT initiative, the IT project team will do the following:

- Strategically involve deans and other TTUHSC administrators in IT advisory groups. For example, the Vice President for Academic Affairs provides administrative oversight for the Interprofessional Teamwork initiative and is a member of the QEP Steering Committee.
- Develop a reward system to recognize and support faculty's interprofessional education endeavors. In order for the IT initiative to be successful, best practices indicate that a process for rewarding and recognizing faculty champions must be developed and approved by the administration (Mengel, Pauwels, & Frey, 2007; Rogers, McCurdy, Slavin, Grubb, & Roberts, 2008). All TTUHSC schools currently recognize the scholarship of education and educational research in their promotion and tenure criteria. In addition, a subcommittee of the QEP Steering Committee has proposed a new president's award to recognize faculty innovation and creativity in interprofessional education.

- Secure financial support for Interprofessional Teamwork (IT)-related work of faculty champions. In the first year, financial support for faculty champions will be provided from the IT budget, and efforts are underway to integrate financial support for faculty champions into existing financial structures. For example, the QEP Steering Committee has proposed that schools provide release time to faculty champions for their IT-related work.

Strategy 1B. Establish a data management system and processes for the Interprofessional Teamwork (IT) initiative.

METHODOLOGY

Assessing the impact of the Interprofessional Teamwork (IT) initiative on student learning will be critical to the ongoing improvement of the Interprofessional Teamwork initiative. It will also be necessary to assess progress towards achieving the broader goals of the IT initiative. To support ongoing assessment, evaluation, and improvement of the IT initiative, the IT project team will:

- Develop appropriate data collection processes. The QEP Steering Committee will work in cooperation with the Faculty Champions to develop appropriate data collection processes utilizing identified assessment tools for each stage of the IT educational programming.
- Conduct a baseline assessment of TTUHSC faculty and students. In the spring of 2009, the QEP Steering Committee conducted a baseline assessment to better understand the knowledge, skills, behaviors, and attitudes of TTUHSC faculty and students related to interprofessional teamwork (Appendices H and I). Results from the QEP Baseline Data Faculty Survey (N-133) and Student Survey (N-359) were representative of all schools and campus locations. Both faculty and students responded positively (96.9% and 97.5%, respectively) to the statement “I feel Interprofessional Teamwork is an important component of quality patient care.” This response justifies selection of Interprofessional Teamwork as a QEP topic and supports the need for implementation of the IT initiative at TTUHSC. Survey results related to incorporating IT into curricula and the availability of educational opportunities to participate as a member of an interprofessional team were inconsistent when compared to comments received informally throughout the QEP selection process. For example, in survey results 29.1% of faculty and 43.3% of the students indicated that IT-related topics were strongly incorporated into the curricula, yet comments from student and faculty regarding the incorporation of IT issues into curricula included statements such as “not to my knowledge,” “opportunities limited,” “the content was minimal at best,” and “It does, but only marginally.” Therefore, it has been recommended that the survey tool for faculty be modified to include not only the definition of IT, but also to provide examples of what does and does not constitute IT. Starting in the summer of 2009, the Baseline Data Student Survey will be replaced with the Readiness for Interprofessional Learning Scale (Appendix J), which will be distributed to all newly admitted TTUHSC students.

A nationally recognized expert in programmatic assessment has been engaged as a consultant to assist the QEP Steering Committee. The first consultation visit was in late January 2009. Subsequent visits are planned throughout the QEP Process.

Strategy 1C. Prepare internal and external reports to support the ongoing development of the Interprofessional Teamwork (IT) initiative.

METHODOLOGY

To ensure open communication and continuous quality improvement of the Interprofessional Teamwork (IT) initiative, the IT Director and program staff will prepare internal and external reports, as follows:

- Complete annual assessment plans in *WEAVEonline*. At TTUHSC, all academic programs, educational support units, and administrative units are required to engage in the development of assessment plans on an annual basis. Each of these plans is documented in the institution's online assessment management system, *WEAVEonline*. Support for these assessment efforts is provided by staff in the Office of Institutional Planning and Effectiveness. Beginning in 2009–2010 and annually thereafter, the IT Director will complete an assessment plan in *WEAVEonline* for the IT initiative. This will include documenting specific findings for assessment methodologies and reflecting on the progress made towards achieving each goal. Based on these findings, the Director will develop specific action plans to promote continuous improvement of the IT initiative.
- Complete Required TTUHSC Application for Recognition as an Institute. As previously mentioned, the overarching, long-term vision of the Interprofessional Teamwork project is to establish an institutional culture that is committed to the values of interprofessional education and care, including collaboration, communication, and coordination. The Interprofessional Teamwork initiative aims to build upon the collaborative foundation established by existing TTUHSC centers and institutes and to lay the groundwork for a new institute—the Institute for Interprofessional Scholarship in Practice, Innovation, Research, and Education (INSPIRE). Establishment of an institute will provide the administrative infrastructure needed for long-term development of the IT initiative and other projects related to interprofessional education. The IT Director, in cooperation with the QEP Steering Committee, will complete the TTUHSC application for recognition as an institute in the fall of 2012.
- Complete Five-Year Impact Report. The IT Director, in cooperation with the QEP Steering Committee and Faculty Champions, will report the extent to which the IT initiative has achieved its goals and enhanced student learning in the five-year impact report. The report will be submitted for review by the Commission.

GOAL 1. EVALUATION.

As mentioned above, beginning in 2009–2010 and annually thereafter, the Interprofessional Teamwork (IT) Director will complete an assessment plan in *WEAVEonline* for the IT initiative. The extent to which the initiative is achieving the goal of creating an administrative infrastructure to support interprofessional education will be measured in quantitative and qualitative terms. Quantitative measures indicating successful creation of a supportive administrative infrastructure will include identification of the IT Director at a high level in the TTUHSC organizational chart (for example, as the Director of a new TTUHSC institute), continued institutional funding for the initiative, dedicated office space for the IT initiative, and integration of IT-related measures into faculty reward systems and financial compensation structures. Qualitatively, annual surveys of TTUHSC faculty will reflect satisfaction with and support of the IT initiative.

GOAL 2. PROVIDE FACULTY DEVELOPMENT OPPORTUNITIES TO SUPPORT THE DEVELOPMENT AND IMPLEMENTATION OF INTERPROFESSIONAL TEAMWORK (IT) PEDAGOGIES AND MODALITIES.

- Strategy 2A. Recruit and train IT faculty champions to lead development and implementation of IT instruction modules.
- Strategy 2B. Provide regular professional development seminars, presentations, and workshops on IT-related issues for TTUHSC administrators, faculty, and staff.

Strategy 2A. Recruit and train Interprofessional Teamwork (IT) Faculty Champions to lead development and implementation of IT instruction modules.

METHODOLOGY

Achieving the desired goals of an Interprofessional education endeavor requires active participation from diverse groups, including leadership, faculty, staff, and external constituents, such as alumni and community leaders (Sanfilippo, Bendapudi, Rucci, & Schlesinger, 2008). The IT Faculty Champions will act as liaisons for the IT initiative, communicating with internal and external constituents, as needed, to support development and implementation of IT educational programming. One faculty champion from each of the six TTUHSC schools will be selected to help the QEP Steering Committee develop and implement IT educational programming. Faculty champions will be provided academic support and attend an intensive workshop related to teaching as a member of an interprofessional team, developing modules related to interprofessional teamwork, and strategies for implementing interprofessional education. The six faculty champions will work as a collaborative interprofessional teaching team and will have one team leader. Qualifications and job descriptions are currently being developed for the faculty champions and the team leader. Faculty champions will be selected from faculty members who express an interest in the IT initiative. To participate, faculty members must secure the approval of their dean. Primary responsibilities of the faculty champions will include the following:

- Identify appropriate IT pedagogies. The QEP Steering Committee has identified best practices related to IT pedagogies and modalities. Faculty champions will review these best practices and identify appropriate pedagogies for each stage of IT educational programming.
- Develop, conduct, and assess IT pilot projects. Based on its review of best practices, the QEP Steering committee has identified guiding principles for developing IT educational programming and has developed a staging process for implementing IT educational programming at TTUHSC. Details regarding the guiding principles and the staging process are provided below under Goal 3, Strategy 3B. Faculty champions will be introduced to the guiding principles and the staging process in their orientation and training sessions.
- Recruit and train other faculty to assist in implementing IT educational programming. The faculty champions will act as liaisons for the IT initiative and will engage and mentor other faculty in the process, as appropriate.
- Act as liaisons with the schools' curriculum committees to identify appropriate integration of IT learning opportunities into existing curricula. Specific content related to basic Interprofessional Teamwork knowledge currently exists in the curricula of most TTUHSC programs. Therefore, an initial strategy for faculty champions will be to

modify existing curricular content to include experimental IT learning opportunities.

Strategy 2B. Provide regular professional development seminars, presentations, and workshops on Interprofessional Teamwork (IT)-related issues for TTUHSC administrators, faculty, and staff.

METHODOLOGY

Essential prerequisites identified in the best practices literature for successful interprofessional faculty collaboration were cultural changes, administrative support, appropriate faculty development, and open communication (Paul & Peterson, 2001; Rice, 2000). Furthermore, Allen, Penn, and Nora (2006) cautioned teaching as an interprofessional team in health care education will require faculty development and a shift in mindset. To facilitate cultural change, the professional development activities of the IT initiative will be designed to educate and support administrators, faculty, and staff as they develop the knowledge, skills, attitudes, and behaviors necessary to support interprofessional education and the IT initiative. Primary professional development activities include the following:

- Provide financial support for key individuals involved in the IT initiative to attend selected conferences related to IT topics. For example, the Institute for Healthcare Improvement regularly hosts conferences related to interprofessional teamwork and education. Selected individuals will attend relevant conferences as appropriate.
- Invite nationally recognized experts in interprofessional education to provide professional development seminars, presentations, and workshops. Several national experts in IT have been invited to present professional development seminars. The initial presentation in spring 2009 focused on the use of simulation in interprofessional education. The presentation complemented activities related to the construction of a new interdisciplinary clinical simulation center on the Lubbock campus. Nationally recognized experts are also scheduled to present on issues such as the use of standardized patients for interprofessional educational experiences; teaching and assessing IT using advanced patient simulators; and planning, designing, and validating case scenarios related to IT. All professional development workshops are presented through TechLink, TTUHSC's videoconferencing system, to allow participation of faculty and staff from all TTUHSC campuses. Future professional development topics will be identified based on feedback from faculty surveys and focus groups.
- Disseminate findings related to the IT initiative. Dissemination of findings will include presentations and/or publications by Faculty Champions and other faculty and students involved in the IT project.

GOAL 2. EVALUATION.

The success of IT-related professional development activities will be measured quantitatively in terms of the number of faculty champions recruited and trained; the number of key individuals attending IT-related conferences; the number of professional development seminars, presentations, and workshops provided and the number and type of participants; and the number of IT-related presentations and/or publications produced by TTUHSC personnel. Qualitative measures used to assess the effectiveness of professional development activities will include the internally developed IT Faculty Survey and two other scales—the Instructor Satisfaction with Educational Pedagogy

Scale and the Instructor Self-Assessment of Self Confidence in Teaching Scale. For more information about these assessment tools, see Section X, Assessment.

GOAL 3. ESTABLISH A CULTURE OF INTERPROFESSIONAL EDUCATION BY DEVELOPING INTERPROFESSIONAL TEAMWORK (IT) LEARNING OPPORTUNITIES AND FACILITATING THE INTEGRATION OF THESE OPPORTUNITIES INTO EXISTING CURRICULA.

- Strategy 3A. Administer a seed grant program among TTUHSC faculty and students.
- Strategy 3B. Develop, implement, and assess IT educational programming in four progressive stages.

Strategy 3A. Administer a seed grant program among TTUHSC faculty and students.

METHODOLOGY

To foster enthusiasm for the IT initiative and facilitate creative, collaborative thinking about IT educational programming, the QEP Steering Committee is administering a seed grant program. A call for proposals for “QEP Seed Grants for Interprofessional Teamwork” was made in December 2008. Basic criteria were developed by a QEP Seed Grant Subcommittee and approved by the QEP Steering Committee, and a rubric was developed to evaluate submissions (Appendix K, QEP Seed Grant Review Rubric). A blind review process was conducted, and the three applications with the highest rubric score were selected and awarded \$2,500 each. The seed grant projects are being implemented in the spring 2009 semester and represent various methods for facilitating interprofessional teamwork. The three awarded seed grants include the following:

- Development of a student collaborative to discuss IT knowledge, skills, behaviors, and attitudes using problem-based learning.
- Development of video vignettes to facilitate team-based decision making through case-based learning.
- Assessing team function during a simulation-based learning experience.

Awardees are expected to implement the seed grant projects, provide data and outcomes back to the QEP Steering Committee, and present a summary of project outcomes at an IT workshop in the fall of 2009.

Strategy 3B. Develop, implement, and assess Interprofessional Teamwork (IT) educational programming in four progressive stages.

METHODOLOGY

The heart of the Interprofessional Teamwork (IT) initiative is developing and implementing IT educational programming at TTUHSC. The underlying framework for IT educational programming has been established by the QEP Steering Committee based on a review of best practices literature. This framework includes a staging process for implementing IT educational programming and guiding principles for developing IT learning modules.

Staging Process. The staging process for the IT initiative is designed to support the integration of IT educational programming over time using a variety of educational methodologies. The staging process is based on several insights gleaned from best practices literature, as follows:

- Exposure to Interprofessional Teamwork (IT) educational programming over time facilitates integration of IT knowledge, skills, behaviors, and attitudes. Educating healthcare students and professionals to develop the knowledge, skills, behaviors, and attitudes necessary for effective interprofessional teamwork is recognized as a key to providing quality, safe patient care. The impact of IT education is related to the duration of the educational experience and the developmental stage of the learner. Research conducted through the Institute for Healthcare Improvement identified courses conducted over a long period of time that integrated work based experiences produced greater individual and organizational change. Additionally, the educational experience should begin in the pre-licensure educational experience and continue throughout the individual's career (McPherson, Headrick, & Moss, 2001).
- Experiential learning is essential to the development of Interprofessional Teamwork (IT) knowledge, skills, behaviors, and attitudes. Development of a learner's competency in a specific area is enhanced when the individual develops an initial conceptual understanding of the subject (Bigge & Shermis, 2004; Bradford, Brown, & Cocking, 2000). Although didactic lecture-based pedagogies can help learners attain knowledge and enhance attitudes concerning interprofessional teamwork (IT), however, experiential learning is required for learners to fully develop IT skills and alter attitudes (Gaba, 2006). Long-term repetitive practice and training has the potential to change the current culture related to teamwork. Furthermore, according to Bigge and Shermis (2004), learning can be defined as the dynamic process of acquiring knowledge and skills through experiences. The experiential learning process promotes change in behaviors and attitudes leading to the discovery of meaning or insight.
- Multiple pedagogical approaches are necessary to maximize learning. Gaba (2006) stated multiple approaches are necessary to maximize learning and facilitate the transfer of IT knowledge, skills, behaviors, and attitudes to the patient care setting. Salas and Burke (2002) indicated IT training should include hands-on practice and feedback using a spectrum of low- to high-fidelity activities. Fidelity is the extent to which a simulated experience mimics reality. Recommended types of activities include verbal problem-based activities using low-fidelity technology, simulation-based activities using high-fidelity technology (such as advanced patient simulators and 3D immersive technology), and work-based activities in the real world.

The Interprofessional Teamwork (IT) staging process at TTUHSC has been designed to integrate various methods of delivery over time, thereby providing multiple opportunities for learners to practice collaboration, communication, and cooperation and develop competence in interprofessional teamwork. The staging process will facilitate progressive acquisition of the knowledge, skills, behaviors, and attitudes necessary for effective participation as an interprofessional team member by giving learners opportunities to practice in safe, simulated environments before transferring IT skills to the actual work-based patient care setting. Case scenarios will be designed using low- and high-fidelity technology, and learning environments will include single-discipline training and combined-team training.

Single-discipline learning includes students from only one discipline during the experience, while other members of the health care team are played by faculty or paid actors. Single-discipline activities allow concentrated learning of discipline-specific skills and knowledge while simplifying the political considerations of interprofessional

teamwork (IT). Activities that integrate single-discipline learning are appropriate for novice learners and advanced beginners. Combined-team learning is an approach where students from different professions undergo learning as a team. Combined-team training is most successful when the learning groups have already achieved a basic level of discipline-specific competencies. In the IT staging process, learners will be introduced to IT knowledge, skills, behaviors, and attitudes (KSAs) in a single-discipline environment. As learners develop basic competencies, they will then be given opportunities to demonstrate IT KSAs in a combine-team learning environment.

The staging process will include four stages, as described below and as illustrated in Table 4.1.

Stage 1. Stage 1 educational programming will focus on the first three student learning outcomes to establish foundational understanding of Interprofessional Teamwork (IT) KSAs. Students will be introduced to IT KSAs through problem-based learning (PBL) scenarios in a single-discipline training environment. Next, students will expand their understanding of IT KSAs by participating in case-based learning scenarios in a combined-team training environment. Low-fidelity, web-based technology will be used for Stage 1 learning modules.

Becker (2005) demonstrated scores on the Interdisciplinary Education Perception Scale (IEPS) increased after students participated in a six-week course related to interdisciplinary teamwork in which group discussions were promoted through computer conferencing supported by faculty mentors and printed-materials. Additionally, Becker indicated that faculty-facilitated engagement positively affected the students' perception of the learning experience. Therefore, Stage 1 educational programming will include the use of computer conferencing via the Internet, the TechLink videoconferencing system, and/or webcam technology. These low-fidelity mechanisms will facilitate connection among faculty and learners from different campuses. The web-based learning modules for Stage 1 will be developed by the interprofessional team of faculty champions. Once developed, these modules will be provided to all TTUHSC faculty and will be integrated appropriately into the current curricula.

Stages 2 and 3. During Stages 2 and 3 of the Interprofessional Teamwork (IT) educational programming, learners will build upon the foundation established in Stage 1 and will begin to demonstrate IT KSAs, as articulated in student learning outcomes four and five. Students will have the opportunity to practice IT KSAs through active participation in simulated, case-based learning scenarios in a combined-team learning environment. The interprofessional team of faculty champions will develop active learning experiences using simulation technology, such as standardized patients, advanced patient simulators, and/or 3D immersive technology. These modules will require learners to demonstrate interprofessional team skills, including basic group skills (communication, negotiation, conflict resolution, delegation, and time management) and evidence-based decision-making while providing care for a patient in a safe, realistic, simulated environment.

Stage 4. Stage 4 Interprofessional Teamwork (IT) educational programming will provide the learner with the opportunity to transfer IT KSAs to the actual patient-care environment. These combined-team learning experiences will be provided through work-based patient-care scenarios facilitated by an interprofessional team of faculty champions.

Table 4.1. Staging Process to Implement Interprofessional Teamwork (IT) Educational Programming

STAGE 1		
Student learning outcomes:		
1. Describe the knowledge, skills, behaviors and attitudes required for an individual to function as an effective member of an interprofessional team.		
2. Identify the roles and diverse perspectives of IT, including responsibilities, expertise, background, knowledge, and values of IT members.		
3. Demonstrate heightened awareness and appreciation of the potential benefits of IT.		
Educational Pedagogy	Type of Team	Delivery Method
Problem Based Learning	-----> Single-discipline training ^a	Electronic learning (web based, web communications, TechLink videoconferencing)
Problem Based Learning ↳ Case Based Learning	-----> Combined-team training ^b	
STAGES 2 AND 3		
Student learning outcomes:		
4. Demonstrate evidence-based decision making while participating collaboratively as a member of an interprofessional team.		
5. Demonstrate basic group skills, including communication, negotiation, conflict resolution, delegation, time management, and assessment of group dynamics.		
Educational Pedagogy	Team Environment	Delivery Method
Case-Based Learning ↳ Simulation-based Learning	- -> Single-discipline training and combined-team training	Simulation (advanced patient simulators, standardized patients, immersive online technologies)
STAGE 4		
Student learning outcome:		
6. Participate as a collegial member of an interprofessional team to coordinate and individualize patient care to ensure excellence, continuity, and reliability, even when team members are in different physical locations.		
Educational Pedagogy	Team Environment	Delivery Method
Simulation-Based Learning ↳ Work-Based Learning	-----> Combined-team training	Actual patient-care settings

^a Student work groups composed of 4 to 5 students from the same discipline.

^b Collaborative student work groups composed of students from more than one discipline.

Pilot Projects. Pilot projects for each stage will be designed and implemented by faculty champions with oversight by the QEP steering committee. Pilot projects will be designed and conducted to determine feasibility, acquire assessment data, and identify modification needed prior to initiation of each stage. Specific criteria for the proposed pilot projects will be developed based on identified student learning outcomes and the guiding principles outlined below. Compensation will be provided to the faculty champions for their time in planning, facilitating, and assessing the pilot projects.

Guiding Principles for Developing IT Learning Modules. Salas and colleagues (2008) emphasized that comprehensive team training modules need to be systematically

planned to integrate adult learning principles. In reviewing best practices literature, the QEP Steering Committee identified the following four critical principles for designing effective team training experiences, as recommended by Shapiro and colleagues (2008):

- Principle 1. Establish the Team-Based Competencies to be Assessed and Trained. Six student learning outcomes have been defined for the TTUHSC Interprofessional Teamwork (IT) initiative.
- Principle 2. Provide Opportunities for Guided Teamwork Practice. Team learning scenarios will be carefully crafted to provide experiential learning opportunities for students.
- Principle 3. Measure Team Performance. Assessment measures have been identified to diagnose strengths and weaknesses in observed teamwork scenarios.
- Principle 4. Develop Robust Debriefing Protocols. Reflective exercises will be used to solicit feedback from students. Student feedback will be linked to student learning outcomes.

Each of these principles is discussed in greater detail below.

Principle 1. Team-Based Competencies to be Assessed. Review of best practices literature uncovered three key components required for effective interprofessional teamwork: communication, coordination, and cooperation (Shapiro et al., 2008; Salas et al., 2008). Extending from these three basic components are the core competencies—the knowledge, skills, behaviors, and attitudes—necessary to perform as an effective member of an interprofessional team (Shapiro et al., 2008; Paris, Salas, & Cannon-Bowers, 2007). These core competencies are summarized in the following table.

Table 4.2. Interprofessional Teamwork Knowledge, Skills, Behaviors, and Attitudes:
Core Competencies and Dimensions

COMPETENCY	DIMENSIONS
Knowledge	<ul style="list-style-type: none"> • Roles of various team members • Responsibilities of various team members • Components of teamwork • Shared team mission, norms, objectives, and resources • Benefits and obstacles of interprofessional teamwork • Shared task models
Skills	<ul style="list-style-type: none"> • Communication (SBAR, Closed-Loop) • Team decision-making skills • Negotiation skills • Team leadership skills
Behaviors	<ul style="list-style-type: none"> • Mutual performance monitoring (including time management) • Shared situation awareness • Backup behaviors and adaptability • Conflict resolution
Attitudes	<ul style="list-style-type: none"> • Belief in the importance of teamwork • Mutual trust and recognition • Team orientation (Cohesion)

→ *Application to TTUHSC Interprofessional Teamwork (IT) Initiative. IT educational programming at TTUHSC will be designed to teach these core competencies, as measured by the defined IT student learning outcomes.*

Principle 2. Guided Teamwork Practice. As stressed by Shapiro and colleagues (2008), knowing about teamwork does not guarantee an individual is able to demonstrate the knowledge, skills, behaviors, and attitudes (KSAs) of an interprofessional team member. Experiential learning opportunities with guided practice are necessary to ensure that IT KSAs are fully developed. The TTUHSC IT initiative is designed to include several modalities of experiential learning, allowing multiple pedagogies, technologies, and techniques to be integrated into the learning process. As described above, the progressive staging process for IT educational programming will include problem-based learning, case-based learning, simulation-based learning, and work-based learning. Case scenarios will be designed using low- and high-fidelity technology, and learning environments will include single-discipline training and combined-team training.

Designing the learning opportunities for guided teamwork practice will begin with case scenario design. Scenarios will be developed based on the identified student learning outcomes and the learner competency level. To ensure consistency and quality in the development of IT learning scenarios, the TTUHSC IT project team has adopted a modified version of the Collaborative Practice Model developed by Jeffries, McNelis, and Wheeler (2008) for collaborative learning with simulation, as illustrated below.

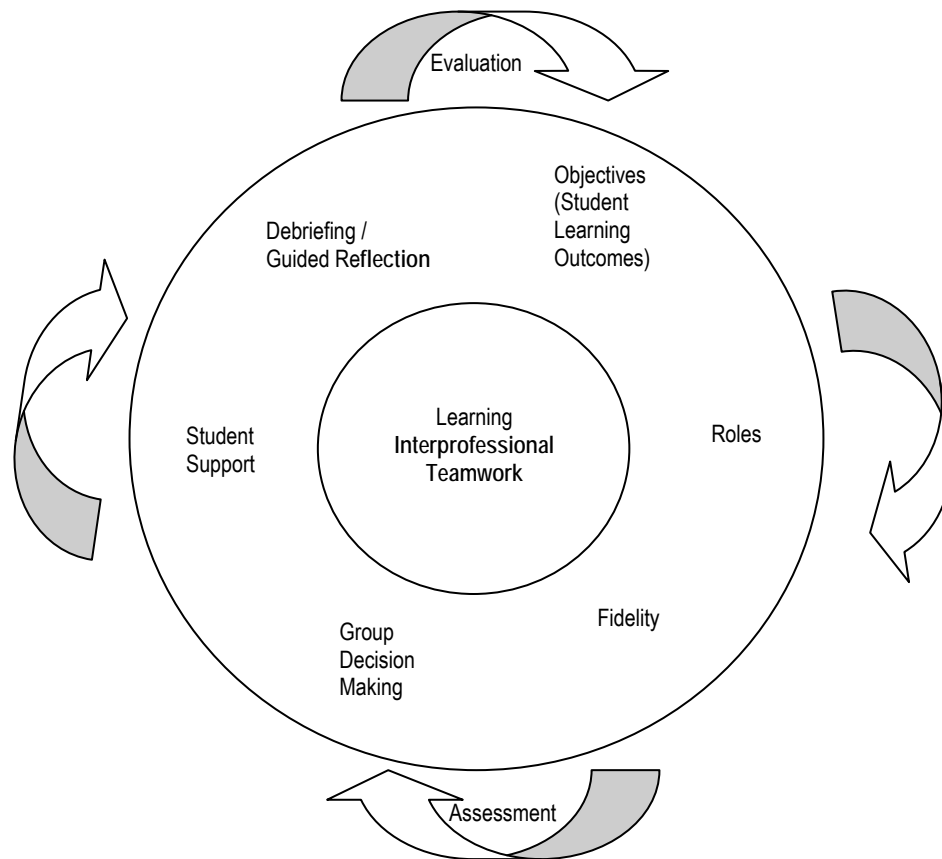


Figure 4.1. IT Teaching Through Simulation Model
(Adapted from Jeffries, McNelis, & Wheeler, 2008)

Jeffries and colleagues stressed a simulated experience must be appropriate to all disciplines involved in learning activities and include the following specified design features:

- Objectives. Objectives need to be specific and state the intended outcomes of the experience.
 - Roles. Roles need to be delineated and include both the expected outcomes for faculty and the learner.
 - Fidelity. Fidelity (high, medium, low) is the extent to which the simulated experience mimics reality. Other dimensions of fidelity include the environment, equipment, and physiologic fidelity of the simulator.
 - Problem-solving. Problem-solving or decision-making expectations should align with the learner's current knowledge and skill level, while including situations of uncertainty that require communication and cooperation.
 - Support. Supporting information is provided to the student as needed to facilitate their understanding and analysis of the given case. The support provided depends on the type of simulation experience and includes information such as cueing from the "patient," diagnostics, and physical assessment findings.
 - Guided reflection. Guided reflection and/or debriefing is planned to occur immediately after the simulation in an effort to promote reflective thinking and the development of insight. (See Principle 4 below for more information about debriefing protocols.)
- *Application to TTUHSC Interprofessional Teamwork (IT) Initiative. Six specific student learning outcomes have been defined for the IT initiative, and these objectives, along with the other design features identified above, will guide the development of all IT learning scenarios. In addition, all IT learning scenarios developed by TTUHSC faculty will be peer reviewed for content validity by experts in interprofessional education. Once reviewed for content validity, the IT scenarios will be revised as needed to support student learning. Ultimately, a library of scenarios will be developed to be accessed and shared by TTUHSC faculty.*

Principle 3. Measuring Team Performance. Polit and Beck (2004) stressed measures used to evaluate learner performance and determine clinical competency need to be reliable and demonstrate validity.

- *Application to TTUHSC IT Initiative. The QEP Steering Committee has identified several valid methods of measurement, both quantitative and qualitative, that will be integrated throughout the IT process, as appropriate, to assess team performance and achievement of desired student learning outcomes. For example, the QEP Writing Subcommittee has mapped the IT student learning outcomes to Benner's (1984) competency-level definitions and is developing a rubric to assess progressive achievement of the student learning outcomes. The rubric identifies progressive development from a novice understanding of IT KSAs toward the higher levels of expertise required to transfer IT KSAs to the patient care setting (Appendix F, Novice-to-Expert Interprofessional Teamwork Competency Rubric). While the learner is not expected to achieve the knowledge, skills, behaviors, and attitudes of an expert until after graduation and professional experience, each learner is expected to progress at least to the level of advanced beginner by graduation. The internally-developed Novice-to-Expert Interprofessional Teamwork Competency Rubric will be*

used along with several other assessment tools, as needed, to assess achievement of the Interprofessional Teamwork (IT) student learning outcomes. Formative and summative assessment of the IT initiative will be conducted, and achievement of student learning outcomes will be measured using pre- and post-testing, nationally recognized assessment tools, self-assessments and reflection, case scenario and simulation experience outcome assessments, locally-developed assessment rubrics, locally modified externally developed satisfaction and self-confidence tools, and externally developed tools. For more information about these assessment tools, please see Section X, Assessment.

Principle 4. Debriefing Protocols. Reflection has been defined as an active process of self-monitoring initiated by a state of doubt or puzzlement occurring during or after an experience. Reflection is an essential component of experiential learning. Reflection promotes insightfulness that leads to the discovery of new knowledge with the intent of applying such knowledge to future situations (Decker, 2007). While the literature review demonstrated experience alone does not guarantee learning (Boud, Keogh, & Walker, 1985), the integration of reflection helped learners apply theory to the clinical setting (Kuiper & Pesut, 2004; Wong, Kember, Chung & Yan, 1995) and promoted development of clinical reasoning skills (Murphy, 2004).

Learning from reflection is not automatic; such learning demands active involvement in a clinical experience (Teekman, 2000) and guidance throughout the reflective process (Johns, 1996). Paget (2001) identified a perceived transferability of reflective practice to clinical practice when reflective practice was integrated into an academic curriculum. Participants in the study indicated increased



assertiveness and self-awareness in individual clinical practice following a reflective educational experience. When structured group experiences were used to promote reflection, an additional identified benefit was the ability to see situations from different perspectives (Westberg & Jason, 2001).

Westberg and Jason (2001) stressed the skills required to engage in the reflective process can be learned. However, sufficient time and appropriate learning experiences—real or simulated—are needed to promote learning of the reflective process. According to Westberg and Jason, the development of insight can be lost if the individual is not allowed time to reflect on new learning. Structured, guided debriefing and/or reflective sessions allow the learner to reflect on the learning experience and relate the learning activities to identified student learning outcomes. The faculty role during debriefing is to guide the process, provide a “safe” learning environment, promote the involvement of all participants, and identify any variations from standards of practice not recognized by the group (Fanning & Gaba, 2007).

Various techniques are posed in best practices literature to facilitate the development of reflective thinking. The methods vary from individual methods, such as inquiry journals, to structured group experiences. Specific strategies identified to support

individual reflection included journal writing (Paget, 2001; Riley-Doucet & Wilson, 1997), audio-taped journaling (Kuiper, 2005), email-based dialogues (Henderson & Johnson, 2002) and debriefing (Fanning & Gaba, 2007). Additionally, Fanning and Gaba stress reflective sessions conducted during interprofessional team learning must be tailored to the identified student learning outcomes, the competency level of the participants, and characteristics of the team members.

Mezirow (1981) described three levels of reflection: non-reflectors, reflectors, and critical reflectors. Non-reflectors demonstrate no evidence of reflection; reflectors attend to feeling; and critical reflectors identify relationships, validate outcomes, and transfer knowledge obtained during the learning experience to new situations. The ability to identify learners' reflective thinking based on Mezirow's levels of reflection was demonstrated by Wong and colleagues (1995). Specific characteristics were noted in the learners at each level. Non-reflectors made precise observations but did not analyze the experience and usually adopted a "straightforward way of viewing the situation" (p. 54). Learners identified as reflectors "attended to feelings" and identified relationships between new and past knowledge, but did not validate the experience or demonstrate the self-analysis identified in learners designated as critical reflectors (p. 54).

→ *Application to TTUHSC Interprofessional Teamwork (IT) Initiative. In designing the IT learning modules, the TTUHSC IT project team will identify appropriate reflective exercises and debriefing protocols for each learning scenario, and performance indicators will be identified and integrated into the Novice-to-Expert Interprofessional Teamwork Competency Rubric to assess learners' competency related to reflective thinking as they progress through the four stages of IT educational programming.*

GOAL 3. EVALUATION.

Evaluation of IT educational programming is addressed above under "Principle 3. Measuring Team Performance" and in Section X, Assessment.

GOAL 4. PROVIDE THE TECHNICAL EXPERTISE AND INFRASTRUCTURE NECESSARY TO FACILITATE INTERCONNECTIVITY AMONG INDIVIDUALS EVEN WHEN THEY ARE IN DIFFERENT GEOGRAPHIC LOCATIONS AND/OR TIME ZONES.

- Strategy 4A. Support ongoing TTUHSC technology initiatives aimed at ensuring interconnectivity.
- Strategy 4B. Use current distance learning technology and purchase a new virtual online technology platform for use in IT simulations.

Strategy 4A. Support ongoing TTUHSC technology initiatives aimed at ensuring interconnectivity.

METHODOLOGY

Interprofessional initiatives at the University of Washington and Ohio State University Medical Center demonstrated that a lack of shared space and geography can be overcome by distance technologies when there is committed administrative and faculty leadership (Mitchell et al., 2006; Sanfilippo, Bendapudi, Rucci, & Schlesinger, 2008). Successful integration of the Interprofessional Teamwork (IT) initiative at all TTUHSC schools and campuses will depend on the innovative use of educational technologies, and the IT project team is committed to supporting ongoing educational technology initiatives. Given the regional, multi-campus structure of TTUHSC, the institution has already established a strong commitment to using technology in innovative and effective ways to facilitate connection among people in different geographic locations. TTUHSC

uses a wide range of information technology systems to enhance student learning and meet the objectives of the institution's academic programs. TTUHSC's Information Technology Division, in collaboration with each of the schools and oversight from the President's Executive Council, provides infrastructure support for these systems and provides related services to maintain an integrated institution-wide network connecting all TTUHSC campuses and clinics. Information services and resources are shared among all TTUHSC schools.

Furthermore, to ensure convenient, reliable, and secure access to the institution's data network and associated academic and administrative information, TTUHSC has recently upgraded its network infrastructure and is in the process of upgrading its information-management systems to create a unified online campus environment. To ensure that TTUHSC constituents have access to the computer hardware and software they need, the institution has an agreement with Summus/Dell Computers to provide discounted pricing on computer hardware, including laptops, and maintains campus-wide agreements with a number of software vendors to provide commonly used software to faculty, staff, and students without cost to the individual.

In 2008, a broad-based committee representing all of the TTUHSC schools developed a new operating policy, HSC OP 56.02 Electronically Delivered Education, to ensure that the institution adheres to best practices for electronically delivered degree programs. HSC OP 56.02 in turn led to the establishment of the Distributive Learning Executive Council (DLEC) and a new Distance Learning website. The DLEC appointed an ad hoc committee, the Education Technology Evaluation Group (ETEG), composed of faculty and technical staff, to develop consensus regarding the current and future pedagogical requirements for electronically delivered education at TTUHSC. The QEP Steering Committee has representation on the DLEC and the ETEG.

Strategy 4B. Use current distance learning technology and purchase a new virtual online technology platform for use in Interprofessional Teamwork (IT) simulations.

METHODOLOGY

TTUHSC provides a variety of educational technology tools and services to promote student learning and support traditional and distance education programs, including Blackboard CE 6, an online educational platform that allows instructors to create virtual classroom environments; video network systems that facilitate communication among campuses; clinical simulation centers, equipped with simulation technology to provide students with risk-free hands-on clinical education; and various other educational technologies that facilitate interactive learning experiences. Furthermore, by using different methods of instruction, some TTUHSC faculty members already teach students at more than one campus site and/or at a distance. TTUHSC defines "method of instruction" as "a means of conducting interaction between students and instructors and among students in an academic course." The following three methods of instruction are used by TTUHSC faculty:

- Face to Face Instruction. Students and instructors are in the same location at the same time.
- Instruction via Interactive Synchronous Videoconferencing. Instructors and students who are geographically separated interact concurrently through the use of videoconferencing resources, such as multimedia teaching podiums, video cameras, webcams, student microphones, video monitors, VGA/video projectors, and related items.

- **Web-based Asynchronous Online.** Instructors and students interact via web-based technologies, not in real time. This technology is usually used by students who are geographically separated from their instructors.

All of these methods of instruction will be integrated into Interprofessional Teamwork (IT) educational programming, with a particular emphasis on developing web-based learning scenarios that will facilitate interaction among students and faculty in different geographic locations at different times.

The IT initiative will use existing educational technologies for several types of simulation, including case studies, role playing, standardized patients, and advanced patient simulators. In Stage 3 of IT educational programming, the IT project team will also incorporate virtual learning experiences using new three-dimensional (3D) immersive technology. As previously described in the literature review and best practices section, a major strength associated with 3D technology is the ability to design unique learning experiences requiring active learning and social networking (Hansen, 2008). The unique virtual reality (VR) environment allows real-time exploration, manipulation of 3D objects, and learning in situations impossible to achieve in the real world due to patient safety issues. Additionally, programs can be developed to depict unique situations and can be accessed by the learner multiple times. Further, virtual worlds can be accessed around the clock, and advanced communication networks allow simulations to be disseminated independent of distance and/or location constraints (Alverson et al., 2005; Vincent et al., 2008).

GOAL 4. EVALUATION.

To assess student and faculty satisfaction with available academic support services, TTUHSC conducts an annual survey of all TTUHSC students and a biannual survey of all TTUHSC faculty. These surveys already include questions regarding student and faculty satisfaction with educational technology resources, and the survey tools will be modified as needed to determine student and faculty satisfaction with technology-facilitated interconnectivity among students and faculty engaged in educational programming related to the Interprofessional Teamwork initiative.

A subcommittee of the QEP Steering Committee, the Immersive Online Technologies Subcommittee, has developed a matrix for evaluating 3D software. The matrix identifies several factors for evaluation, including the following: end user operating system, training, technical support, license duration, cost, housing option, annual user fees, and capability for asynchronous and synchronous learning.

VII. Timeline

The actions outlined in the previous section will be implemented progressively over the course of the next five years, as summarized in the following figure and tables:

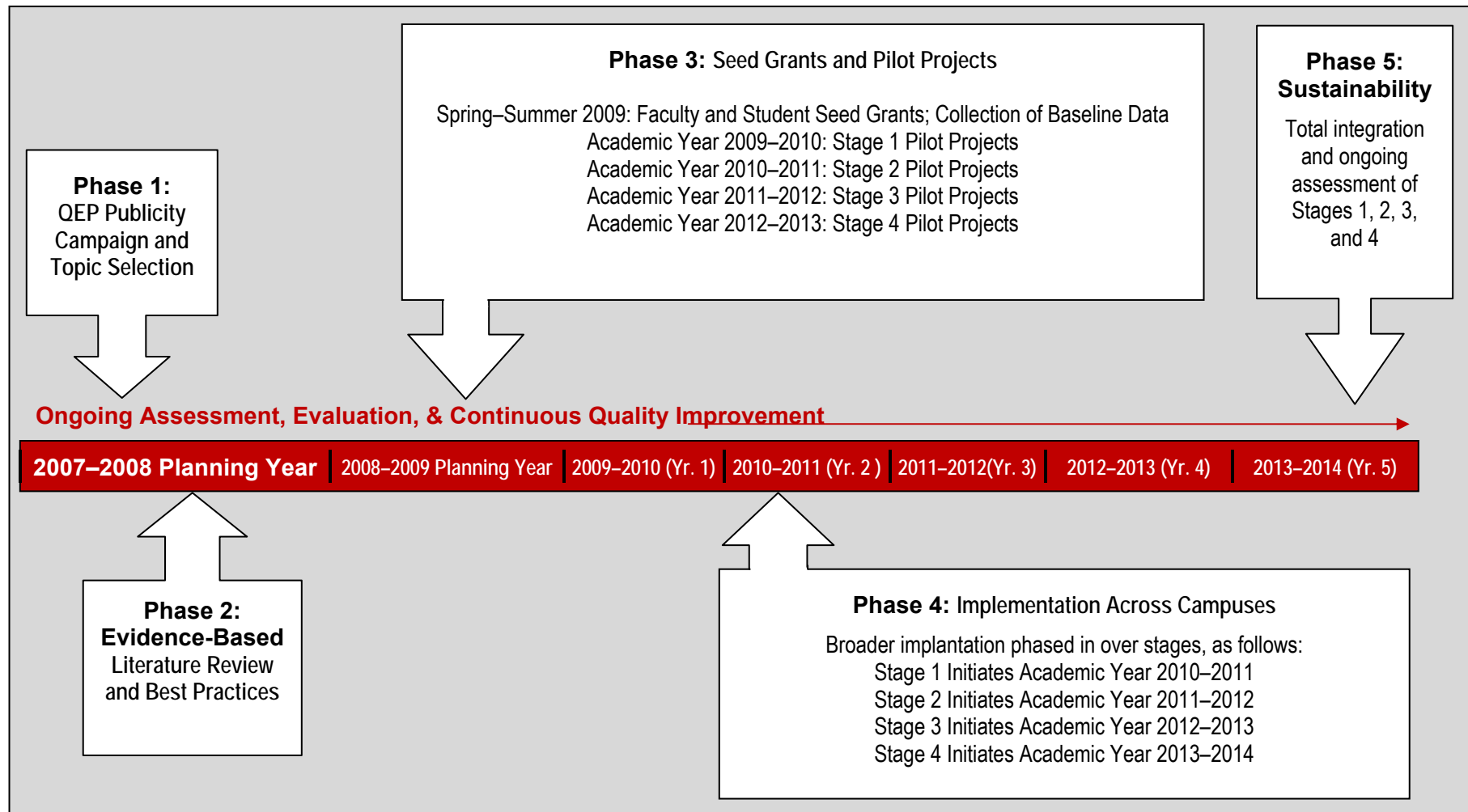
- Figure 5.1. Overview of Five-Year Timeline
- Table 5.1. Specific Actions, Time Frame, Persons Responsible, and Expected Impact: Spring 2009 through Spring 2014
- Table 5.2. Estimated Student and Faculty Involvement



The timeline established by the TTUHSC QEP Steering Committee for the Interprofessional Teamwork (IT) initiative depicts the following:

- Planning, assessment, and continuous quality improvement to be integrated throughout the implementation process.
- Staged implementation of seed grant projects, pilot projects, and broader IT educational programming.
- Professional development for personnel involved in developing, implementing, and assessing IT educational programming.

Figure 5.1. Overview of Five-Year Timeline



Stage 1: IT skills for the novice and advanced beginner using strategies combining problem-based learning with low-fidelity web-based technology.

Stage 2: IT skills for the competent learner combining case-based and team-based learning with high-fidelity technology, such as advanced patient simulators and standardized patients.

Stage 3: IT skills for the competent and possibly proficient learner using strategies combining team-based learning with high-fidelity immersive online 3D technology.

Stage 4: IT skills for the competent and possibly proficient learner using work-based experiences in the clinical environment.

Table 5.1. Specific Actions, Time Frame, Persons Responsible, and Expected Impact: Spring 2009 through Spring 2014

SPECIFIC ACTIONS	TIME FRAME	PERSON(S) RESPONSIBLE	EXPECTED IMPACT
Goal 1. Create an administrative infrastructure to support the implementation of interprofessional education.			
Strategy 1A. Acquire support from TTUHSC administrators for the IT initiative.			
Strategically involve deans and other TTUHSC administrators in IT advisory groups.	Began Summer 2008 and ongoing	Vice President for Academic Affairs	Continued administrative support for IT initiative.
Develop a reward system to recognize and support faculty's interprofessional education endeavors.	Proposed Spring 2009	QEP Steering Committee	Continued faculty interest and involvement in IT initiative.
Propose financial support for IT-related work of Faculty Champions.	Spring 2009	QEP Steering Committee	Faculty commitment to participating as Faculty Champions in the IT initiative.
Strategy 1B. Establish a data management system and processes for the IT initiative.			
Select a data management system and develop appropriate data collection processes: <ul style="list-style-type: none"> Review Software Select storage medium Define data collection procedures 	Early Spring 2009	QEP Steering Committee	Accurate and readily accessible assessment data.
Conduct Baseline Assessment: <ul style="list-style-type: none"> Distribute web-based baseline survey about Interprofessional Teamwork to all TTUHSC faculty and students Collect and analyze survey results 	Early Spring 2009	QEP Baseline Subcommittee	Baseline assessment data against which to measure future outcomes.
Strategy 1C. Prepare internal and external reports to support the ongoing development of the IT initiative.			
Complete annual assessment plans in WEAVE <i>online</i> .	Summer 2009 and annually thereafter	Director and Assessment Coordinator	Continuous quality improvement based on assessment data.
Complete Required TTUHSC Application for Recognition as an Institute: <ul style="list-style-type: none"> Collect relevant data for application Prepare application Submit to TTUHSC administrators 	Collect data: Spring 2009–Summer 2012 Prepare and submit report: Fall 2012	Director and Assessment Coordinator	Fulfillment of long-term vision for the IT initiative to establish the administrative infrastructure necessary for long-term development of the IT initiative and other projects related to interprofessional education.

SPECIFIC ACTIONS	TIME FRAME	PERSON(S) RESPONSIBLE	EXPECTED IMPACT
Complete Five-Year Impact Report: <ul style="list-style-type: none"> • Summarize and evaluate outcomes to date • Make data-driven decisions for future actions • Report outcomes and plans for the future 	Fall 2013	Director, Assessment Coordinator, QEP Steering Committee, and Faculty Champions	Plans for continued improvement and/or expansion of the project based on reflection and assessment outcomes.
Goal 2. Provide faculty development opportunities to support the development and implementation of Interprofessional Teamwork pedagogies and modalities.			
Strategy 2A. Recruit and train IT faculty champions to lead development and implementation of IT instruction modules.			
Recruit Faculty Champions: <ul style="list-style-type: none"> • Announce Opportunities • Solicit Deans' Support • Orient Faculty • Provide Training 	Spring 2009	QEP Steering Committee	Identification of 6 faculty champions, one from each TTUHSC school. Core of faculty trained in IT development and implementation.
Strategy 2B. Provide regular professional development seminars, presentations, and workshops on IT-related issues for TTUHSC administrators, faculty, and staff.			
Provide financial support for key individuals involved in the IT initiative to attend selected conferences related to IT topics.	Fall 2008 and annually thereafter	QEP Steering Committee	Continued awareness of and commitment to IT best practices among key personnel.
Provide ongoing academic support services to faculty involved in developing and implementing IT learning modules.	Spring 2009 and ongoing	QEP Steering Committee	Increased faculty expertise in IT development and implementation.
Invite nationally recognized experts in interprofessional education to provide professional development seminars, presentations, and workshops.	At least once each spring and fall semester (twice each academic year) beginning Spring 2009	Director and QEP Steering Committee	Increased faculty awareness and expertise related to IT.
Disseminate finding related to the IT initiative, to include presentations and/or publications by Faculty Champions and other faculty and students involved in the IT project	At least once each academic year beginning Fall 2009	Faculty Champions, other faculty, and students	Increased awareness and expertise related to IT among TTUHSC community and among the broader academic community.

SPECIFIC ACTIONS	TIME FRAME	PERSON(S) RESPONSIBLE	EXPECTED IMPACT
Goal 3. Establish a culture of interprofessional education by developing Interprofessional Teamwork learning opportunities and facilitating the integration of these opportunities into existing curricula.			
Strategy 3A. Administer a seed grant program among TTUHSC faculty and students.			
Select seed grant projects: <ul style="list-style-type: none"> • Review proposals • Select winning proposals • Initiate projects 	Early Spring 2009	QEP Abstract Review Committee and QEP Steering Committee	Increased awareness of and interest in the IT initiative among faculty and students.
Collect and analyze assessment data from seed grant projects and disseminate findings: <ul style="list-style-type: none"> • Collect assessment data related to student satisfaction and perception • Evaluate outcomes • Disseminate findings 	Summer 2009–Fall 2009	Director and QEP Steering Committee Recipients of Seed Grants	Increased faculty awareness and expertise related to IT.
Strategy 3B. Develop, implement, and assess IT educational programming in four progressive stages.			
Stage 1 Educational Programming			
Identify and/or develop assessment tools for IT Stage 1 learning outcomes assessments: <ul style="list-style-type: none"> • Develop local rubrics • Identify appropriate external assessment tools 	Spring 2009	Director, QEP Steering Committee, and Faculty Champions	Increased faculty expertise in IT assessment.
Develop IT pilot studies for Stage 1: <ul style="list-style-type: none"> • Solicit IT pilot study proposals • Evaluate IT pilot study proposals • Select proposals for implementation 	Spring–Summer 2009	Director, Faculty Champions, Assessment Coordinator, and QEP Steering Committee	Increased faculty experience and involvement in IT educational programming.
Implement Stage 1 IT pilot studies: <ul style="list-style-type: none"> • Collect pre-test baseline data • Implement IT Stage 1 pilot studies with at least 10 students per study • Collect post-test assessment data 	Fall 2009	Director, Faculty Champions, Assessment Coordinator, and Administrative Assistant	Increased IT knowledge, skills, behaviors, and attitudes and improved student satisfaction and self-confidence scores among students involved in IT learning opportunities. Improved faculty satisfaction and self-confidence scores among faculty involved in IT learning opportunities.

SPECIFIC ACTIONS	TIME FRAME	PERSON(S) RESPONSIBLE	EXPECTED IMPACT
Evaluate outcomes from Stage 1 pilot studies and plan improvements: <ul style="list-style-type: none"> • Analyze assessment data • Evaluate outcomes based on data • Assess previous improvement action plan outcomes • Develop new improvement action plans 	Summer 2010	Director, Assessment Coordinator, QEP Steering Committee, and Faculty Champions	Continuous quality improvement based on assessment data.
Plan broader implementation of Stage 1 IT experiences: <ul style="list-style-type: none"> • Refine IT learning opportunities • Determine appropriate curriculum integration in each school • Identify appropriate opportunities for integration on each campus 	Spring–Summer 2010	Faculty Champions, QEP Steering Committee, School curriculum committees	Increased faculty experience and involvement in IT educational programming.
Implement Stage 1 IT learning experiences across campuses: <ul style="list-style-type: none"> • Administer assessment tools, including pre- and post-test assessments and student satisfaction and perception assessments • Implement IT Stage 1 learning experiences • Evaluate assessment data • Assess previous improvement action plan outcomes • Continue improving Stage 1 learning opportunities 	Academic Year 2010–2011	Director, Faculty Champions, Assessment Coordinator, and Administrative Assistant	Increased IT knowledge, skills, behaviors, and attitudes and improved student satisfaction and self-confidence scores among students involved in IT learning opportunities. Improved faculty satisfaction and self-confidence scores among faculty involved in IT learning opportunities.
Stage 2 Educational Programming			
Identify and/or develop assessment tools for IT Stage 2 learning outcomes assessments: <ul style="list-style-type: none"> • Develop local rubrics • Identify appropriate external assessment tools 	Spring 2010	Director, QEP Steering Committee, and Faculty Champions	Increased faculty expertise in IT assessment.
Develop IT pilot studies for Stage 2: <ul style="list-style-type: none"> • Solicit IT pilot study proposals • Evaluate IT pilot study proposals • Select proposals for implementation 	Spring–Summer 2010	Director, Faculty Champions, Assessment Coordinator, and QEP Steering Committee	Increased faculty experience and involvement in IT educational programming.

SPECIFIC ACTIONS	TIME FRAME	PERSON(S) RESPONSIBLE	EXPECTED IMPACT
Implement Stage 2 IT pilot studies: <ul style="list-style-type: none"> • Collect pre-test baseline data • Implement IT Stage 2 pilot studies with at least 10 students per study • Collect post-test assessment data 	Fall 2010	Director, Faculty Champions, Assessment Coordinator, and Administrative Assistant	Increased IT knowledge, skills, behaviors, and attitudes and improved student satisfaction and self-confidence scores among students involved in IT learning opportunities. Improved faculty satisfaction and self-confidence scores among faculty involved in IT learning opportunities.
Evaluate outcomes from Stage 2 pilot studies and plan improvements: <ul style="list-style-type: none"> • Analyze assessment data • Evaluate outcomes based on data • Assess previous improvement action plan outcomes • Develop new improvement action plans 	Summer 2011	Director, Assessment Coordinator, QEP Steering Committee, and Faculty Champions	Continuous quality improvement based on assessment data.
Plan broader implementation of Stage 2 IT experiences: <ul style="list-style-type: none"> • Refine IT learning opportunities • Determine appropriate curriculum integration in each school • Identify appropriate opportunities for integration on each campus 	Spring–Summer 2011	Faculty Champions, QEP Steering Committee, School curriculum committees	Increased faculty experience and involvement in IT educational programming.
Implement Stage 1 and 2 IT learning experiences across campuses: <ul style="list-style-type: none"> • Administer assessment tools, including pre- and post-test assessments and student satisfaction and perception assessments • Implement IT Stage 1 and 2 learning experiences • Evaluate assessment data • Assess previous improvement action plan outcomes • Continue improving Stage 1 and 2 learning opportunities 	Academic Year 2011–2012	Director, Faculty Champions, Assessment Coordinator, and Administrative Assistant	Increased IT knowledge, skills, behaviors, and attitudes and improved student satisfaction and self-confidence scores among students involved in IT learning opportunities. Improved faculty satisfaction and self-confidence scores among faculty involved in IT learning opportunities.
Stage 3 Educational Programming			
Identify and/or develop assessment tools for IT Stage 3 learning outcomes assessments: <ul style="list-style-type: none"> • Develop local rubrics • Identify appropriate external assessment tools 	Spring 2011	Director, QEP Steering Committee, Faculty Champions, and Web Master	Increased faculty expertise in IT assessment.

SPECIFIC ACTIONS	TIME FRAME	PERSON(S) RESPONSIBLE	EXPECTED IMPACT
Develop IT pilot studies for Stage 3: <ul style="list-style-type: none"> • Solicit IT pilot study proposals • Evaluate IT pilot study proposals • Select proposals for implementation 	Spring–Summer 2011	Director, Faculty Champions, Assessment Coordinator, and QEP Steering Committee	Increased faculty experience and involvement in IT educational programming.
Implement Stage 3 IT pilot studies: <ul style="list-style-type: none"> • Collect pre-test baseline data • Implement IT Stage 2 pilot studies with at least 10 students per study • Collect post-test assessment data 	Fall 2011	Director, Faculty Champions, Assessment Coordinator, and Administrative Assistant	Increased IT knowledge, skills, behaviors, and attitudes and improved student satisfaction and self-confidence scores among students involved in IT learning opportunities. Improved faculty satisfaction and self-confidence scores among faculty involved in IT learning opportunities.
Evaluate outcomes from Stage 3 pilot studies and plan improvements: <ul style="list-style-type: none"> • Analyze assessment data • Evaluate outcomes based on data • Assess previous improvement action plan outcomes • Develop new improvement action plans 	Summer 2012	Director, Assessment Coordinator, QEP Steering Committee, and Faculty Champions	Continuous quality improvement based on assessment data.
Plan broader implementation of Stage 3 IT experiences: <ul style="list-style-type: none"> • Refine IT learning opportunities • Determine appropriate curriculum integration in each school • Identify appropriate opportunities for integration on each campus 	Spring–Summer 2012	Faculty Champions, QEP Steering Committee, School curriculum committees	Increased faculty experience and involvement in IT educational programming.
Implement Stage 1, 2, and 3 IT learning experiences across campuses: <ul style="list-style-type: none"> • Administer assessment tools, including pre- and post-test assessments and student satisfaction and perception assessments • Implement IT Stage 1, 2, and 3 learning experiences • Evaluate assessment data • Assess previous improvement action plan outcomes • Continue improving Stage 1, 2, and 3 learning opportunities 	Academic Year 2012–2013	Director, Faculty Champions, Assessment Coordinator, Web Master, and Administrative Assistant	Increased IT knowledge, skills, behaviors, and attitudes and improved student satisfaction and self-confidence scores among students involved in IT learning opportunities. Improved faculty satisfaction and self-confidence scores among faculty involved in IT learning opportunities.

SPECIFIC ACTIONS	TIME FRAME	PERSON(S) RESPONSIBLE	EXPECTED IMPACT
<i>Stage 4 Educational Programming</i>			
Identify and/or develop assessment tools for IT Stage 4 learning outcomes assessments: <ul style="list-style-type: none"> • Develop local rubrics • Identify appropriate external assessment tools 	Spring 2012	Director, QEP Steering Committee, and Faculty Champions	Increased faculty expertise in IT assessment.
Develop IT pilot studies for Stage 4: <ul style="list-style-type: none"> • Solicit IT pilot study proposals • Evaluate IT pilot study proposals • Select proposals for implementation 	Spring–Summer 2012	Director, Faculty Champions, Assessment Coordinator, and QEP Steering Committee	Increased faculty experience and involvement in IT educational programming.
Implement Stage 4 IT pilot studies: <ul style="list-style-type: none"> • Collect pre-test baseline data • Implement IT Stage 4 pilot studies with at least 10 students per study • Collect post-test assessment data 	Fall 2012	Director, Faculty Champions, Assessment Coordinator, and Administrative Assistant	Increased IT knowledge, skills, behaviors, and attitudes and improved student satisfaction and self-confidence scores among students involved in IT learning opportunities. Improved faculty satisfaction and self-confidence scores among faculty involved in IT learning opportunities.
Evaluate outcomes from Stage 4 pilot studies and plan improvements: <ul style="list-style-type: none"> • Analyze assessment data • Evaluate outcomes based on data • Assess previous improvement action plan outcomes • Develop new improvement action plans 	Summer 2013	Director, Assessment Coordinator, QEP Steering Committee, and Faculty Champions	Continuous quality improvement based on assessment data.
Plan broader implementation of Stage 4 IT experiences: <ul style="list-style-type: none"> • Refine IT learning opportunities • Determine appropriate curriculum integration in each school • Identify appropriate opportunities for integration on each campus 	Spring–Summer 2013	Faculty Champions, QEP Steering Committee, School curriculum committees	Increased faculty experience and involvement in IT educational programming.

SPECIFIC ACTIONS	TIME FRAME	PERSON(S) RESPONSIBLE	EXPECTED IMPACT
Implement Stage 1, 2, 3, and 4 IT learning experiences across campuses: <ul style="list-style-type: none"> • Administer assessment tools, including pre- and post-test assessments and student satisfaction and perception assessments • Implement IT Stage 1, 2, 3, and 4 learning experiences • Evaluate assessment data • Assess previous improvement action plan outcomes • Continue improving Stage 1, 2, 3, and 4 learning opportunities 	Academic Year 2013–2014	Director, Faculty Champions, Assessment Coordinator, Web Master, and Administrative Assistant	Increased IT knowledge, skills, behaviors, and attitudes and improved student satisfaction and self-confidence scores among students involved in IT learning opportunities. Improved faculty satisfaction and self-confidence scores among faculty involved in IT learning opportunities.
Goal 4. Provide the technical expertise and infrastructure necessary to facilitate interconnectivity among individuals even when they are in different geographic locations and/or time zones.			
Strategy 4A. Support ongoing TTUHSC technology initiatives aimed at ensuring interconnectivity.			
Ensure IT initiative is represented on key technology councils.	Spring 2009 and ongoing	QEP Steering Committee	Increased awareness of IT initiative among administrators, staff, and faculty.
Strategy 4B. Use current distance learning technology and purchase a new virtual online technology platform for use in IT simulations.			
Investigate feasibility, cost, and appropriateness of different 3D immersive learning technology platforms	Spring and Fall 2009	3D Immersive Technology Subcommittee and QEP Steering Committee	Increased faculty awareness of 3D technologies.
Identify and purchase 3D immersive technology platform: <ul style="list-style-type: none"> • Increase web master FTE to 100% • Prepare for integration of 3D technology in Stage 3 pilot projects 	Fall 2010	Faculty Champions, Web Master, QEP Steering Committee, Director, and Assessment Coordinator	Increased Faculty Involvement and Experience Development of 3D Immersive Educational Experiences related to IT

Student and faculty involvement in the Interprofessional Teamwork initiative is projected to increase yearly, as illustrated in Table 5.2 below. Variations to the projected involvement will occur based on assessment data.

Table 5.2. Estimated Student and Faculty Involvement in the Interprofessional Teamwork Initiative

IMPLEMENTATION PHASE	NUMBER OF STUDENTS	NUMBER OF FACULTY ^A
Spring 2009		
Seed Grants—two faculty-directed grants and one student-directed grant	15 students	5 faculty
Academic Year 2009–2010		
Two Stage 1 Pilot Projects	20 (10 students/project)	6 Faculty Champions 6 Course Faculty
Academic Year 2010–2011		
Stage 1 Implementation	100	6 Faculty Champions
Two Stage 2 Pilot Projects	20 (10 students/project)	12 Course Faculty
Academic Year 2011–2012		
Stage 1 Implementation	200	6 Faculty Champions
Stage 2 Implementation	100	18 Course Faculty
Two Stage 3 Pilot Projects	20 (10 students/project)	1 Simulation Specialist
Academic Year 2012–2013		
Stage 1 Implementation	200	6 Faculty Champions
Stage 2 Implementation	200	24 Course Faculty
Stage 3 Implementation	100	1 Simulation Specialist
Two Stage 4 Pilot Projects	20 (10 students/project)	
Academic Year 2013–2014		
Full Implementation Stages 1–4	600	6 Faculty Champions 24 Course Faculty 1 Simulation Specialist

^a “Course faculty” are those faculty who implement IT learning modules into their existing courses.

VIII. Organizational Structure

TTUHSC has assigned qualified individuals to implement and sustain the Interprofessional Teamwork (IT) initiative, as described below and as illustrated in Figure 8.1.

ADMINISTRATIVE OVERSIGHT AND SUPPORT

Administrative oversight of the IT initiative is provided by the Vice President for Academic Affairs and the QEP Steering Committee. Membership in the QEP Steering Committee includes the authors of the top four QEP proposals, the Vice President for Academic Affairs, the Associate Director of the Office of Institutional Planning and Effectiveness (OIPE), the Associate Director for Institutional Assessment, a Faculty Senator from the School of Nursing, the Student Government Association President, and students, faculty, and staff from Lubbock and the regional campuses. The QEP Steering Committee has played an essential role in developing the IT initiative and will continue to provide oversight and guidance to the IT project team during the ongoing planning, implementation, and evaluation of the IT initiative. Additionally, office space and required equipment and supplies required to implement the IT initiative have been allocated at the Lubbock campus. The structure of the QEP Steering Committee will evolve as needed to meet the goals of the IT initiative.



INTERPROFESSIONAL TEAMWORK (IT) PROJECT TEAM

The people responsible for implementing and evaluating the IT initiative include the Director of the IT Initiative, Faculty Champions, and the Assessment Coordinator. These individuals will be supported by an Administrative Assistant and Webmaster. Following is a brief summary of the qualifications and responsibilities of the IT project team members. Detailed job descriptions are currently being developed for each of these roles.

Director of the IT Initiative. The Director of the IT Initiative is a faculty member from the School of Nursing with experience in IT pedagogies and expertise in clinical simulation. The Director will oversee the development, implementation, and assessment of IT educational programming and will maintain responsibility for preparing assessment plans and reports.

Faculty Champions. As previously described, the IT Faculty Champions will act as liaisons for the IT initiative, communicating with internal and external constituents, as needed, to support development and implementation of IT educational programming. One Faculty Champion from each of the six TTUHSC schools will be selected to help the IT Director and the QEP Steering Committee develop and implement IT educational programming. The six faculty champions will work as a collaborative interprofessional teaching team and will have one team leader. Qualifications and job descriptions are currently being developed for the Faculty Champions and the team leader. Faculty Champions will be selected from faculty members who express an interest in the IT initiative. To participate, faculty members must secure the approval of their Dean. Primary responsibilities of the Faculty Champions will include the following:

- Identify appropriate IT pedagogies.
- Develop, conduct, and assess IT pilot projects.
- Recruit and train other faculty to assist in implementing IT educational programming.
- Act as liaisons with the schools' curriculum committees to identify appropriate integration of IT learning opportunities into existing curricula.

Assessment Coordinator. The Assessment Coordinator will have a master's degree in an appropriate field and will assist with data collection, analysis, and evaluation of student learning outcomes. Additionally, the Assessment Coordinator will work in collaboration with the Faculty Champions to modify and strengthen IT learning opportunities based on the outcome evaluation of both the student learning outcomes and the overall IT initiative.

Administrative Assistant. The IT Administrative Assistant holds a baccalaureate degree in Business Management and will provide support to the IT Director, the Faculty Champions, and the Assessment Coordinator as needed.

Webmaster. The IT Webmaster holds a master's degree in Business Administration and will provide technical assistance to the IT Director and Faculty Champions as needed to support incorporation of IT learning modules into web-based formats.

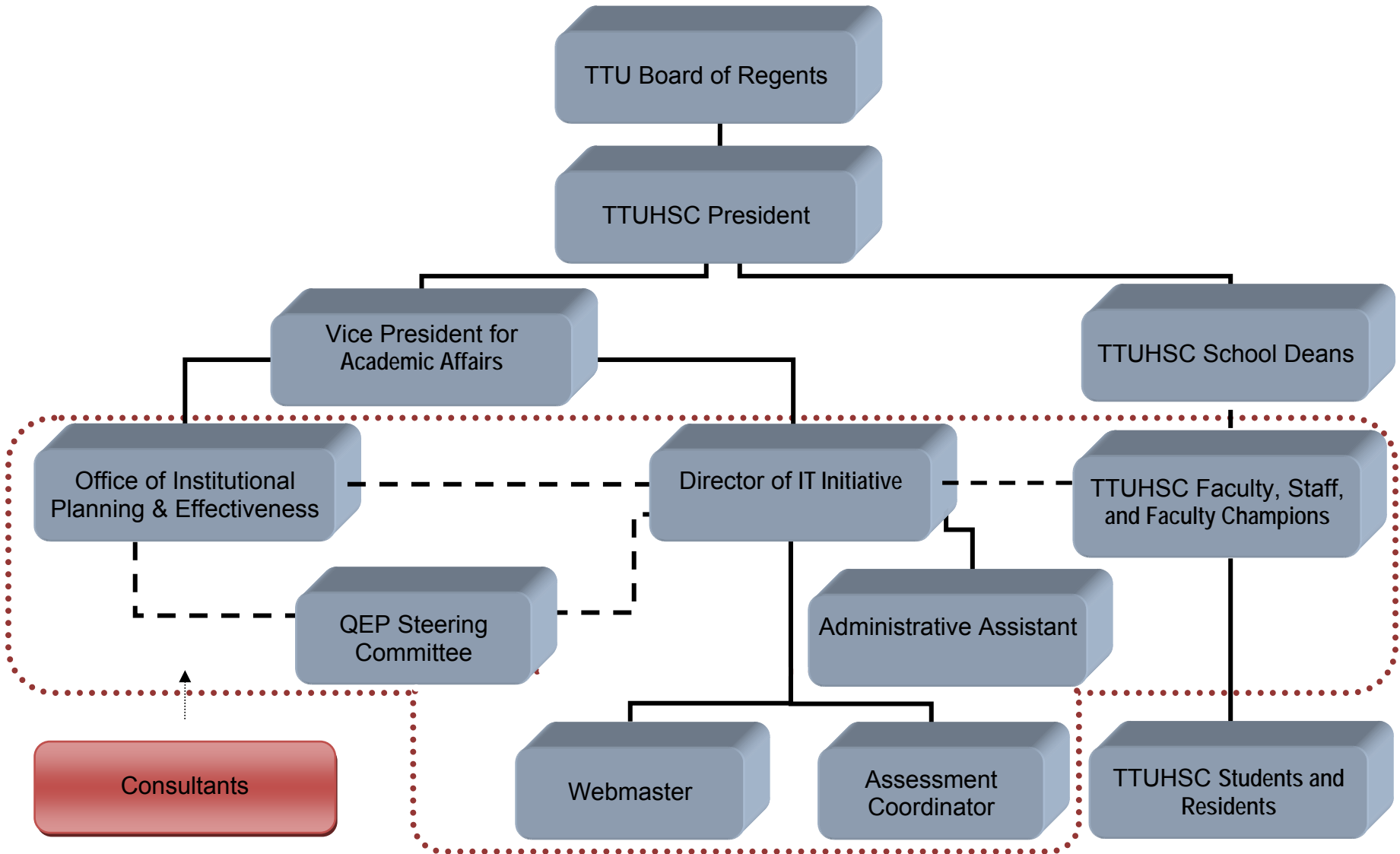


Figure 8.1 Organizational Structure for the Interprofessional Teamwork Initiative

IX. Resources

TTUHSC has committed sufficient financial, physical, human, and academic resources to implement, sustain, and complete the Interprofessional Teamwork initiative, as described below.

FINANCIAL RESOURCES

For each of the first five years, TTUHSC has committed \$250,000 of new funding to support development and implementation of the IT initiative. In addition, a proposal is being developed to request in-kind funds from the institution to support activities of the faculty champions in Years 2 through 5. Educational technology resources are already available for the low- and high-fidelity simulation scenarios planned for Stages 1 and 2 of IT educational programming. The projected five-year budget for the IT initiative is summarized in Table 7.1 below.

Table 7.1. Projected Five-Year Budget for Interprofessional Teamwork Initiative

RESOURCE ^A	YEAR 1 AY 2009–10	YEAR 2 AY 2010–11	YEAR 3 AY 2011–12	YEAR 4 AY 2012–13	YEAR 5 AY 2013–14
Personnel^B					
IT Director (20–75% FTE)	\$ 22,000	\$ 77,000	\$ 77,000	\$ 80,000	\$ 88,000
IT Assessment Coordinator (20–50% FTE)	\$ 15,000	\$ 15,000	\$ 40,000	\$ 42,000	\$ 44,000
Administrative Assistant (20–100% FTE)	\$ 6,000	\$ 6,000	\$ 27,000	\$ 29,000	\$ 31,000
Web Master (25–100% FTE)	\$ 14,000	\$ 28,000	\$ 28,000	\$ 42,000	\$ 44,000
Faculty Champions	\$ 24,000	Projected in-kind funding of 20% FTE per faculty champion per year for Years 2 through 5			
Faculty Champion Team Leader	\$ 5,000	Projected in-kind funding of 25% FTE for the faculty champion team leader per year for Years 2 through 5			
Professional Development					
Travel for IT Personnel to Attend Conferences/Workshops	\$ 25,000	\$10,000	\$10,000	\$10,000	\$10,000
Professional Development Seminars, Workshops, and Presentations; Consultant Fees	\$ 40,000	\$25,000	\$17,500	\$10,000	\$ 10,000
Seed Grant/Pilot Project Proposals					
Seed Grants (\$2,500 each)	\$ 7,500	–	–	–	–
Pilot Study Proposals (\$2,500 each)	\$ 7,500	\$ 5,000	\$ 5,000	\$ 5,000	–
Educational Technology					
Online Software for Low-Fidelity Stage 1 Simulations ^C	Existing TTUHSC resources				
Simulation Resources for High-Fidelity Stage 2 Simulations ^C	Existing TTUHSC resources				
3D Immersive Technology Platform for High-Fidelity Stage 3 Simulations	\$ 55,000	\$70,000	\$ 30,000	\$20,000	\$20,000

RESOURCE ^a	YEAR 1 AY 2009–10	YEAR 2 AY 2010–11	YEAR 3 AY 2011–12	YEAR 4 AY 2012–13	YEAR 5 AY 2013–14
Miscellaneous Equipment, Supplies, and Support Services					
Assessment and Analysis (Supplies and Services)	\$ 2,500	\$ 2,500	\$ 3,000	\$ 4,000	\$ 4,000
Marketing and Community Education (Supplies and Services)	\$ 25,000	\$ 3,500	\$ 2,000	\$ 1,500	\$ 1,000
Office Equipment and Supplies	\$ 5,000	\$ 5,000	\$ 7,500	\$ 7,500	\$ 7,500
TOTAL NEW FUNDS	\$253,500	\$247,000	\$247,000	\$251,000	\$259,500

NOTE: FTE = Full-time equivalent

- ^a Unless otherwise indicated, the funding source for listed resources is the \$250,000/year that TTUHSC has committed to the IT initiative.
- ^b The projected funding for personnel accounts for annual cost-of-living salary increases.
- ^c More information about the online software and clinical simulation resources currently available at TTUHSC is provided below under Physical Resources.

PHYSICAL RESOURCES

Office space and required equipment and supplies required to implement the IT initiative have been allocated at the Lubbock campus. In addition, successful integration of the IT initiative at all TTUHSC schools and campuses will require convenient, reliable and secure access to the institution's data network and associated online academic resources and will depend on the innovative use of educational technologies and methods, including clinical simulation.

Access to Technology Resources. As previously described, TTUHSC has recently upgraded its network infrastructure and is in the process of upgrading its information-management systems to create a unified online campus environment. Upgrades are designed to provide all TTUHSC constituents with secure, around-the-clock, web-based access to academic and administrative information, services, and resources.

Educational Technology Resources. TTUHSC provides a variety of educational technology tools and services to promote student learning and support traditional and distance education programs, as follows:

- **Blackboard CE 6.** Blackboard CE 6 (formerly known as WebCT) is an online educational platform that facilitates interactive learning in both traditional and distance courses. Blackboard CE 6 allows instructors to create a virtual classroom environment that is accessible to students around the clock. Instructors use Blackboard CE 6 to post course materials, such as syllabi, lecture notes, handouts, and streaming videos of course lectures; to facilitate student collaboration and discussion using Blackboard CE 6's online group and discussion-board features; and to deliver secure online examinations. All six TTUHSC schools use Blackboard CE 6 to enhance traditionally delivered courses with online learning tools. The schools of allied health sciences, nursing, and pharmacy also use Blackboard CE 6 to deliver distance education courses.
- **Video Network Systems.** TechLink is TTUHSC's primary videoconferencing infrastructure. TechLink supports distance learning, telemedicine, and general business applications through a variety of services, including videoconferencing and satellite uplink or downlink. With TechLink, TTUHSC students, faculty, and staff can have a multi-campus meeting remotely, and the TechLink services in

distance education classrooms allow a faculty member to teach students in several locations at once. TTUHSC's 39 TechLink distance education classrooms are distributed across campuses in Lubbock, Amarillo, Dallas/Fort Worth, El Paso, and the Permian Basin (Midland/Odessa). Each TechLink classroom is equipped with a multimedia teaching podium.

In the summer of 2007, the TTUHSC School of Pharmacy implemented a new videoconferencing system, the Virtual Classroom System (VCS) to support the school's expansion into Abilene. VCS facilitates delivery of the school's curriculum between Abilene and Amarillo.

- **Clinical Simulation Center.** TTUHSC currently has a Clinical Simulation Center in Lubbock. It is an 8,000 square-foot facility dedicated to providing TTUHSC students with authentic, risk-free, hands-on clinical learning experiences in a low-stress environment. Use of the clinical simulation technology at TTUHSC has increased significantly over the past two years as research has demonstrated that simulation, as an educational strategy, helps students acquire the knowledge and clinical expertise needed to provide quality, safe patient care. The CSC in Lubbock is currently used by students in the School of Allied Health Sciences, the School of Nursing, and the School of Medicine-Lubbock. Because of increased usage, TTUHSC has decided to expand the CSC, and construction has started on the Marie F. Hall SimLife Center, a new 26,000 square-foot CSC in Lubbock.

The Paul L. Foster School of Medicine in El Paso also is developing a new, comprehensive, state-of-the-art clinical skills and simulation center that will be fully operational prior to the matriculation of its first class of students in 2009. It is a 4,722-square-foot facility. An extensive faculty development program was implemented in the fall of 2008 to prepare faculty for optimal use of the facility's resources.



Simulation Centers are also in development for the Amarillo and Permian Basin campuses. All simulation centers are equipped with several state-of-the-art advanced patient simulators (Sim Man, Sim Baby, and Harvey). Portable simulation units, purchased with funding from a Robert Wood Johnson Foundation grant, are also available to support simulated experiences at smaller sites throughout West Texas.

- **Other educational technology tools.** A variety of other educational technology tools are used to facilitate interactive learning and provide students with ready access to educational resources, including the following:
 - **eReserves.** The TTUHSC Libraries online reserve system, eReserves, allows faculty to post resources for student use. Students may access their online

reserve materials, including articles, book chapters, and PowerPoint presentations, from any computer at any time of the day.

- Audience response systems. Audience response systems allow faculty to increase interactive learning experiences during classroom sessions. Audience response systems can be used to promote active learning and discussion, support interactive case study analysis, and give immediate feedback to students.
- Streaming media and podcasting. Streaming media and podcasting have been used to archive educational presentations for review. With archival streaming media and podcasting, complicated material or procedures can be reviewed multiple times by students.

HUMAN RESOURCES

TTUHSC has assigned qualified personnel to develop, implement, and assess the IT initiative, as described in Section VIII, Organizational Structure. These core personnel will be supported by qualified faculty and technical support staff who have extensive experience in the educational technologies that are to be used for IT educational programming.

Technical Support Staff. At the institutional level, information technology support staff provide a variety of training opportunities for students, faculty, and staff to facilitate effective and appropriate use of educational technology tools. Training offered by information technology support staff includes orientations, regularly scheduled instructor-led courses, email and phone support from the Information Technology Help Desk, in person assistance from PC Support Staff, and training for TechLink from HealthNet Education Services. Online support is also available through the Information Technology support website in the form of computer-based training, interactive tutorials, quick start guides, and online help files. Technology training opportunities are also made available by other departments and units, including the individual schools. Each school has a dedicated Information Technology support staff to assist faculty in integrating educational technologies into their courses.

Directors and Staff of Clinical Simulation Centers. The directors and staff of the TTUHSC's clinical simulation centers have the expertise and experience to support TTUHSC faculty as they develop, implement, and assess simulation-based learning modules for the IT initiative. TTUHSC faculty who are experienced in the use of clinical simulation provide training to assist faculty in developing the skills and knowledge needed to facilitate effective learning through simulation. Examples of recent formal training sessions include the following:

- Critiquing Core Competencies Through Simulated Patient Care Experiences (October 2006)
- Integrating Simulation Throughout the Curriculum (September 2007)
- The Role of Debriefing and Guided Reflection in Simulation (June 2007)
- Giving Effective Feedback: A Core Skill for Clinical Simulation Instructors: Debriefing a Specialized Form of Feedback (April 2008)

Several faculty members have also attended national conferences related to the use of simulation as an educational strategy. These conferences have been sponsored by the National League for Nursing, the American Association of College of Nursing, the

International Nursing Association for Clinical Simulation and Learning, the Society for Simulation in Healthcare, and the Association of Standardized Patient Educators.

Other TTUHSC Administrators, Faculty, and Staff. The purpose of the IT initiative is closely aligned with the TTUHSC mission and strategic plan, as describe previously in Section III, Identification of the Topic. Similarly, the purpose of the IT initiative is closely aligned with the missions and strategic plans of each TTUHSC school, as indicated in the following excerpts from school mission statements and strategic plans:

- School of Allied Health Sciences. The mission of the TTUHSC School of Allied Health Sciences is to *provide a high-quality, student centered learning environment for graduate and undergraduate education in the allied health professions; advance knowledge through scholarship and research; and provide clinical services that improve health and quality of life in Texas and the Nation.*

As part of a state-supported university system, we serve the people of Texas, with particular emphasis on *developing regional solutions to meet the educational and clinical needs of rural communities of West Texas.*

- School of Medicine. Vision: Graduates of the TTUHSC-SOM will be knowledgeable, competent, and compassionate clinicians who *communicate and collaborate with patients and colleagues in a caring and professional fashion.* The curriculum that prepares these graduates will emphasize acquisition and application of medical knowledge, clinical skills, and professional behaviors. *Multiple modalities of instruction* which promote integration of basic and clinical science information, development of problem solving and clinical reasoning abilities, and development of life-long learning habits will be utilized. The educators involved in the instruction of these graduates will be role models who reflect and *emphasize professionalism in their teaching, science, clinical care of patients, and modes of communication with patients and colleagues.*

Strategic Plan: 3.b. Advance research programs within the school through internal and external *collaboration*, recruitment of NIH-funded researchers, and comprehensive long-term planning.

3.b.6. *Encouraging and supporting collaborative efforts* with external research entities and *across disciplines within the TTUHSC.*

5.b. Attempt to meet the best interests of the communities in which the School of Medicine serves through *collaborative programs* and provision of quality medical care.

- Paul L. Foster School of Medicine. The mission of the Paul L. Foster School of Medicine at Texas Tech University Health Sciences Center at El Paso is to *provide exceptional opportunities for students, trainees, and physicians; to advance knowledge through innovative scholarship and research in medicine with a focus on international health and health care disparities; and to provide exemplary patient care and service* to the entire El Paso Community and beyond.
- School of Nursing. The primary mission of Texas Tech University Health Sciences Center School of Nursing is to *provide quality educational programs and advance excellence in health care* for diverse populations through programs of scholarship, research, practice, and service.

Strategic Plan: VI.7. *Facilitate staff and faculty preparation for QEP implementation.*

VI.7.a. *Support HSC system-wide QEP educational activities by conducting meetings to update staff and faculty on the status of QEP project.*

- School of Pharmacy. Our mission is to enhance the lives of the diverse people of Texas and beyond, through *excellence and innovation in: educating health-care practitioners, researchers, and educators, providing pharmaceutical care and service, and advancing knowledge through scholarship and research.*

The vision of the TTUHSC School of Pharmacy is to become internationally recognized for expanding the pharmacist's role as a leader in health care by developing models of excellence in *patient-centered care and collaborative drug therapy management through an innovative educational curriculum*, while advancing healthcare through cutting-edge research.

Strategic Plan: Objective 1.1.1 Curricular Delivery: Develop and implement optimal strategies for curricular delivery. *Identify strategies to enhance the delivery of team-taught coursework.*

Goal 2.2 Campus Development: Foster an environment across all campuses that nurtures both professional and personal development, *collegiality* and pride in our graduates.

Strategy 4.0 Practice of Pharmacy: Develop and enhance patient care services to support education, scholarship, and *interdisciplinary healthcare activities* of the institution and promote these activities within the institution and our communities

Strategy 5.0 Research: Expand and enhance research, research infrastructure, and *collaboration* and promote these activities within and outside the institution.

- Graduate School of Biomedical Sciences. The mission of the Graduate School of Biomedical Sciences is to *educate the next generation of scientists and health-related professionals in a dynamic and productive research environment that fosters creativity and discovery.*

Strategic Plan: 4.2.2 Develop a high profile seminar series to generate interest by the local community and to *generate enthusiasm among TTUHSC faculty, staff and students.*

Given the close alignment of the IT initiative with the schools' missions and strategic plans, it is anticipated that administrators, faculty, and staff in all TTUHSC schools will contribute their support to the IT initiative in direct and indirect ways as they continue to implement their own educational programs and academic support services.

TTUHSC Students. The IT project team also anticipates support from the TTUHSC student body. As indicated in its mission statement, students in the TTUHSC Student Government Association act as advocates for and representatives of student needs and interests. Collaborating with students, faculty, student organizations, administration, and the community, the SGA strives to promote a campus climate that is inclusive, supportive, and student centered. SGA's purpose is to promote, coordinate, and direct those student affairs and activities affecting the TTUHSC student body as an entity as well as encourage communication among the individual schools that compose the TTUHSC. The SGA is composed of students from every discipline at TTUHSC. This structure allows the SGA to promote interdisciplinary communication and collaboration through many, if not all, of its endeavors. Based on feedback from students, the SGA identified improved interdisciplinary communication as a primary goal for academic year

2009–2010. Several members of the SGA are active members of the QEP Steering Committee and provide presentations to the student body related to the IT initiative.

ACADEMIC RESOURCES

Institution-wide academic support services for TTUHSC students and faculty are coordinated through several offices at the institutional level, including, for example, the offices of the Vice President for Academic Affairs and the Vice President for Information Technology. In addition, academic resources are provided to students and faculty through the TTUHSC Libraries of the Health sciences, TTUHSC institutes and centers, and institutional committees, as briefly outlined below.

Office of the Vice President for Academic Affairs. The Vice President for Academic Affairs, who provides administrative oversight for the IT initiative and serves on the QEP Steering Committee, supervises the activities of the Office of Student Services, TTUHSC Libraries of the Health Sciences, Office of the Registrar, Office of Financial Aid, Classroom Support, and the Office of Institutional Planning and Effectiveness. Through administrative oversight, the Vice President will ensure that these support services facilitate the development and implementation of the IT initiative.

Information Technology Division. The Information Technology Division plays an essential role in connecting the TTUHSC campuses into an integrated system and providing critical clinical and academic services throughout the underserved areas of West Texas. The Vice President for Information Technology and Chief Information Officer (CIO) oversees the TTUHSC Information Technology Division, which includes the following three departments: Information Services, Technology Services, and HealthNet Education Services. Resources and services of the Information Technology Division are described above under Physical Resources and Human Resources.

TTUHSC Libraries of the Health Sciences. The mission of the TTUHSC Libraries of the Health Sciences is to meet the curricular, research, and patient-care information needs of TTUHSC students, faculty and staff and by extension, to meet the biomedical information needs of the community and resident citizenry of the 108-county area of West Texas. The resources and services of the TTUHSC Libraries are available to all TTUHSC users, including distance education students. A proxy server allows users to remotely access library collections and services.

TTUHSC Institutes and Centers. TTUHSC institutes and centers provide unique faculty development opportunities by facilitating collaboration among faculty, attracting funding from various internal and external sources, and providing educational opportunities for health care professionals. The purpose of the IT initiative is closely aligned with that of TTUHSC Institutes and Centers, as indicated in the following excerpts from relevant vision and mission statements:

Institutes

- F. Marie Hall Institute for Rural and Community Health. The mission of the TTUHSC F. Marie Hall Institute for Rural and Community Health is to improve the health of West Texans by *increasing the availability and quality of health services and education*, promoting healthier living, and serving as an information resource for communities and policy makers.
- Garrison Institute on Aging. Vision: To become nationally recognized as a center of excellence for the creation and application of new knowledge about healthy aging

through research, *innovative interdisciplinary education and collaborative community outreach efforts.*

The Garrison Institute on Aging is a unique organization whose mission is to promote healthy aging through cutting-edge research in Alzheimer's disease and other diseases of aging, and through *innovative educational opportunities offered to students, health care professionals and the public.*

- Institute of Environmental and Human Health. Vision: The Institute of Environmental and Human Health was the first of its kind among academic institutions at Texas Tech because it fused the resources of both Texas Tech's academic campus and its premier medical facility. This initiative employs a medical school and health sciences center interfaced with a comprehensive university, including the Texas Tech University School of Law, and represents an opportunity to *address environmental and human health issues from a multi-disciplinary perspective.*
- Institute for Forensic Science. Vision: The Institute for Forensic Science is a center of excellence that *integrates the disciplines of forensic science through academic programs, research, training and services.*
- Laura W. Bush Institute for Women's Health. Mission: To *cultivate the advancement of multi-disciplinary science in women's health* and to promote the well-being of women through research, education, and clinical outreach.
- Southwest Institute for Addictive Diseases. Mission: To improve the life quality of those with chemical dependency and mental health needs through the provision of comprehensive behavioral health care services, while concurrently *providing opportunities for health professions training and research.*

Vision: Southwest Institute for Addictive Diseases adheres to the most rigorous standards that continuously *demonstrate improvement in the quality of care through the use of best practices provided by a multidisciplinary and culturally competent team.*

Centers of Excellence

- Center of Excellence in Evidence-Based Practice. The mission of the CEEBP is achieved through several measures, including a commitment to *establish research and education programs to aid multidisciplinary health care providers in the delivery of evidence-based practice.*
- Center for International and Multicultural Affairs. The mission of the Center for International and Multicultural Affairs is to increase and broaden the initiatives in higher education through activities that enhance the education of its students, faculty and the staff of TTUHSC through exposure to international health experiences such as study abroad opportunities, faculty exchange programs, and institutional articulation agreements with universities worldwide.
- South Plains Alcohol and Addiction Research Center. Mission: To *develop translational, multidisciplinary and collaborative approaches* to better understand the consequences of alcohol and drug use.

Centers of Learning

- Center for Teaching and Learning with Technology. Mission: The Center provides climate and support through which faculty, staff and teaching assistants can become independent developers and/or consumers of new media to support

teaching and research. *CTLT can provide expert technical support, mentoring and collaboration opportunities as well as access to technology, software and media resources for courseware creation, teaching and learning.*

- F. Marie Hall SimLife Center. The vision of the center is *to establish the Health Sciences Center as a recognized national leader in patient safety, patient-centered care, informatics and interdisciplinary teamwork.* The center has an interprofessional advisory committee.
- High Performance Computing Center of the Information Technology Division. Mission: *The High Performance Computing Center promotes research and teaching by integrating leading-edge, high-performance computing and visualization for the faculty, staff, and students of TTU/TTUHSC, as well as advance disciplinary diversity, partnerships, and excellence.* The center has an interprofessional advisory committee.
- Trans-discipline Research in Patient Safety (TRIPS) Center. The TRIPS Center in Lubbock is a *trans-disciplinary, trans-organizational center that fosters collaboration among clinicians, academicians, and researchers without regard to location in order to provide meaningful patient safety work products that advance the state of the science surrounding patient safety, ultimately affecting change.* The center has an interprofessional advisory committee.

Given the close alignment of the IT initiative with the mission and vision statements of TTUHSC institutes and centers, it is anticipated that the institutes and centers will contribute academic support services and resources to the IT initiative in direct and indirect ways as they continue to implement their own programs.

Organizations and Committees. Other TTUHSC organizations and committees that will provide support for the IT initiative include the following:

- Faculty Senate. The purpose of the TTUHSC Faculty Senate is to *promote interaction and collaboration between the members of the Faculty of the various schools* as well as to represent the faculty as an advisory body to the TTUHSC President on common issues affecting institutional governance, responsibilities in teaching, practice, research, and service.
- Institutional Effectiveness Workgroup. TTUHSC's Institutional Effectiveness (IE) Workgroup, which includes faculty, staff, and administrators from across the institution, plays a major role in promoting coordination among the schools and educational support units to address institutional goals and strategies for improvement. *The importance of interprofessional teamwork is communicated explicitly in the institution's strategy to "develop and enhance interdisciplinary, inter-school, and inter-campus programs in education." The IE workgroup and its subcommittees facilitate the development and implementation of such programs, including innovative improvements for delivering class instruction, improved communication regarding student support services, and productive sharing of learning tools and resources.*
- TTUHSC Library Committees. Each of the Libraries of the Health Sciences has its own Library Committee representing the library users at its location. These Committees have no administrative role, but serve as advisory bodies. Committee members communicate faculty and student concerns to the librarians, and, in turn, inform the faculty and students of new library policies and resources.

X. Assessment

A comprehensive assessment plan has been developed to guide the planning, implementation, and continuous quality improvement of the Interprofessional Teamwork (IT) initiative. In evaluating the overall progress of the IT initiative, primary emphasis will be given to the impact of IT educational programming on the quality of student learning. It will also be necessary to assess progress towards achieving the broader goals of the IT initiative. The assessment process is a dynamic component of the IT initiative, developed to provide outcomes for continuous growth and improvement planning. The ongoing IT assessment process includes formative and summative assessment, assessment of student learning outcomes, and use of assessment outcomes to develop improvement action plans and inform decision-making.

ASSESSMENT OF STUDENT LEARNING OUTCOMES

Implementation of IT Educational Programming will occur in four stages and several assessment tools and methodologies will be used to assess student learning outcomes. Details regarding the specific assessment tools and processes to be used in each stage of educational programming will be determined by the IT Director, Assessment Coordinator, QEP Steering Committee, and Faculty Champions as final decisions are made regarding the specific educational modules to be implemented in each stage. In all cases, achievement of student learning outcomes will be measured using pre- and post-testing, nationally recognized assessment tools, self-assessments and reflection, case scenario and simulation experience outcome assessments, locally-developed assessment rubrics, locally modified externally developed satisfaction and self-confidence tools, and externally developed tools, including two widely recognized instruments in the field of interprofessional education. Permission to use external assessment tools has been obtained. Following is a brief description of the assessment tools that have been identified by the QEP Steering Committee.



Summative Assessment Tools

Readiness for Interprofessional Learning Scale. The revised Readiness for Interprofessional Learning Scale (RIPLS; Appendix J) is used to measure changes in student attitudes and perceptions of interprofessional education. The RIPLS scale contains 19 items scored on a 5-point Likert scale. Each item is categorized into one of four sub-scales: (1) teamwork and collaboration, (2) negative professional identity, (3) positive professional identity, and (4) roles and responsibilities. The internal consistency and test-retest reliability have been established (McFayden, Webster, & Maclaren, 2006).

Clinical Teamwork Scale. The Clinical Teamwork Scale (CTS; Appendix L) is used to assess the use of teamwork skills by an interprofessional team of students during a simulation exercise or in the provision of patient care. The CTS rubric contains 15 items along five domains: (1) communication,

(2) situational awareness, (3) decision-making, (4) role responsibility, and (5) patient-friendliness. Although the items were written to be understood easily, operational definitions are provided to orient raters to the intent of each item. Therefore, the CTS requires minimal rater training. Raters are simply required to rate the team on a scale of 0 to 10 for 14 of 15 items. For the final item, raters must mark Yes or No. The sensitivity of the scale contributes to the overall validity and reliability of the instrument. Statistical analysis revealed an interrater reliability of 0.98, significant agreement (Kappa 0.78), and score concordance (Kendall coefficient 0.95) among raters (Guise et al., 2008).

Interdisciplinary Education Perception Scale. The Interdisciplinary Education Perception Scale (IEPS; Appendix M) is used to assess team member attitudes and perception of interdisciplinary education. The scale consists of four stable sub-scales, each with fair to moderate reliability (Cronbach's α of subscales vary for .6 to .81). The tool consists of 18 items addressing the four sub-scales (preparation, collaboration, respect, and judgment) on a six-point Likert scale (McFadyen, Maclaren, & Webster, 2007).

Formative Assessment Tools

Novice-to-Expert Interprofessional Teamwork Competency Rubric. The QEP Writing Subcommittee has mapped the Interprofessional Teamwork student learning outcomes to Benner's novice-to-expert theory and is developing a rubric to assess progressive achievement of the student learning outcomes. The rubric identifies progressive development from a novice understanding of the knowledge, skills, behaviors, and attitudes (KSAs) required for effective Interprofessional Teamwork toward the higher levels of expertise required to transfer teamwork KSAs to the patient care setting (Appendix F, Novice-to-Expert Interprofessional Teamwork Competency Rubric). While the learner is not expected to achieve the knowledge, skills, behaviors, and attitudes of an expert until after graduation and professional experience, each learner is expected to progress at least to the level of advanced beginner by graduation.

In designing the IT learning modules, the IT project team will identify appropriate reflective exercises and debriefing protocols for each learning scenario, and performance indicators will be identified and integrated into the Novice-to-Expert Interprofessional Teamwork Competency Rubric to assess learners' competency related to reflective thinking as they progress through the four stages of IT educational programming.

Situation, Background, Assessment, and Recommendation (SBAR) Rubric. The SBAR Rubric (Appendix N) is used to assist in assessing the communication between and among team members using the nationally approved and recommended SBAR format. The SBAR Rubric was an outcome of a recent research study (Hamilton et al., 2006). Thus, validity and reliability has not been obtained. Use of the rubric in the TTUHSC IT initiative will assist the developer of this rubric in obtaining the data to determine validity and reliability.

Learner Satisfaction and Self-Confidence Scales. The modified Learner Satisfaction and Self-Confidence Scales (Appendix O) are used to assess an individual team member's perceived satisfaction related to the learning experience and self-confidence with IT knowledge, skills, behaviors, and attitudes, including the ability to transfer learning to the actual patient care setting. The eight-item 15-point Likert scale was modified from The Student Satisfaction and Self-Confidence in Learning Questionnaire, which is an 18-item instrument with a reliability of a Cronbach's alpha of 0.94 (Jeffries & Rizzolo, 2006).

ASSESSMENT OF OPERATIONAL GOALS OF THE INTERPROFESSIONAL TEAMWORK (IT) INITIATIVE

At TTUHSC, all academic programs, educational support units, and administrative units are required to engage in the development of assessment plans on an annual basis. Each of these plans is documented in the institution's online assessment management system, *WEAVEonline*. Support for these assessment efforts is provided by staff in the Office of Institutional Planning and Effectiveness. Each institutional program and unit posts assessment plans for annual achievement of unit goals. The assessment plans contain the mission or purpose statement, goals, measures, target levels, outcomes, and documentation level of goal achievement, as well as improvement action plans.

Beginning in 2009–2010 and annually thereafter, the IT Director will complete an assessment plan in *WEAVEonline* for the IT initiative. This will include documenting specific findings for assessment methodologies and reflecting on the progress made towards achieving each goal. Based on these findings, the Director, in cooperation with the Assessment Coordinator, Faculty Champions, and QEP Steering Committee, will develop specific action plans to promote continuous improvement of the IT initiative.

During subsequent academic years, the IT Director will engage in a similar assessment process on an annual basis. Typically, assessment actions include revising specific strategies as necessary, modifying assessment measures and target levels, and documenting findings based on results. Thus, the process provides a systematic approach to assessment, and offers adequate opportunities for IT to evolve based on documented feedback and data-driven decision-making.

Tools to be used in measuring the success of the IT initiative as a whole include the following:

Interprofessional Teamwork (IT) Initiative Activity Logs. Appropriate logs will be kept to track student and faculty participation in IT professional development activities and educational programming.

Interprofessional Teamwork (IT) Faculty Survey. The Baseline Data Faculty Survey will be modified and distributed at regular intervals to TTUHSC faculty to measure their views regarding the importance of teaching interprofessional teamwork knowledge, skills, behaviors, and attitudes.

Instructor Satisfaction with Educational Pedagogy and Self-Confidence in Teaching Scales. The modified Instructor Satisfaction with Educational Pedagogy and Self-Confidence in Teaching Scales (Appendix P) are used to assess faculty attitudes about educational pedagogies and self-confidence regarding instruction provided to the learner. The eight-item 5-point Likert scale was modified from The Self-Confidence in Learning Using Simulation Scale. Content validity of this scale was established by nine expert nurse clinicians, with a reliability of a Cronbach's alpha of 0.87 (Jeffries & Rizzolo, 2006).

KEY PERFORMANCE INDICATORS

The following table summarizes the key performance indicators and assessment tools to be used in assessing the IT initiative.

**Table 10.1. Key Performance Indicators and Assessment Tools
for the Interprofessional Teamwork Initiative**

Goal 1. Create an administrative infrastructure to support the implementation of interprofessional education.	
Strategy 1A. Acquire support from TTUHSC administrators for the IT initiative.	
Strategy 1B. Establish a data management system and processes for the IT initiative.	
Strategy 1C. Prepare internal and external reports to support the ongoing development of the IT initiative.	
Key Performance Indicators	Assessment Tools
<ul style="list-style-type: none"> • Identification of the IT Director at a high level in the TTUHSC organizational chart. • Continued institutional funding for the initiative. • Dedicated office space for the IT initiative. • Integration of IT-related measures into faculty reward systems and financial compensation structures. • Continued administrative support for IT initiative. • Continued faculty interest and involvement in IT initiative. • Faculty commitment to participating as Faculty Champions in the IT initiative. 	<ul style="list-style-type: none"> • TTUHSC IT Faculty Survey • Instructor Satisfaction with Educational Pedagogy Scale • Instructor Self-Assessment Self-Confidence in Teaching Scale
Goal 2. Provide faculty development opportunities to support the development and implementation of Interprofessional Teamwork pedagogies and modalities.	
Strategy 2A. Recruit and train IT faculty champions to lead development and implementation of IT instruction modules.	
Strategy 2B. Provide regular professional development seminars, presentations, and workshops on IT-related issues for TTUHSC administrators, faculty, and staff.	
Key Performance Indicators	Assessment Tools
<ul style="list-style-type: none"> • Number of faculty champions recruited and trained • Number of key individuals attending IT-related conferences • Number of visits from external IT consultant • Number of professional development seminars, presentations, and workshops provided • Number and type of participants at professional development activities • Number of IT-related presentations and/or publications produced by TTUHSC personnel • Continued awareness of and commitment to IT best practices among key personnel. • Increased faculty expertise in IT development and implementation. • Increased faculty awareness and expertise related to IT. • Increased awareness and expertise related to IT among TTUHSC community and among the broader academic community. 	<ul style="list-style-type: none"> • IT Initiative Activity Logs • TTUHSC IT Faculty Survey • Instructor Satisfaction with Educational Pedagogy Scale • Instructor Self-Assessment Self-Confidence in Teaching Scale

Goal 3. Establish a culture of interprofessional education by developing Interprofessional Teamwork learning opportunities and facilitating the integration of these opportunities into existing curricula.

Strategy 3A. Administer a seed grant program among TTUHSC faculty and students.

Strategy 3B. Develop, implement, and assess IT educational programming in four progressive stages.

Key Performance Indicators

- Number of seed grant projects and pilot studies implemented
- Number of students and faculty participating in IT educational programming
- Number of courses per school integrating IT learning modules
- Increased faculty awareness and expertise related to IT.
- Improved faculty satisfaction and self-confidence scores among faculty involved in IT learning opportunities.
- Improved student satisfaction and self-confidence scores among students involved in IT learning opportunities.
- Increased IT knowledge, skills, behaviors, and attitudes as measured by the following Student Learning Outcomes:

Assessment Tools

- IT Initiative Activity Logs
- TTUHSC IT Faculty Survey
- Instructor Satisfaction with Educational Pedagogy Scale
- Instructor Self-Assessment Self-Confidence in Teaching Scale
- Learner Satisfaction Scale
- Learner Self-Confidence Scale

Student Learning Outcomes

Summative Assessment Tools

Stage 1 Student Learning Outcomes

1. Describe the knowledge, skills, behaviors, and attitudes required for an individual to function as an effective member of an interprofessional team.
2. Identify the roles and diverse perspectives of IT, including responsibilities, expertise, background, knowledge, and values of IT members.
3. Demonstrate heightened awareness and appreciation of the potential benefits of IT.

- Readiness for Interprofessional Learning Scale (pre and post)

Stage 2 and 3 Student Learning Outcomes

4. Demonstrate evidence-based decision-making while participating collaboratively as a member of an interprofessional team.
5. Demonstrate basic group skills, including communication, negotiation, conflict resolution, delegation, time management, and assessment of group dynamics.

- Clinical Teamwork Scale or Interdisciplinary Education Perception Scale (post)

Stage 4 Student Learning Outcomes

6. Participate as a collegial member of an interprofessional team to coordinate and individualize patient care to ensure excellence, continuity, and reliability, even when team members are in different physical locations.

- Clinical Teamwork Scale or Interdisciplinary Education Perception Scale (post)

Goal 4. Provide the technical expertise and infrastructure necessary to facilitate interconnectivity among individuals even when they are in different geographic locations and/or time zones.

Strategy 4A. Support ongoing TTUHSC technology initiatives aimed at ensuring interconnectivity.

Strategy 4B. Use current distance learning technology and purchase a new virtual online technology platform for use in IT simulations.

Key Performance Indicators

Assessment Tools

- Acquire new 3D immersive technology platform.
- Increased student and faculty satisfaction with information technology infrastructure and educational technology tools.

- Student Satisfaction Survey
- Faculty Satisfaction Survey

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Appendix B. QEP Topics Short List and Three Thematic Areas

QEP Topics "Short List"			
Academic Support for Students	Curriculum & Pedagogy	Faculty Development	IT & Media
TTUHSC Communications Central: development of a center that would focus on improvement of students' written & oral communication skills (1)	Interdisciplinary education/communication (based on IOM competencies) (3, 15, 27, 56, 64, 65, 69, 92, 110); Students matriculate into Interdisciplinary Colleges (106); Center of Excellence for Scholarship in Interdisciplinary Education (6); interdisciplinary workshops (3)	Improving Skills, Abilities and Support for Healthcare Educators – create an office/research center to support faculty (31, 37); Teach faculty how to teach. e.g., less ppt, use whiteboards, etc. (57, 58, 82, 90); provide teaching workshops with emphasize on teaching methods & learning styles (17, 42); Education about learning styles of students (72, 82)	Set up distance education in all programs and expand current online course offerings (23, 40, 109); Double T Approach to Enhance Student Learning: Interdisciplinary Teamwork through Advanced Technology (22)
Student/Academic Learning Center: improvement of student skills (study, test-taking); course specific tutoring/review, prep for professional exams (10, 37, 47, 61, 89)	Adhere to Institutes of Medicine (IOM) evidence-based guidelines for health care delivery f(29)	Create a Teaching & Learning Institute w/ collaboration across Schools; focus on support for practice & research on Best Practices related to teaching methodologies/ student learning outcomes. (73)	Learning Enhancement and the Integration of Technology: comprehensive plan to assess faculty/student performance experiences & develop strategies for improving outcomes related to use of technology (54)
Increase awareness/knowledge related to diversity (2)	Integration of formal "professional responsibility" training into the HSC curriculum (55); professional climate with ethical standards for faculty, staff, students, admin (139);		Fix/Upgrade Healthnet, including state-of-the-art video conferencing, headphones to aid concentration, a monitor to decrease needless talking, instructor on screen at all times (41, 84, 91, 95, 96, 103);
Student mentoring programs, e.g. faculty, resident, student and improved advising (135, 18, 77, 100, 122); SMaRT – Student Mentoring with Residents as Teachers (127)	Competency-based learning & evaluation (e.g. redesign curriculum delivery and student evaluation system to reflect ACGME competencies) (67,75,98);		Expand multimedia content for all courses, make available online (43, 54, 129)
Double Check for Success – students helping students & student performance tracked by portfolios (90)	Teaching Critical Thinking and Problem Solving Skills to Healthcare Professionals (141)		
	Better clinical simulation (93); Patient care simulation centers for all campuses (40)		

Note: The parenthetical numbers in the table above refer to the unique identifying numbers that were assigned to each of the 141 QEP suggestions received by the QEP Topic Selection Committee during the suggestion-solicitation campaign of September-October 2007 (see "TTUHSC QEP Topic Suggestions," http://www.ttuhscc.edu/admin/oipe/qep/qep_topics.pdf)

Three Thematic Areas

This "short list" of 17 potential topics for the QEP was reviewed by TTUHSC's Institutional Effectiveness Executive Workgroup during a series of November 2007 meetings. The Workgroup finished its evaluation of the 17 ideas by dividing them into three thematic areas from which interested members of the TTUHSC community would be asked to prepare formal proposals of no more than eight pages for consideration as the QEP topic to be adopted by the institution.

- *Academic Support for Students* (focus on improving academic and professional success of students through tutoring, study skills and time management workshops, preparation for licensure exams, and similar support)
- *Interdisciplinary Education* (provide instruction in professionalism, cultural competence, communication skills, critical thinking, problem solving, and/or other core competencies common to all members of healthcare teams)
- *Faculty Development Programs* (offer resources for faculty to further their pedagogical and professional development)

The Institutional Effectiveness Executive Workgroup strongly supports the concept that the QEP proposal incorporate, if feasible, an appropriate augmentation of TTUHSC's information-technology infrastructure as it relates to student learning.

Appendix C. QEP Steering Committee Members

NAME	SCHOOL/DEPARTMENT	FACULTY/STAFF/STUDENT	CAMPUS
Rick Bliss	Medicine (Student Government Association President)	Graduate Student	Lubbock
Dr. Melinda Corwin	Allied Health Sciences/Speech & Hearing Sciences	Faculty	Lubbock
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Jimmy Fraigne	Biomedical Sciences (Student Government Association)	Graduate Student	Lubbock
Dr. Wrennah Gabbert	Nursing/Graduate Program	Faculty	Lubbock
Victor Gonzales	Medicine/Office of Medical Curriculum	Staff	Lubbock
Dr. Tori Gustafson	Allied Health Sciences/Speech & Hearing Sciences (Faculty Senate Representative)	Faculty	Lubbock
Dr. Herb Janssen	Medicine/Office of Associate Dean	Faculty	El Paso
Dr. Yondell Masten	Nursing/Outcomes Management & Evaluation (Faculty Senate Representative)	Faculty	Lubbock
Jaynie Maya	Nursing/Undergraduate Program	Faculty	Lubbock
Dr. Thomas Francis McGovern	Medicine/Department of Psychiatry (Faculty Senate Representative)	Faculty	Lubbock
Dr. Harold Miller	Pharmacy/Pharmaceutical	Faculty	Abilene
Dr. Carla Myers	Institutional Planning & Effectiveness	Staff	Lubbock
Dr. German Nunez	Center for International Cultural Affairs	Faculty/Administration	Lubbock
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Appendix D. Definitions

CONCEPTUAL DEFINITIONS

Evidence-based decision making, as defined by the IOM (2001), are decisions made by health care professional based on “conscientious, explicit, and judicious use of best evidence” from relevant scientific sources and “knowledge of patient values by well-trained, experienced clinicians.” (p. 76).

Interprofessional is defined as a group of individuals from different disciplines working and communicating with each other individuals. In the interprofessional learning environment each member provides his/her knowledge, skills, and attitudes to augment and support the contributions of others (Hall and Weaver, 2001).

Interprofessional education is defined as learning occurring when two or more professions learn with, from and about each other to improve collaboration and the quality of care” (CAIPE, 2002). Effective Interprofessional education improves quality of patient care, focuses on the needs of the learners and learners are active participants in assessing, planning, delivering, and evaluating IPE.

Interprofessional team, as defined in the Institute of Medicine’s (IOM) Report, *Health Professions Education: A Bridge to Quality* (2003) is “composed of members from different professions and occupations with varied and specialized knowledge, skills, and methods.” (p. 54) Members of an Interprofessional team communicate and work together, as colleagues, to provide quality, individualized care for patients.

Interprofessional teamwork, as defined by the IOM (2003) is a collaborative interaction among interprofessional team members to provide quality, individualized care for patients.

Teamwork is defined as the interaction and relationships between two or more health professionals who work interdependently to provide safe, quality patient care. Teamwork includes the interrelated set of specific knowledge (cognitive competencies), skills (affective competencies), and attitudes (behavioral competencies) required for an interprofessional team to function as a unit (Salas, DiazGranados, Weaver, and King, 2008).

Teams are defined as healthcare professionals working interdependently to achieve specified, shared objectives. The achievement of the shared objectives requires team members to share multiple sources of information, systematic communication, coordination, and cooperation (Salas, DiazGranados, Weaver, and King, 2008).

OPERATIONAL DEFINITIONS

SBAR is defined as a health care professional communication technique recommended by the Agency for Healthcare Research and Quality (2008) for communication of critical information concerning a patient’s condition. Communication using SBAR is divided into four specific segments. The *Situation* (S) includes what is going on with the patient. The *Background* (B) provides any critical background or context. The *Assessment* (A) is a statement of what the health care provider making the call thinks is the problem. The *Recommendation and Request* include what the caller would do to correct the problem.

PEDAGOGY DEFINITIONS

Case-based learning is defined as a pedagogy utilizing “real-life” situations to stimulate problem-based learning in small group situations. The case or simulation is developed

with a problem needing to be solved and is used to stimulate acquisition of knowledge and skills (Williams, 2005).

Combined-team training is defined as a learning approach where all members of the teams from different disciplines learn together. Each member participates in the learning according to the role of his/her specific discipline (Gaba, 2006). Combined-team learning allows for learning and assessment of basic group skills (including communication, negotiation, conflict resolution, delegation, time management, and group dynamics) and evidence-based team decision making.

Fidelity is defined as the extent to which a simulated learning experience mimics reality. According to Shapiro et al. (2008), several levels of fidelity are currently recognized and vary from low (static tools and mannequins) to high (incorporate a sophisticated, computerized mannequin or 3D representation to mimic real life features and physiologic responses).

Low fidelity simulations are defined by TTUHSC QEP as learning experiences where both lower and medium levels of fidelity provided through Web based platforms, DVD's, simulators with limited degree of reality, and role playing are integrated.

High fidelity simulations are defined by TTUHSC QEP as learning experiences where high levels of fidelity provided through immersive 3D technologies, virtual reality, advanced patient simulators, and standardized patients are integrated.

Immersive on-line technologies are defined by TTUHSC QEP as computer-operated interactive simulations in a virtual reality (VR) environment. The simulations depict reality with physical, spatial, and visual dimensions (3D). In the 3D computer environment, the learner interacts in a manner to mimic real life engagement.

Problem-based learning (PBL) is defined as a pedagogy for emphasizing problem solving and critical thinking skills in small-group work. The goal of PBL pedagogy is to facilitate the learning in the development of the student's learning process. The facilitator is not necessarily a content expert and does not teach the content. Instead the facilitator listens to the learners' discussion and intervenes only when learners are "stuck or are off track" and then refocuses the groups by asking probing questions (Williams & Beattie, 2008).

Single-discipline training is defined as a learning experience where only participants from one discipline are included and case scenarios are used to include relevant team members. The role of other team members is role played by faculty, other students, and/or paid actors (Gaba, 2006). Single-discipline training allows individuals to develop discipline-specific competencies in the knowledge, skills, behaviors, and attitudes required to participate as a collegial member of an Interprofessional team.

Simulated learning experiences are defined as designed learning experiences to replicate a "real-world" setting with enough realism and fidelity to serve a desired purpose. The specific purpose is dependent on the objectives of the experience and the learners' expertise. Fidelity is generated through the integration of live models, advanced patient simulators, authentic supplies, and equipment or through the use of immersion technology such as virtual reality. Simulation is posed as a compliment to (not a substitute for) actual patient care for promoting the learners' ability to integrate theory into a patient care situation in a controlled environment without risks to patients (Bearbien & Baker, 2008).

Simulation-based learning (SBL) is defined as a pedagogy using multiple techniques and technologies (such as, simulators, standardized patients, virtual reality, on-line immersion technologies) to place the learner into a realistic scenario. The learner is

required to interact, make critical decisions, and implement the decisions with the results of the decisions having a direct effect on the outcomes of the scenario. Both single-discipline and combined-team training approaches can be used as complementary methods to prepare the learner to work as a member of an Interprofessional team (Bearbien & Baker, 2008).

Standardized patient is defined as an individual, volunteer, or paid actor taught to portray a 'patient' in a realistic and consistent manner. Through the integration of case studies and role playing a situation is designed requiring the practitioner interacting with a standardized patient to demonstrate appropriate communication skills while completing an interview, performing a physical assessment, and devising an individualized plan of care (Ebbert & Connors, 2004).

Team training/learning is defined as the tools and methods of instructional strategy, including opportunities to practice and receive constructive feedback. Salas, DiazGranados, Weaver, and King (2008) identified the strategies, including team coordination and adaptation. Guided self-correction had the greatest effect on team performance. Effective team training requires the use of educational principles, planning, and assessment integrated into an environment conducive to transfer of the knowledge, skills, behaviors, and attitudes to actual patient care settings. Therefore, according to Salas and colleagues, team training/learning requires a mix of traditional methods of instruction, video based sessions, and guided opportunities to practice through role playing and simulation. Simulation-based training provides the unique opportunity for the learner to implement and practice teamwork in an environment similar to the actual patient care setting.

TeamSTEPPS is defined as an evidence-based framework developed by the Agency for Healthcare Research and Quality (2006) to optimize team performance across the healthcare delivery system. Thus *TeamSTEPPS* fits well with the IOM (2003) *work in interdisciplinary teams* competency and Benner's Novice to Expert theory (1984).

Work-based learning is defined as learning and transfer of knowledge, skills, behaviors, and attitudes in the actual clinical (patient care) environment and can include grand rounds educational sessions (Marshall & Manus, 2007). The learning in the actual clinical environment is often difficult to structure and can constitute a complex system where roles and priorities can be variable.

Benner's Competency Level Definitions, as summarized by Tomey and Alligood (2006), are provided above in Section IV, Desired Student Learning Outcomes.

Appendix E. TTUHSC Mission Statement and Strategic Plan

Mission. The mission of the Texas Tech University Health Sciences Center is to improve the health of people by providing educational opportunities to students and health care professionals, advancing knowledge through scholarship and research, and providing patient care and service.

Vision. Texas Tech University Health Sciences Center will be recognized nationally as a top-ranked health sciences university.

Institutional Goals. *G-I* Train competent health professionals and scientists; *G-II* Increase externally funded, peer-reviewed research, especially NIH-funded research, and research focused on aging, cancer, and rural health; *G-III* Improve access to quality health care for the TTUHSC's target populations; *G-IV* Prepare health professions students for an increasingly diverse workforce and patient population; *G-V* Provide leadership in the development of partnerships and collaborations to improve community health; *G-VI* Operate the TTUHSC as an efficient and effective institution.

The Institutional Goals for 2006-2009 are broad, measurable priorities that will enable the Texas Tech University Health Sciences Center to fulfill its vision and mission. G-I through G-III highlight our institutional commitment to continuing excellence in the areas of education, research, and service. Enhancing student learning in all of the TTUHSC's academic programs is a major focus of the institution. A complement to the emphasis on student learning is the fostering of a research-rich academic teaching environment that will facilitate up-to-date educational experiences for our students as well as provide innovative treatment opportunities for our patients. As an academic health sciences center geographically located in an area that is predominantly rural and increasingly elderly and Hispanic, the TTUHSC takes its responsibility seriously for improving the access of these populations to quality healthcare. G-IV acknowledges the need for innovative programs that better prepare our health professions students for the changing demographics of both the health professions workforce and the populations that they serve. G-V focuses on the TTUHSC's leadership role in the community by providing medical services, educating the public on health-related issues, and playing a key advocacy role in promoting a healthier environment. G-VI demonstrates that the TTUHSC is committed to institutional effectiveness. All programs and services throughout the institution support the institutional mission efficiently and effectively by engaging in ongoing and integrated planning and assessment, using the results for continuous improvement, and allocating resources accordingly.

These goals are designed to remain the same within the current strategic planning period (2006-2009). Any modifications or revisions will be made under the direction of the TTUHSC Strategic Planning Steering Committee during its annual review of the Strategic Plan.

The following list of Strategies for Institutional Improvement provides a variety of methods or techniques for advancing the Institutional Goals. These strategies can be carried out at all levels of the institution. All planning and assessment processes throughout the institution will be expected to link to one or more of the institutional goals and strategies. This integrated planning and assessment will be documented in WEAVE, an online data assessment system administered through the TTUHSC's Office of Institutional Planning and Effectiveness.

STRATEGIES FOR INSTITUTIONAL IMPROVEMENT	
S-1	Enhance student learning by developing learning outcomes that are clearly linked to the institution's goals
S-2	Develop and enhance programs to facilitate an increase in peer-reviewed, externally funded research
S-3	Develop and conduct focused clinical, translational, and educational research programs
S-4	Develop and enhance education, research, and clinical care programs and services with an emphasis on addressing health disparities in Hispanic, elderly, and rural populations
S-5	Create new and expand existing community, clinical, and program partnerships
S-6	Develop and enhance interdisciplinary, inter-school, and inter-campus programs in education, research, and clinical care
S-7	Implement and expand programs to increase public awareness of and support for the TTUHSC
S-8	Develop and enhance programs to increase the capacity of health professionals to address the needs of an increasingly diverse patient population
S-9	Strengthen faculty and staff expertise through support of professional development
S-10	Assess and continuously improve internal and external customer satisfaction (i.e., students, faculty, staff, patients, alumni, donors, etc.)
S-11	Provide student support programs and learning/information resources to enhance student learning and development
S-12	Provide student and faculty support programs and resources (e.g., information technology, clinical simulation) to strengthen communication skills, knowledge management, and decision making
S-13	Conduct targeted efforts to recruit and retain outstanding students, faculty, and staff
S-14	Refine business, technological, and other administrative processes to maximize efficiency
S-15	Conduct ongoing, systematic, institution-wide planning and assessment to ensure that all programs and services are efficiently and effectively supporting the mission of the TTUHSC

Appendix F. Novice-to-Expert IT Competency Rubric (DRAFT)

STUDENT LEARNING OUTCOMES	NOVICE	ADVANCED BEGINNER	COMPETENT	PROFICIENT	EXPERT	EARNED SCORE
Work in Interdisciplinary Teams (IOM Competency). Goal: <i>Cooperate, collaborate, communicate, and integrate care in teams to ensure that care is continuous and reliable</i> (IOM, 2003, p. 4)	Learning Skills (Benner Competency) VALUE=4 POINTS	Demonstrating Skills (Benner Competency) VALUE=8 POINTS	Sense of Mastery through Planning and Predictability (Benner Competency) VALUE=12 POINTS	Sees Whole Picture; Demonstrates Intuitive Grasp of Situations (Benner Competency) VALUE=16 POINTS	Sees the Unexpected; "Knows" the Client Situation (Post-Grad) (Benner Competency) VALUE=20 POINTS	
1. Describe the knowledge, skills, behaviors, and attitudes (KSAs) required for an individual to function as an effective member of an interdisciplinary team (*Stage 1 SLO).	Relates basic interdisciplinary team knowledge, skills, behaviors, and attitudes (KSAs) as evidenced by (AEB): Defines <i>interdisciplinary team member</i> . States five basic skills of an interdisciplinary team member. Lists four basic interdisciplinary team member behaviors. Lists three basic interdisciplinary team member attitudes.	Demonstrates advanced beginner interdisciplinary team KSAs AEB: States he/she is an interdisciplinary team member. Performs at least three interdisciplinary team member skills. Performs at least two basic interdisciplinary team member behaviors. Performs at least one basic inter-disciplinary team member attitude.	Demonstrate competent interdisciplinary team KSAs AEB: Communicates with team members before acting. Performs at least four interdisciplinary team member skills. Performs at least three basic inter-disciplinary team behaviors. Performs at least two basic inter-disciplinary team member attitudes.	Demonstrate proficient interdisciplinary team KSAs AEB: Consistently communicates with team members about plan of care goals, objectives, and outcomes. Performs at least five interdisciplinary team member skills. Performs at least four interdisciplinary team member behaviors. Performs at least three interdisciplinary team member attitudes.	Demonstrate expert interdisciplinary team KSAs AEB: Routinely communicates with interdisciplinary team members. Routinely performs more than five interdisciplinary team member skills. Routinely performs more than four interdisciplinary team member behaviors. Routinely performs more than three interdisciplinary team member attitudes.	

STUDENT LEARNING OUTCOMES	NOVICE	ADVANCED BEGINNER	COMPETENT	PROFICIENT	EXPERT	EARNED SCORE
Work in Interdisciplinary Teams (IOM Competency). Goal: <i>Cooperate, collaborate, communicate, and integrate care in teams to ensure that care is continuous and reliable</i> (IOM, 2003, p. 4)	Learning Skills (Benner Competency) VALUE=4 POINTS	Demonstrating Skills (Benner Competency) VALUE=8 POINTS	Sense of Mastery through Planning and Predictability (Benner Competency) VALUE=12 POINTS	Sees Whole Picture; Demonstrates Intuitive Grasp of Situations (Benner Competency) VALUE=16 POINTS	Sees the Unexpected; "Knows" the Client Situation (Post-Grad) (Benner Competency) VALUE=20 POINTS	
2. Identify the roles and diverse perspectives of IT individuals, including responsibilities, expertise, background, knowledge, and values of interprofessional team members (*Stage 1 SLO). 3. Demonstrate heightened awareness and appreciation of the potential benefits on interprofessional team members (*Stage 1 SLO)	Describes individual interdisciplinary team member roles, perspective, responsibility, expertise, background, knowledge, values AEB: States each interdisciplinary team member role and function. States each interdisciplinary member expertise and responsibilities States each interdisciplinary team member basic preparation. States each interdisciplinary team member professional values.	Demonstrates beginning collaborative decision-making skills based on individual team member roles and expertise AEB: Demonstrates collaborative decision-making with at least one other team member. Demonstrates use of at least one other team member expertise. Identifies need for collaboration with at least one other team member for provision of care. Considers team member values in providing care some times.	Demonstrates competent team decision-making skills, including individual team member professional expertise and common roles AEB: Demonstrates collaborative decision-making with team members most of the time. Demonstrates use of other team members' expertise most of the time. Collaborates with other team members in provision of care most of time. Considers team member values in providing care most of the time.	Demonstrates proficient team decision-making skills including integration of team member expertise for patient-centered care AEB: Consistently demonstrates collaborative decision-making with team members. Demonstrates consistent use of other team members' expertise. Consistently collaborates with team members for provision of care. Consistently considers team member values in providing care.	Demonstrates expert team decision-making skills for best client outcomes AEB: Routinely demonstrates collaborative decision-making with team members. Routinely demonstrates use of team member expertise. Routinely collaborates with all team members for provision of individualized, patient-centered care. Routinely considers team members' professional values in providing individualized, patient-centered care.	

STUDENT LEARNING OUTCOMES	NOVICE	ADVANCED BEGINNER	COMPETENT	PROFICIENT	EXPERT	EARNED SCORE
Work in Interdisciplinary Teams (IOM Competency). <i>Goal: Cooperate, collaborate, communicate, and integrate care in teams to ensure that care is continuous and reliable (IOM, 2003, p. 4)</i>	Learning Skills (Benner Competency) VALUE=4 POINTS	Demonstrating Skills (Benner Competency) VALUE=8 POINTS	Sense of Mastery through Planning and Predictability (Benner Competency) VALUE=12 POINTS	Sees Whole Picture; Demonstrates Intuitive Grasp of Situations (Benner Competency) VALUE=16 POINTS	Sees the Unexpected; "Knows" the Client Situation (Post-Grad) (Benner Competency) VALUE=20 POINTS	
4. Demonstrate evidence-based decision-making while participating collaboratively as a member of an interprofessional team. (* Stages 2-3 SLO)	Demonstrates beginning group interaction skills AEB: Demonstrates beginning evidence-based decision-making skills AEB: Share applicable EBP literature with team. Contribute to discussion of applicable EBP literature.	Demonstrates basic group dynamic skills AEB: Demonstrates evidence-based decision-making skills AEB:	Demonstrates competent group dynamic skills AEB: Demonstrates evidence-based decision-making skills AEB:	Demonstrates proficient group dynamic skills AEB: Demonstrate proficient evidence-based decision-making skills AEB:	Demonstrates expert group dynamic skills AEB: Demonstrate evidence-based decision-making skills AEB:	
5. Demonstrate basic group skills, including communication, negotiation, conflict resolution, delegation, time management, and assessment of group dynamics (*Stages 2--3 SLO).	Demonstrates beginning basic communication, negotiation, conflict resolution, delegation, time management, and assessment of group dynamics using a shared professional language across locations AEB:	Demonstrates advanced beginner communication, negotiation, conflict resolution, delegation, time management, and assessment of group dynamics using a shared professional language across locations AEB:	Demonstrates competent communication, negotiation, conflict resolution, delegation, time management, and assessment of group dynamics using a shared professional language across locations AEB:	Demonstrates proficient communication, negotiation, conflict resolution, delegation, time management, and assessment of group dynamics using a shared professional language across locations AEB:	Demonstrates expert communication, negotiation, conflict resolution, delegation, time management, and assessment of group dynamics using a shared professional language across locations AEB:	

STUDENT LEARNING OUTCOMES	NOVICE	ADVANCED BEGINNER	COMPETENT	PROFICIENT	EXPERT	EARNED SCORE
Work in Interdisciplinary Teams (IOM Competency). <i>Goal: Cooperate, collaborate, communicate, and integrate care in teams to ensure that care is continuous and reliable (IOM, 2003, p. 4)</i>	Learning Skills (Benner Competency) VALUE=4 POINTS	Demonstrating Skills (Benner Competency) VALUE=8 POINTS	Sense of Mastery through Planning and Predictability (Benner Competency) VALUE=12 POINTS	Sees Whole Picture; Demonstrates Intuitive Grasp of Situations (Benner Competency) VALUE=16 POINTS	Sees the Unexpected; "Knows" the Client Situation (Post-Grad) (Benner Competency) VALUE=20 POINTS	
6. Participate as a collegial member of an interprofessional team to coordinate and individualize patient care to ensure excellence, continuity, and reliability, even when team members are in entirely different physical locations (*Stage 4 SLO).	Demonstrates basic processes to coordinate and integrate care processes and timely "hand-off" information AEB:	Demonstrates basic collegial coordination and integration of care processes, including timely "hand-off" information AEB:	Demonstrates collaborative planning of competent, coordinated, integrated team-based care processes and timely "hand-off" information AEB:	Demonstrates proficient, collaborative, coordinated, integrated, role-specific care and communication of accurate, timely "hand-off" information AEB:	Demonstrates expert, collaborative, coordinated, integrated, role-specific care processes, including communication of timely "hand-off" information AEB:	
TOTAL SCORE						

NOTE: SLO = Student learning outcome

* SLOs are measured by pre- and post-testing, self assessments, case scenario, and simulation experience outcomes, and assessment rubrics.

Appendix G. TTUHSC Degrees, Certificates, and Diplomas Offered by Location

LOCATION OF STUDENTS →	ABILENE			AMARILLO			DALLAS/FT. WORTH			EL PASO			LUBBOCK			MIDLAND			ODESSA			HIGHLAND LAKES			DISTANCE STUDENTS
	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	
SCHOOL/DEGREE PROGRAM																									
School of Allied Health Sciences																									
Bachelor of Science in Clinical Laboratory Science																									
Bachelor of Science in Clinical Services Management																									
Bachelor of Science in Health Science ^a																									
Bachelor of Science in Speech-Language and Hearing Sciences																									
Master of Athletic Training																									
Master of Occupational Therapy																									
Master of Physical Therapy ^b																									
Master of Physician Assistant Studies																									
Master of Rehabilitation Counseling																									
Master of Science in Clinical Practice Management																									
Master of Science in Molecular Pathology																									

LOCATION OF STUDENTS →	ABILENE			AMARILLO			DALLAS/FT. WORTH			EL PASO			LUBBOCK			MIDLAND			ODESSA			HIGHLAND LAKES			DISTANCE STUDENTS	
	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	≥50% DE	
SCHOOL/DEGREE PROGRAM																										
School of Allied Health Sciences, continued																										
Master of Science in Speech-Language Pathology														✓	✓											
Doctor of Audiology														✓	✓											
Doctor of Philosophy in Communication Sciences and Disorders														✓	✓											
Doctor of Science in Physical Therapy														✓	✓											
School of Medicine-Lubbock																										
Doctor of Medicine				✓						✓			✓	✓					✓							
School of Nursing																										
Bachelor of Science in Nursing (Traditional Undergraduate Studies)													✓	✓												
Bachelor of Science in Nursing (RN to BSN) ^c																										✓
Bachelor of Science in Nursing (Non-Traditional 2nd degree program) ^d			┆ ^d									┆ ^d			┆ ^d						┆ ^d					✓
Master of Science in Nursing										✓		✓	✓	✓					✓		✓	✓		✓	✓	✓
Post Master's Nurse Practitioner Certificates										✓		✓	✓	✓					✓		✓	✓		✓	✓	✓
Doctor of Nursing Practice													✓	✓												
School of Pharmacy																										
Doctor of Pharmacy	✓	✓		✓	✓		✓	✓					✓	✓												

LOCATION OF STUDENTS →	ABILENE			AMARILLO			DALLAS/FT. WORTH			EL PASO			LUBBOCK			MIDLAND			ODESSA			HIGHLAND LAKES			DISTANCE STUDENTS	
	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	≥50% DE	
SCHOOL/DEGREE PROGRAM																										
Graduate School of Biomedical Sciences																										
Master of Science in Biochemistry and Molecular Genetics														✓	✓											
Master of Science in Biotechnology														✓	✓											
Master of Science in Cell and Molecular Biology														✓	✓											
Master of Science in Medical Microbiology														✓	✓											
Master of Science in Pharmaceutical Sciences	✓			✓	✓																					
Master of Science in Pharmacology and Neuroscience														✓	✓											
Master of Science in Physiology														✓	✓											
Doctor of Philosophy in Biochemistry and Molecular Genetics														✓	✓											
Doctor of Philosophy in Cell and Molecular Biology														✓	✓											
Doctor of Philosophy in Medical Microbiology														✓	✓											
Doctor of Philosophy in Pharmaceutical Sciences	✓			✓	✓																					
Doctor of Philosophy in Pharmacology and Neuroscience														✓	✓											

LOCATION OF STUDENTS →	ABILENE			AMARILLO			DALLAS/FT. WORTH			EL PASO			LUBBOCK			MIDLAND			ODESSA			HIGHLAND LAKES			DISTANCE STUDENTS	
	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	Courses Offered	≥50% Traditional	≥50% DE	≥50% DE	
SCHOOL/DEGREE PROGRAM																										
Graduate School of Biomedical Sciences, continued																										
Doctor of Philosophy in Physiology																										
													✓	✓												

- a The Bachelor of Science in Health Science is available only to students admitted to the school's Master of Occupational Therapy degree program.
- b As of summer of 2008, the Master of Physical Therapy program became a Doctor of Physical Therapy program.
- c Observational learning experiences are conducted at appropriate community/acute care facilities.
- d Coursework for the Second Degree track is offered online. Students complete both concentrated clinical simulation and concentrated hospital-based clinical learning experiences. The concentrated clinical simulation experiences occur on the Lubbock as well as applicable TTUHSC regional campuses. Concentrated hospital-based clinical experiences are completed by each student at applicable local hospitals near the student's home. Each student is assigned a clinical coach who guides hospital-based student learning on a day-to-day basis with coordination of clinical learning experiences by nursing faculty located at the Lubbock and applicable TTUHSC regional campuses.

Appendix H. Baseline Data Student Survey

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER (TTUHSC) QUALITY ENHANCEMENT PLAN (QEP) Baseline Data Student Survey

The TTUHSC QEP Steering Committee would like to better understand the knowledge, skills, behaviors, and attitudes of the current TTUHSC Students related to Interprofessional Teamwork.

As defined in the Institute of Medicine's (IOM) Report, *Health Professions Education: A Bridge to Quality*, (2003) an **interdisciplinary (Interprofessional) team** is "composed of members from different professions and occupations with varied and specialized knowledge, skills, and methods" (p. 54). Members of an **Interprofessional team** communicate and work together, as colleagues, to provide quality, individualized care for patients. As defined by the IOM (2003), **Interprofessional teamwork** is a collaborative interaction among interprofessional teams to provide quality, individualized care for patients.

The information collected in this survey is anonymous and will only be reported in aggregate.

I. First we would like to know some information about you.

1. What is your age group? Under 20 20-24 25-29 30-34 35+

2. What is your gender? Male Female

3. What School, Program and/or Department are you in?

- Allied Health Sciences (Program _____)
- Medicine (Department _____)
- Nursing (Department _____)
- Pharmacy
- Graduate School of Biomedical Sciences
- Other (please specify): _____

4. How would you be currently classified? (Example – undergraduate junior level, graduate master's level, post masters, doctoral, resident) _____

5. In which city is your primary campus located? _____

6. What is your racial background? African American Asian American Caucasian/white
 Hispanic American Native American
 Other (please specify): _____

II. Next, we would like to gain your perspective about the knowledge, skills, behaviors, and attitudes you have related to Interprofessional Teamwork.

Please indicate your level of agreement with the following statements.

	Strongly Disagree	Disagree	Agree	Strongly Agree
<p>7. I feel my program of study has provided adequate preparation in the knowledge, skills, behaviors, and attitudes required for me to participate as a collegial member of an Interprofessional Team in the patient care setting.</p> <p>Comment/s:</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>8. I feel my program of study has prepared me to communicate accurately, through use of shared terminology and language, with other members of an Interprofessional Team.</p> <p>Comment/s:</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>9. My program of study incorporated topics of Interprofessional Teamwork within the curriculum.</p> <p>Comment/s:</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>10. My program of study has provided opportunities to participate as a member of an Interprofessional Team in either a simulated or work-based learning environment.</p> <p>Comment/s:</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>11. I feel Interprofessional Teamwork is an important component of quality patient care.</p> <p>Comment/s:</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>12. I feel Interprofessional Teamwork is utilized in most patient care settings.</p> <p>Comment/s:</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix I. Baseline Data Faculty Survey

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER (TTUHSC) QUALITY ENHANCEMENT PLAN (QEP) Baseline Data Faculty Survey

The TTUHSC QEP Steering Committee would like to better understand how faculty view the importance of teaching the knowledge, skills, behaviors, and attitudes of Interprofessional Teamwork.

As defined in the Institute of Medicine's (IOM) Report, *Health Professions Education: A Bridge to Quality*, (2003) an **interdisciplinary (Interprofessional) team** is "composed of members from different professions and occupations with varied and specialized knowledge, skills, and methods" (p. 54). Members of an **Interprofessional team** communicate and work together, as colleagues, to provide quality, individualized care for patients. As defined by the IOM (2003), **Interprofessional teamwork** is a collaborative interaction among interprofessional teams to provide quality, individualized care for patients.

The information collected in this survey is anonymous and will only be reported in aggregate.

I. First we would like to know some information about you.

1. What is your age group? 20-30 30-40 40-50 50-60 61+

2. What is your gender? Male Female

3. What School, Program and/or Department are you in?

- Allied Health Sciences (Program _____)
- Medicine (Department _____)
- Nursing (Department _____)
- Pharmacy
- Graduate School of Biomedical Sciences
- Other (please specify): _____

4. What level of students do you predominantly teach? (Example – undergraduate junior level, graduate master's level, post masters, doctoral, resident) _____

5. In-which city is the campus in which you teach located? _____

6. What is your racial background? African American Asian American Caucasian/white
 Hispanic American Native American
 Other (please specify): _____

II. Next, we would like to gain your perspective about the knowledge, skills, behaviors, and attitudes you have related to Interprofessional Teamwork.

Please indicate your level of agreement with the following statements.

	Strongly Disagree	Disagree	Agree	Strongly Agree
7. I feel my School/Department provides students adequate preparation related to the knowledge, skills, behaviors, and attitudes required to participate as a collegial member of an Interprofessional Team in the patient care setting. Comment/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I feel my School/Department prepares students to communicate accurately, through use of shared terminology and language, with other members of an Interprofessional Team. Comment/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. My School/Department incorporates topics Of Interprofessional Teamwork within the Curriculum. Comment/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. My School/Department provides opportunities for the learner to participate as a member of an Interprofessional Team in either a simulated or work-based learning environment. Comment/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I feel Interprofessional Teamwork is an important component of quality patient care. Comment/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I feel Interprofessional Teamwork is utilized in most patient care settings. Comment/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix J. Readiness for Interprofessional Learning Scale

Readiness for Interprofessional Learning Scale (RIPLS)

For items #1-19, please indicate your level of agreement with each statement using the following scale.

Strongly Agree Agree Undecided Disagree Strongly Disagree
○ ○ ○ ○ ○

- 1) Learning with other students will make me a more effective member of a health care team.
- 2) Patients would ultimately benefit if health care students worked together to solve patient problems.
- 3) Shared learning with other health care students will increase my ability to understand clinical problems.
- 4) Learning with health care students before qualification would improve relationships after qualification.
- 5) Communication skills should be learned with other health care students.
- 6) Shared learning will help me think positively about other professionals.
- 7) For small group learning to work, students need to trust and respect each other.
- 8) Team-working skills are essential for all health care students to learn.
- 9) Shared learning will help me to understand my own limitations.
- 10) I don't want to waste my time learning with other health care students.
- 11) It is not necessary for health care students to learn together.
- 12) Clinical problem-solving skills can only be learned with students from my own department.
- 13) Shared learning with other health care students will help me to communicate better with patients and other professionals.
- 14) I would welcome the opportunity to work on small-group projects with other health care students.
- 15) Shared learning will help to clarify the nature of patient problems.
- 16) Shared learning before qualification will help me become a better team worker.
- 17) The function of nurses and therapists is mainly to provide support for doctors.
- 18) I'm not sure what my professional role will be.
- 19) I have to acquire much more knowledge and skills than other health care students.

Appendix K. QEP Seed Grant Review Rubric



**QEP Seed Grant
Review Rubric**

Cover Page	Includes Project Title	Includes team members from two different schools	Primary team members' signatures	Dept. Chair or Mentor's Signature
The Proposal must have all information requested to be considered for funding				

	0 Points	1 Point	2 Points	Points
Criteria (Each item may not meet criteria)	Does Not Meet Criteria	Meets Criteria	Exceeds Criteria	
The proposal focuses on Interprofessional Teamwork Skills. (Must be met)				
The proposal incorporates the use of innovative technology.				
The proposal includes faculty or students from at least two different schools. (Must be met)				
The proposal addresses the student learning outcome: "Describe/define team member roles, processes, expertise, background, knowledge, and values."				
The proposal addresses the student learning outcome: "Demonstrate basic group skills, including communication, negotiation, delegation, time management, and assessment of group dynamics."				
The proposal addresses the student learning outcome: "Deliver accurate, timely information to other team members at the appropriate time."				
The proposal addresses the student learning outcome: "Integrate coordinated and individualized care processes, including management of smooth transitions across settings and over time, even when team members are in entirely different physical locations to ensure excellence, continuity, and reliability."				
The proposal addresses the student learning outcome: "Resolve conflicts through communicating with team members in a shared language, even when members are in different locations. "				

	0 Points	1 Point	2 Points	Points
Abstract	Does Not Provide Information	Provides Minimum Information	Clearly and Effectively States Information	
The abstract includes information on the importance of the project to the TTUHSC community.				
The abstract includes goals for the Seed Grant activity that are aligned with at least one of the student learning objectives.				
The abstract includes a timeline for Spring through Summer 2009 Semester activities.				
The abstract describes activities and assessment of the project				
The abstract provides information on the anticipated resources required.				

	5 Points	5 points	5 Points	Points
Contributions to the QEP	Directed at Students	Directed at Faculty	Fact Sheets, web pages, tutorials, and/ or training materials	
The proposal includes the development of new materials.				
The proposal includes the assessment of existing materials and/or resources for the development of interprofessional teamwork.				
The proposal includes the planning and execution of workshops for interprofessional teamwork				
The proposal provides assessment data for existing assessment instruments related to interprofessional teamwork.				
The proposal creates assessment instruments relating to interprofessional teamwork.				
Total Points				

Score: _____ Criteria
 _____ Abstract
 _____ Contributions to the QEP
 _____ Total Points

Appendix L. Clinical Teamwork Scale

Clinical Teamwork Scale

	Not Relevant	Not acceptable	Poor			Average			Good		Perfect	
Overall												
1) How would you rate teamwork during this scenario?	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
Communication												
2) Overall communication rating	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
3) Orient new members (SBAR)	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
4) Transparent thinking	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
5) Directed communication	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
6) Closed loop communication	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
Situational Awareness												
7) Overall situational awareness rating	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
8) Resource allocation	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
9) Target fixation	Yes <input type="checkbox"/>	No <input type="checkbox"/>										
Decision Making												
10) Overall decision making rating	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
11) Prioritize	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
Role Responsibility (Leader/Helper)												
12) Overall role responsibility rating	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
13) Role clarity	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
14) Perform as a leader/helper	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10
Other												
15) Patient friendly	<input type="checkbox"/>	0	1	2	3	4	5	6	7	8	9	10

Additional Notes:

Appendix M. Interdisciplinary Education Perception Scale

Please indicate the degree to which you agree or disagree with the statement by drawing a circle around the number of the response that best expresses your feeling.

The scale is as follows:

6 = strongly agree 5 = agree 4 = somewhat agree 3 = somewhat disagree 2 = disagree 1 = strongly disagree

Interdisciplinary Education Perception Scale						
1. Individuals in my profession are well-trained.	6	5	4	3	2	1
2. Individuals in my profession are able to work closely with individuals in other professions.	6	5	4	3	2	1
3. Individuals in my profession demonstrate a great deal of autonomy.	6	5	4	3	2	1
4. Individuals in other professions respect the work done by my profession.	6	5	4	3	2	1
5. Individuals in my profession are very positive about their goals and objectives.	6	5	4	3	2	1
6. Individuals in my profession need to cooperate with other professions.	6	5	4	3	2	1
7. Individuals in my profession are very positive about their contributions and accomplishments.	6	5	4	3	2	1
8. Individuals in my profession must depend upon the work of people in other professions.	6	5	4	3	2	1
9. Individuals in other professions think highly of my profession.	6	5	4	3	2	1
10. Individuals in my profession trust each other's professional judgment.	6	5	4	3	2	1
11. Individuals in my profession have a higher status than individuals in other professions.	6	5	4	3	2	1
12. Individuals in my profession make every effort to understand the capabilities and contributions of other professions.	6	5	4	3	2	1
13. Individuals in my profession are extremely competent.	6	5	4	3	2	1
14. Individuals in my profession are willing to share information and resources with other professionals.	6	5	4	3	2	1
15. Individuals in my profession have good relations with people in other professions.	6	5	4	3	2	1
16. Individuals in my profession think highly of other related professions.	6	5	4	3	2	1
17. Individuals in my profession work well with each other.	6	5	4	3	2	1
18. Individuals in other professions often seek the advice of people in my profession.	6	5	4	3	2	1

Appendix N. Situation-Background-Assessment-Recommendation (SBAR) Rubric

SBAR RUBRIC

Levels:	0 Does not meet expectations	1 Competent (meets expectations)	2 Proficient (exceeds expectations)	Score
Criteria:				
(S) Situation: What is the situation you are calling/reporting about? • Identify self, unit, patient, room number. • Briefly state the problem, what is it, when it happened or started, and how severe.	Did not adequately identify self/patient and/or omitted important information concerning the patient's current status OR communicated in a way that hampered teamwork.	Communicated major points in patient's current Situation but needed prompting for additional relevant information	The patient's situation was completely and correctly communicated and no additional information was needed by the team member receiving the information	
(B) Background: Pertinent background information could include the following: • The admitting diagnosis and date of admission • List of current medications, allergies, IV fluids, and labs • Most recent vital signs • Lab results: provide the date and time test was done and results of previous tests for comparison • Other clinical information • Code status	Did not communicate important information about base line and/or changes in labs, vital signs, patient concerns, etc OR communicated in a way that hampered teamwork.	Communicated major points in patient's Background but needed prompting for additional relevant information	The patient's Background was completely and correctly communicated and no additional information was needed by the team member receiving the information	
(A) Assessment: What is the team member's assessment of the situation?	Did not make a concise Assessment OR Assessment made but not related to S & B OR was made in a way that hampered teamwork.	An Assessment was made and communicated but it did not address all the relevant patient needs, concerns or physical state or led to minor delay in appropriate action.	The Assessment made was accurate and complete and/or stated in a way that rapidly moved the team toward appropriate action	
(R) Recommendation: What is the team member's recommendation or what does he/she want? Examples: •Notification that patient has been admitted • Patient needs to be seen now • Order change	Did not make a concise recommendation OR Recommendation made but not related to S&B&A OR was made in a way that hampered teamwork.	A Recommendation was made and communicated but it did not address all the relevant patient needs, concerns or physical state or led to minor delay in appropriate action.	The Recommendation made was accurate and complete and/or stated in a way that rapidly moved the team toward appropriate action	

Date _____

Student Code _____

Evaluator _____

Permission to use granted by P. Hamilton on December 19, 2008.

Appendix O. Learner Satisfaction and Self-Confidence Scales

Learner Satisfaction Scale

Instructions: This questionnaire is a series of statements about your personal attitudes toward the educational pedagogy [Problem-based learning (PBL), Case-based learning (CBL), Simulation-based learning (SBL), or Work-based learning (WBL)] that was used to facilitate your knowledge, skills, behaviors, and attitudes in interprofessional teamwork. Each item represents a statement about your satisfaction with the learning. Please indicate your own feelings about each statement by marking the numbers that best describes your attitude or beliefs. This is anonymous, with the results being compiled as a group, not individually.

Please circle the educational pedagogy you are evaluating as you rate the following items:

	Satisfaction with Current Learning	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	The (PBL), CBL, (SBL), or (WBL) method was effective.	1	2	3	4	5
2.	The (PBL), (CBL), SBL, or (WBL) method provided a variety of learning activities to promote my learning.	1	2	3	4	5
3.	I enjoy how my instructors teach using the (PBL), CBL, (SBL), or (WBL) approach.	1	2	3	4	5
4.	The (PBL), (CBL), (SBL), or (WBL) method motivated me to learn.	1	2	3	4	5
5.	The (PBL), (CBL), (SBL), or (WBL) method provided opportunities for practice & mastery of the knowledge, skills and attitudes (KSA) needed to participate as a collegial member of an Interprofessional health care team.	1	2	3	4	5

Please rate the following items based on how important that item is to you.

	Satisfaction with Current Learning	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	The (PBL), CBL, (SBL), or (WBL) method was effective.	1	2	3	4	5
2.	The (PBL), (CBL), SBL, or (WBL) method provided a variety of learning activities to promote my learning.	1	2	3	4	5
3.	I enjoy how my instructors teach using the (PBL), CBL, (SBL), or (WBL) approach.	1	2	3	4	5
4.	The (PBL), (CBL), (SBL), or (WBL) method motivated me to learn.	1	2	3	4	5
5.	The (PBL), (CBL), (SBL), or (WBL) method provided opportunities for practice & mastery of the knowledge, skills and attitudes (KSA) needed to participate as a collegial member of an Interprofessional health care team.	1	2	3	4	5

Learner Self-Confidence Scale

Instructions: This questionnaire is a series of statements about your personal feelings of self-confidence after participating in an educational activity supported by [Problem-based learning (PBL), Case-based learning (CBL), Simulation-based learning (SBL), or Work-based learning (WBL)]. Please indicate your own feelings about each statement below by marking the numbers that best describes your attitude or beliefs. Please be truthful and describe your attitude as it really is, not what you would like for it to be. This is anonymous, with the results being compiled as a group, not individually.

Please circle the education pedagogy and rate the following items: after participating in a learning experience using (PBL), (CBL), (SBL), or (WBL)

	Self-confidence in Learning	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	I am confident I have the knowledge needed to participate as a member of an Interprofessional team.	1	2	3	4	5
2.	I am confident that I have the skills needed to participate as a member of an Interprofessional team.	1	2	3	4	5
3.	I am confident that I have the behaviors needed to participate as a member of an Interprofessional team.	1	2	3	4	5
4.	I am confident that I have the attitudes needed to participate as a member of an Interprofessional team.	1	2	3	4	5

Please rate the following items based on how important that item is to you.

	Self-confidence in Learning	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	I am confident I have the knowledge needed to participate as a member of an Interprofessional team.	1	2	3	4	5
2.	I am confident that I have the skills needed to participate as a member of an Interprofessional team.	1	2	3	4	5
3.	I am confident that I have the behaviors needed to participate as a member of an Interprofessional team.	1	2	3	4	5
4.	I am confident that I have the attitudes needed to participate as a member of an Interprofessional team.	1	2	3	4	5

Appendix P. Instructor Satisfaction and Self-Confidence Scales

Instructor Satisfaction with Educational Pedagogy Scale

Instructions: This questionnaire is a series of statements about your personal satisfaction regarding the educational pedagogy [Problem-based learning (PBL), Case-based learning (CSL), Simulation-based Learning (SBL), or Work-based learning (WBL)] used to teach the knowledge, skills, and attitudes of interprofessional teamwork. Please indicate your personal feelings about each statement below by marking the appropriate number. This is anonymous with the results being compiled as a group, not individually.

Please circle the educational pedagogy you are evaluating as you rate the following items:

	Satisfaction with Educational Pedagogy	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	The teaching method of (PBL), (CBL), (SBL), or (WBL) was helpful and effective.	1	2	3	4	5
2.	The use of (PBL), (CBL), (SBL), or (WBL) provided me with a variety of teaching materials and activities.	1	2	3	4	5
3.	I enjoy incorporating (PBL), (CSL), (SBL), or (WBL) into my teaching.	1	2	3	4	5
4.	The (PBL), (CBL), (SBL), or (WBL) method helped motivate my students to learn.	1	2	3	4	5
5.	The (PBL), (CBL), (SBL), or (WBL) method provided the students with the opportunities to practice and master the skills required to participate as a member of an interprofessional team.	1	2	3	4	5

Please rate the following items based on how important that item is to you.

	Satisfaction with Educational Pedagogy	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	The teaching method of (PBL), (CBL), (SBL), or (WBL) was helpful and effective.	1	2	3	4	5
2.	The use of (PBL), (CBL), (SBL), or (WBL) provided me with a variety of teaching materials and activities.	1	2	3	4	5
3.	I enjoy incorporating (PBL), (CSL), (SBL), or (WBL) into my teaching.	1	2	3	4	5
4.	The (PBL), (CBL), (SBL), or (WBL) method helped motivate my students to learn.	1	2	3	4	5
5.	The (PBL), (CBL), (SBL), or (WBL) method provided the students with the opportunities to practice and master the skills required to participate as a member of an interprofessional team.	1	2	3	4	5

Instructor Self-Assessment: Self-Confidence in Teaching Scale

Instructions: This questionnaire is a series of statements about your personal feelings of self-confidence using a specific educational pedagogy [Problem-based learning (PBL), Case-based learning (CSL), Simulation-based Learning (SBL), or Work-based learning (WBL)] to teach the knowledge, skills, and attitudes of interprofessional teamwork. Please indicate your personal feelings about each statement below by marking the appropriate number. This is anonymous with the results being compiled as a group, not individually.

Please circle the educational pedagogy you used as you rate the following items:

	Self-confidence in Teaching	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	I am confident that I am able to provide my students with the knowledge, skills, and attitudes required to participate as a collegial member of an Interprofessional	1	2	3	4	5
2.	I am competent in using (PBL), (CBL), SBL), or (WBL) to teach the knowledge, skills, and attitude of Interprofessional teamwork.	1	2	3	4	5
3.	It is my responsibility to teach the students what they need to know to participate as a collegial member of an Interprofessional team.	1	2	3	4	5

Please rate the following items based on how important that item is to you.

	Self-confidence in Teaching	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	I am confident that I am able to provide my students with the knowledge, skills, and attitudes required to participate as a collegial member of an Interprofessional	1	2	3	4	5
2.	I am competent in using (PBL), (CBL), SBL), or (WBL) to teach the knowledge, skills, and attitude of Interprofessional teamwork.	1	2	3	4	5
3.	It is my responsibility to teach the students what they need to know to participate as a collegial member of an Interprofessional team.	1	2	3	4	5