
Executive Summary

The Quality Enhancement Plan (QEP) of The University of Texas at Arlington reflects a shared vision of the educational experiences we want our students to have and of what we want our students to learn. After a careful, thoughtful, and extensive dialogue among the various interests that comprise our academic and broader communities (most significantly our faculty), the University selected as the goal of its QEP *the effective application of active learning to achieve higher order thinking skills*. Through this QEP, UT Arlington seeks to foster an environment in which our students will be engaged partners in their own learning process, and will be able to apply, analyze, synthesize, and evaluate their classroom experiences to better understand the world around them.

The process for selecting the QEP theme was designed to be open and stakeholder-driven. This process of institutional self-reflection was undertaken in concert with other University initiatives (e.g., a strategic planning process and a new branding campaign), and took advantage of lessons learned throughout these endeavors to inform subsequent steps. This approach facilitated the creation of a well-integrated plan for an educational environment at UT Arlington centered on the acquisition and development of higher order thinking skills through carefully designed active learning experiences.

This process resulted in the following definition of active learning for the QEP:

Active learning places the student at the center of the learning process, making him/her a partner in discovery, not a passive receiver of information. It is a process that employs a variety of teaching and learning strategies to place the responsibility for creating and defining the learning environment on the instructor and the responsibility for effective engagement in the learning process on the students. Active learning encourages students to communicate and interact with course materials through reading, writing, discussing, problem-solving, investigating, reflecting, and engaging in the higher order thinking tasks of application, analysis, synthesis, and evaluation. An active learning approach draws upon a continuum of teaching and learning strategies, including for example class discussion activities, undergraduate research, and community-based learning experiences.

This definition embodies many reasons why a QEP premised on active learning resonated so deeply with the University's constituencies. The variety of teaching and learning strategies promotes innovation within the colleges and schools consistent with our strong-college model of governance and history of strong teaching. This variety of approaches acknowledges that our diverse and changing student population employs a number of different learning styles that need to be taken into consideration. Student engagement in their classes and their acquisition and development of the higher order thinking skills of application, analysis, synthesis, and evaluation are the learning environments that our faculty want to promote, that our students indicate they want to participate in, that our alumni report are most beneficial to them, and that employers believe produce the skills they desire in their future employees.

UT Arlington approaches its QEP from an institutional research perspective. The QEP is a narrowly tailored institutional research project designed to investigate the impact of the use of active learning techniques on students' acquisition and development of higher order thinking skills. It is intended to address four research questions:

1. Does active learning contribute to enhancing higher order thinking skills among UT Arlington students?
2. What are the most effective active learning strategies (in terms of complexity, time on task, and intensity) for increasing higher order thinking skills?
3. At what level in the UT Arlington undergraduate experience does active learning have the most impact?
4. How does the effectiveness of active learning strategies vary across the colleges and schools as explored through the respective pilot projects?

Twelve pilot projects were selected for the QEP following an open call for pre-proposal submissions from throughout the University. These projects were chosen based on certain commonalities (similar approaches, similar concepts, and most importantly similar student learning outcomes). They offer an array of educational contexts that will allow us to explore the intervention of active learning techniques. As shown in the following table, the pilot projects cover nearly all the colleges and schools, a broad range of the undergraduate experiences from introductory classes to capstone courses, and a wide variety of learning environments.

College/School	Level	Learning Environment
Architecture	Upper-division course	Computer-based portfolio building
Business	Introductory	Using projects to enhance required curriculum (catapult group project)
Education	Upper-division course	Using blogs/podcasts to foster on-line e-communities of learners
Engineering	Capstone	Increasing reflective practice within engineering capstone experience across the college
Engineering	Introductory	Using classroom response technologies in large class
Engineering	Introductory	Using computerized, interactive homework
Honors	Freshman/Sophomore and Junior/Senior symposia	Interdisciplinary interactive symposia
Liberal Arts	Introductory	Using classroom response technologies in large class
Liberal Arts	Introductory	Using projects to enhance required curriculum (group project module on elections)
Univ. Library/ Liberal Arts	50-minute session (primarily Freshmen)	Using projects to enhance required curriculum (plagiarism case studies)
Nursing	Capstone	Active learning projects on-campus as well as satellite locations
Science	Capstone	Problem-based research experience

The effectiveness of active learning techniques in the pilot projects will be assessed at the course, program, and University levels at several points in the QEP three-year implementation period. Such assessments will provide data to explore, understand, and direct the classroom experience at UT Arlington. At the end of the third year, these data will help us identify the most effective active learning techniques and best practices in the institution. The findings will inform the University’s decision making in matters of allocating scarce resources, time, talent, and institutional energy, as we continuously seek to spread these best practices throughout the University.

The QEP will also inform the University’s larger ten-year strategic planning initiative geared toward promoting what is referred to as its “Strategic Planning Priority I”—“to provide an environment that fosters broad-based education as well as professional studies designed to facilitate successful careers, personal development, and community service.” The QEP will offer evidence of teaching and student learning accomplishments and better enable the University to

develop teaching goals and strategies to reach this strategic planning priority. It will also initiate dialogue on teaching and learning so that faculty can learn from one another and disciplines can take advantage of one another's perspectives. Finally, it will encourage and support innovation in the classroom.

The University's plan to integrate active learning is designed to distinguish the student learning experience at UT Arlington from that of other institutions of higher learning and to create a cross-campus active learning environment that will become the hallmark of a UT Arlington education. We also seek to design an environment in which our students acquire and develop the thinking skills they need to be vital contributors to the workforce and the community and to ignite a thirst for lifelong learning. The QEP is a mechanism that allows the University to work toward fulfilling its institutional mission and its strategic plan, to help obtain its goal of becoming an institution of first choice, and to achieve institution-wide improvement through the pursuit of enhancing higher order thinking skills.

The QEP Pilot Projects

Below are summary descriptions of each of the individual pilot projects. For more specific information regarding these courses – for example, student learning outcomes, active learning activities being employed, thinking skills emphasized (such as, application, analysis, synthesis or evaluation), summative assessments and research designs – see the QEP available at <http://sacs.uta.edu/>.

Pilot Project Summaries

College/School: Architecture
Pilot Project Name: *Interactive Digital Portfolio*
Scope of Active Learning Technique: Full Semester
Course Abstract: Course No.: Arch 4395 – Selected Topics in Architecture (Interactive Digital Portfolio)

This course will provide a conceptual framework for the development of an interactive digital portfolio. The digital portfolio is used by the design disciplines to document creative work. This course is comprised of the Intermedia Toolbox, Active Archive, Adaptive (Live) Portfolio, and culminates in a Personal Education Portfolio. The class will be structured around as a series of self and group active learning exercises and pedagogies that build toward a living document that simultaneously develop digital proficiencies and critical thinking skills. The Personal Education Portfolio will be a live, ongoing Portfolio of their own relationship to learning using inter-disciplinary practices, new multi-media methods and contemporary communication models. Assessment of students will be based on their ability to synthesize the four modules by acquiring digital proficiencies, incorporating collaborative and composite designs, interdisciplinary research, developing adaptive models/case studies and synthesizing into a new Interactive Educational Portfolio.

College/School: Business
Pilot Project Name: *Catapulting to Higher Learning*
Scope of Active Learning Technique: Module within course integrated throughout the course
Course Abstract: Course No.: OPMA 3306 – Introduction to Operations Management

Most business students understand topics such as accounting, finance, and marketing but lack a conceptual base when it comes to operations management; therefore, experiential learning is vital in operations management courses. OPMA 3306 introduces undergraduate students to various OM concepts and techniques. To supplement our lecture style of teaching, we add a group project as a required element of the course. Within our catapult project, students gain a deeper understanding by applying several quantitative and qualitative techniques covered in lecture. The project begins when student groups decide to buy or build their catapult. Most often, groups exercise their creative abilities and decide to design and build their own catapults. Groups then apply project management techniques and learn how to create production schedules and time-phased material requirement records for attaining resources. In the competition phase, groups use their catapults to create data representing their catapult's ability to hit a defined target. They also gather observations on other groups' catapults and catapulting process. Using the data, observations, and quality control techniques, groups assess their catapult's performance and identify ways to improve it. After the second competition, groups compare the performance of different catapults and prepare a project report that integrates the different applied techniques. The project incorporates a variety of tools within a common context to assist students in understanding the integrative nature of analytical tools. Along with its integrated approach, it also promotes the development of effective communication and team participation skills by requiring students to provide various reports throughout the project. Group learning assessment is based on the analysis and explanation within each written report and the group's overall comprehensive report. Individual student learning assessment is based on test performance throughout the course and pre-project and post-project performance comparison on questions covering applied concepts throughout the project.

College/School:

Education

Pilot Project Name:

New Media Literacy for a New Generation of Learners

Scope of Active Learning Technique:

Full Semester

Course Abstract:

Course No.: LIST 4343 – Content Area Reading and Writing

Today's new generation of learners are: digitally literate, connected, immediate, experiential, social, highly interactive and collaborative. Yet often, there is a disconnect between the way the Net Generation is taught and the way they go about learning, problem solving and communicating in their daily lives. LIST 4343 aims to illustrate the importance of reading, writing, speaking, and listening across the curriculum and it explores methods of teaching in all of these areas for grades 4-12. This study seeks to understand what happens when digital tools, such as blogs, podcasts, and vodcasts, are utilized to determine what impact these tools have on students' ability to understand and employ these skills within their teaching. To assess the impact of employing the use of digital tools, data on students who are enrolled will be collected and evaluated using ethnographic software that analyzes textual, graphic, audio, and video data. Blogs and face-to-face meetings will also be used in order to assess the impact of digital tools on pedagogical comprehension in content area reading and writing across the content areas. Furthermore, a rubric will be developed to evaluate the acquisition of these skills in the student's final research projects.

College/School:

Engineering

Pilot Project Name:

Quality Enhancement Plan (QEP) for enhancement of the Engineering Capstone Design experience

Scope of Active Learning Technique:

Full Semester

Course Abstract:

Course No.: CSE 4316 – Computer System Design Project I

For each of the programs in the College of Engineering, students' undergraduate coursework culminates in a capstone design experience. The common characteristic of these experiences is a strong engineering design emphasis, usually in a team environment. Each team typically selects its own real-world problem and takes that problem from definition to design of a solution and usually to implementation. Student teams work closely with faculty member(s) in the development of the project. The capstone design experience can produce direct evidence of the accomplishment of a subset of these outcomes for each of the engineering programs. For example, students in Industrial Engineering (IE) must demonstrate their ability to communicate effectively, in that each student makes three class presentations that are videotaped and streamed onto a class website where the presentations can be critiqued by others in the class and the students themselves receive feedback. Two of the three presentations deal with contemporary issues, thus achieving the student learning outcome of having knowledge of contemporary issues. Each of these capstone experiences employs a project log and project final report. The project log currently is just a reporting of the students' activities as is the final report. These logs will be retooled as journals to intentionally build in reflective questions that are developed around the key skills vital for their respective engineering practice. Furthermore, all capstone faculty members will work together to enhance their respective courses with additional formative assessment strategies throughout the capstone experience as well as to develop a common rubric to ensure that instructors in each of these capstones are evaluating and emphasizing a common set of expectations of performance for both the oral and written reports. This more methodical, step-by-step approach will allow students to apply their full academic experience as well as learn what their professional practice will entail. By enhancing these capstones in this manner, the respective engineering programs will ensure learning experiences more directly aligned with and designed to meet the College's and external accreditors' required learning outcomes.

College/School: Engineering
Pilot Project Name: *A Controlled Study on Classroom Response Technology for Large Classes*
Scope of Active Learning Technique: Full Semester
Course Abstract:

Course No.: XE 1104 – Introductory to Engineering

A classroom response system (CRS) will be used in the introductory engineering course XE 1104. By using the CRS as an assessment tool, students are provided instant feedback to their questions, which easily allows the instructor to monitor student absorption and retention of the wide variety of topics covered by this critical course. As an introductory course, XE 1104 exposes students to engineering ethical issues and mandates that they work in teams of four—with each team being required to have at least three of the engineering departments represented. By the end of the semester students should be able to: distinguish between the different engineering disciplines in order to identify the discipline that best fits their strengths and weaknesses; identify ethical and professional behaviors in order to assess and judge provided contemporary ethical case studies; communicate clearly and effectively in writing in order to practice professional behavior that will be expected in their careers; work within a multi-disciplinary team in order to design and construct a project. The objective of this project is to assess the CRS effectiveness in increasing active learning and improving student learning outcomes by targeting three specific assessment areas: classroom learning, multi-disciplinary teamwork, and engineering ethics. These three goals will be assessed using student responses to questions on tests, course evaluations, end-of-semester- peer evaluations, and student exam questions.

College/School: Engineering
Pilot Project Name: *An Instant-Response Homework System for Engineering Classes*
Scope of Active Learning Technique: Full Semester
Course Abstract:

Course No.: EE 2315 – Circuit Analysis I

Homework problems assigned to engineering students help develop problem solving skills with engineering models by requiring the students to calculate answers based on a supplied set of numerical parameters. Unfortunately, students have often lost focus on the problems by the time the assignment is returned to them. A solution to this problem is to have students complete homework on-line using a fully interactive program. The program generates random variables for the model parameters so that each student gets a unique version of each assigned problem. Answers are automatically calculated, stored in a password-protected data base under the student's user name and compared with the student's submitted answers. This will provide students with instant feedback that will contribute to critical thinking by quickly rejecting answers obtained by false reasoning or incorrect assumptions. In addition, collaboration between students will become a teaching/learning experience rather than just an exchange of data, since no two students will have exactly the same parameters. Having completed EE 2315, students are expected to be able to identify the fundamental laws of electric circuit analysis in order to effectively use the underlying concepts for analyzing electric circuits, and to use the basic methods of circuit analysis to efficiently formulate solutions for complex circuit problems. To assess whether these learning outcomes have been met, two sections of EE 2315 will be offered in the fall of 2007 with the same lectures. One section will be given conventional homework assignments, while the other will have the web-based system for homework. The evaluation of student learning will be based on formative in-class questioning, embedded examination questions and results, homework grades and tracking of performance on such, and class attendance. Using a dependable set of rubrics, we will be able to measure the students' abilities to apply knowledge of math, science and engineering as well as to solve engineering problems.

Pilot Project Name: *Freshman/Sophomore Seminar Course and Junior/Senior Honors Seminar Course*

Scope of Active Learning Technique: **Full Semester**

Course Abstract:

Course No.: HONR 2103 – Honors Special Topics (Freshman/Sophomore)
Course No.: HONR 4103 – Honors Advanced Special Topics (Junior/Senior)

The Honors College will develop a freshman/sophomore and a junior/senior-level one-hour Honors undergraduate seminar to be offered every fall and spring semester on interdisciplinary topics attractive to Honors and Honors-qualified students from a variety of academic disciplines. Seminar topics will eventually be selected from proposals submitted by UT Arlington faculty; however, the initial phase of the project will utilize two courses. The freshman/sophomore course will be entitled “Honors Seminar” and the junior/senior course will be entitled “Advanced Honors Seminar.” Individual seminar topic titles will be assigned under these main titles each semester the seminars are taught. These seminars will foster a learning environment where students examine a focus topic, participate in interactive classroom discussions, free exchange of ideas and opinions, and exploration of new ideas. Students completing this course are expected to have: 1) knowledge of major aspects of the seminar topic; 2) the ability to critically read and discuss seminar materials and subject matter; 3) the ability to critically assess an assigned topic and develop critical questions and statements as the basis for group discussion; 4) the ability to carry out independent research, develop and deliver an oral presentation, and moderate a seminar discussion on an assigned topic; and 5) the ability to express and discuss opinions regarding an assigned topic with the instructor and peers in an interactive group setting. Student learning outcomes will be assessed using qualitative survey documents for students and faculty facilitators, as well evaluation of the students’ oral reports, short reports and essays using a common grading rubric. In addition, instructors will assess students based on their level of preparation for their oral presentation, in leading class discussion, as well as the level of student participation in the seminar.

College/School

Liberal Arts

Pilot Project Name:

Personal Response Systems: Active Learning in a Large Lecture Hall

Scope of Active Learning Technique:

Full Semester

Course Abstract:

Course No.: HIST 1311 – United States History to 1865

This project will involve the re-development of a core requirement course, which is usually taught in a large lecture hall, to learn more about the benefits of a personal response system. This relatively new technology employs handheld devices (or “clickers”) and innovative software, which together presents the entire class’s responses to instructor-posed questions instantly in a graph, as well as keeping track of individual responses. A personal response system allows an instructor to engage students during lecture, assess their comprehension, and track student learning over time, even in large courses where students are often inclined to remain anonymous and passive. Clicker technology in a humanities course, like history, can test students’ ability to apply knowledge, but it can also engage students in their own historical analysis. This project will center on reorganizing the course around primary sources, with the aim of helping students in the process of making their own interpretations discover how well-informed and well-intentioned historians sometimes arrive at different understandings of the past. In addition to creating a more interactive course, this project will rely on intensive tracking of student in-class participation to subsequent performance on class assignments and exams. Embedded test questions, as well as a rubric used to analyze their essay exams, will allow for further evaluation of the students’ performance toward the course’s desired learning outcomes. The overall goal will be to use these active learning strategies to teach introductory students not only influential interpretations of the development of American society and politics prior to the Civil War, but also how historians go about constructing those interpretations.

College/School: Liberal Arts
Pilot Project Name: *Democracy in Action: Understanding the Democratic Process through an Analysis of Political Campaigns*
Scope of Active Learning Technique: Module within course integrated throughout the three sections of the course
Course Abstract: Course No.: POLS 2311 U.S. Government

POLS 2311 U.S. Government is a required course for all undergraduate students at the University. In this project, students will participate in an active learning module regarding political campaigns and elections. The objective of this project is for students to understand better the electoral process and to assess the impact of contemporary campaigning on the democratic process. Working in small groups, students will conduct research on candidates running for political office (e.g., state representative, city council, county judge, district attorney or perhaps even U.S. Congress), engage in and reflect on presentations from guest speakers regarding these races, evaluate the campaigns and present their analysis to their classmates. This multi-pronged learning strategy allows students to develop important research and analytical skills by engaging actively with the course material through “real world” experiences. A common assessment rubric will be developed to ensure that the faculty who are involved are utilizing consistent standards to measure students’ performance. Each presentation and essay will be examined utilizing this rubric to ascertain the level of higher order thinking at which each student is operating. A pretest/posttest and embedded questions will be employed to also gauge the progression of students’ skills.

College/School: University Library/Liberal Arts
Pilot Project Name: *Academic Integrity 101: An Anti-Plagiarism Instruction Session*
Scope of Active Learning Technique: Full Semester
Course Abstract: Course No.: ENGL 1301 Critical Thinking, Reading, and Writing I & ENGL 1302 Critical Thinking, Reading and Writing II

In *Academic Integrity 101: An Anti-Plagiarism Instruction Session*, students will be presented with a worksheet that contains only part of an essay. Working in small groups, students must determine whether the essay section has been plagiarized or not; identify what constitutes plagiarism; outline the disciplinary process at UT Arlington for violations of academic integrity standards; explore the possible consequences for those who continue to plagiarize in their professional lives; and demonstrate the proper citation of the “plagiarized” material. Each group presents portions of what they have discovered to the other groups, and all students are encouraged to participate in class discussion, thus challenging the students to think more deeply about the ethical use of information. By the end of the session, students should be able to interpret and apply their knowledge of the economic, legal, and social standards for information use in order to apply these standards to their research and writing and to be able to analyze a case example for evidence of plagiarism. Evaluation of the sessions will be completed by applying a four-point critical thinking rubric to students’ homework assignments. Assessment of student learning of information usage will target three key areas: measuring the students’ ability to identify and summarize the economic, legal, and social standards for information use, the student’s ability to identify and consider the ethical context for information use, and their ability to identify and assess the consequences for unethical information use.

College/School: Nursing
Pilot Project Name: RN-BSN Capstone Seminar
Scope of Active Learning Technique: Full Semester
Course Abstract:

Course No.: NURS 4382 – Capstone Seminar, RN-BSN Program

This course is for the RN student who has enrolled to obtain their Bachelors of Science in Nursing. The course is offered simultaneously on the main campus as well as in remote locations. The enhanced-version of the Capstone Seminar will require all students to give an oral presentation to meet an identified agency's need for education. Students will choose their presentation subject by assessing the agency's need for education and the current literature on timely topics in nursing and health care that are related to the identified needs of the agency. They will share these articles and what they learned from them at their agency site and with their fellow students in online discussions in which students from different sites are grouped together. Students will write a literature review on their chosen topic, and once completed, this review will be used to construct a Power Point presentation to educate client and/or staff in their chosen agency on their chosen topic. These opportunities allow students the chance to broaden their knowledge by learning from each other, agency workers, and faculty members as well as employ the full range of their academia experience. To assess whether the goals are met, students' class discussion, online discussion, and content and delivery of their presentations all will be assessed using an evaluation rubric. Written appraisals from their agency on the quality of the presentation, usefulness and immediate application of the information provided will be gathered to judge the effect the students' presentations had on the agencies. This aspect of evaluation will not only demonstrate the effectiveness of the presentation, but also the relevance of the choice of topics. Information will also be collected from the students as to their confidence level after presenting and their likelihood to repeat this behavior. Additional plans call for tracking these students' changes in job settings after graduation and the number of RN-BSN students who progress to masters and doctoral programs juxtaposed with learning styles and other criteria determined at the beginning of the QEP program. This later assessment would serve to evaluate whether the outcomes desired by the overall program are met and how best to utilize this capstone experience.

College/School: Science
Pilot Project Name: Active learning through URE courses
Scope of Active Learning Technique: Full Semester
Course Abstract:

Course No.: MATH 4394 – Undergraduate Research Experiences

In order to create an active learning environment for our undergraduate mathematics students, we propose to introduce an Undergraduate Research Experiences (URE) course into our curriculum. Students enrolled are expected to perform meaningful research under the supervision and mentorship of active faculty researchers. This course aims at training students to improve their oral, written, computational, and presentation skills; to analyze a specific research problem and formulate it as a mathematical problem; to apply new and prior knowledge to solve the mathematical problem; to translate the mathematical solution by giving a physical interpretation to it; and to analyze the shortcomings of the mathematical model used, determine how realistic the model is, and to compare the solution with those obtained by others or from other methods. This course creates an open learning environment that is based on inquiry rather than on passive learning and one that challenges students to think, to use new and prior knowledge, to collaborate with peers and faculty, and to explain both the problem and the solution to others. The goals of this course will be assessed by direct and indirect methods. Direct methods of assessment will include the tracking of student demographics, the structure of each URE course, the research performed, basic information on the nature of the supervision, student research papers and presentations, and the academic progress of the students after the course. A rubric will be developed to ensure common standards are articulated and evaluated on both the oral and written components. Indirect methods of assessment will include end-of-semester student surveys that will ask about goal attainment, recommendations for future courses, and will allow the students to express how they felt about their research topic and advisor, whether they felt they had sufficient supervision, and how learning in this course compares with learning in a traditional course.