

***TOTAL QUALITY LEARNING IN THE CLASSROOM***

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**Abstract**

**Total Quality Learning in the Classroom**

Although all areas of higher education--from service departments, to administration, to classrooms--can benefit from TQM/CQI initiatives, the teaching/learning environment can benefit the most. This study presents the results of an ongoing research project comparing traditional approaches to teaching and learning with innovative applications of the principles of TQM and CQI in the college classroom. The study focuses on observing the effects of implementing strategies of student empowerment, feedback, collaborative teams, and the use of selected technologies. Findings indicate that students experience statistically significant positive shifts in their confidence in course content, working effectively in teams, understanding of consensus building, and knowledge of TQM/CQI. Overall, the partnership between students and faculty results in better learning and teaching.

## INTRODUCTION

This article addresses the positive impact of implementing principles of Total Quality Management (TQM) and Continuous Quality Improvement (CQI) in various classroom environments.

### Historical Perspective

Recent research, including observations by Hogg (1993), point out that quality organizations have several common characteristics: paying attention to customers, empowering employees, providing ongoing training, modifying organizational and reward structures, reforming union-management antagonism, forming partnerships with suppliers, and improving processes. Quality companies have seen dramatic improvement their vitality and competitiveness. Xerox, Motorola, Mayo Clinics, and AT&T Bell Labs, for example, have outperformed their competition through quality improvement initiatives.

### Applications of TQM in Higher Education

Higher education--from service departments, to administration, to classrooms--can benefit from TQM/CQI initiatives. The area which can benefit the most, however, is the teaching/learning environment. Faculty at several universities have begun implementing TQM/CQI techniques. For example, Robert Hogg (1993) has used various CQI techniques in a statistics department at the University of Iowa. He has emphasized improvement in teaching methods, course planning, and faculty teamwork to manage an academic department.

Danny Arnold (1994) has applied several TQM/CQI techniques in his business course. He

empowered students to assist in course design, including the type of assessments. To facilitate continuous improvement, he used student quality teams to provide ongoing feedback about learning experiences. He reported improved student performance; improved student attitudes toward the class, subject matter, and learning; clearer expectations of students; and increased instructor appreciation of student desire to learn and do quality work.

According to Potocki (1994), common elements of successful implementation of TQM/CQI in the classroom include the following: listening to student feedback, empowering students by inviting them to participate in course design and learning experiences, developing a teamwork environment among students and instructors, and demonstrating leadership in the classroom by practicing the quality philosophy and principles.

## DESCRIPTION OF THE STUDY

This study presents a classic experimental design comparing traditional approaches to teaching and learning with innovative applications of the principles of TQM and CQI in literature, technical writing, and engineering statistics courses. The study focuses on observing the effects of implementing strategies of student empowerment, feedback, collaborative teams, and the incorporation of targeted technologies in the college classroom.

### Student Empowerment

As industries employing TQM and CQI have learned, increasing employee empowerment is an important means of eliciting worker participation and improving job performance. Student empowerment results in similar behaviors. Students who participate in course design and help to establish teaching methods,

and the types and number of assessments, become valued, involved contributors to the learning process.

Professors conducting the study began courses without pre-determined, instructor-designed syllabi. Rather, the first classroom activity entailed syllabus negotiations. Under the guidance of the instructor, who relayed minimum course standards as required by the University, students decided requirements of the syllabus. Negotiations centered on expected classroom norms, such as class attendance and the ways students would interact with one another; the number, types, and weights of assignments; thresholds of acceptable performance on tests, projects, and papers; and opportunities for students to improve their work. The last of these elements particularly reinforced CQI, which emphasizes the importance of striving for incremental improvements in all efforts. These negotiations also provided an adjunct benefit, in that students practiced decision-making through consensus. The entire class began as a team, finding solutions to common questions and problems. Acting as a resource person and a coach, the professor acknowledged that students' experiences count, that their voices are valued.

#### Feedback

Industries implementing TQM/CQI have discovered vast benefits in reducing, if not eliminating, adversarial relationships between management and labor by exchanging continuous feedback. Often students express dissatisfaction with traditional means of offering feedback about courses, professors, and instruction. Implementing a series of relatively simple classroom practices helped to break down potential adversarial relationships between professor and student. By assuring that communications about course expectations and

student progress traveled in both directions, professors acted as mentors or coaches. One instructor, for example, required students to keep attendance logs, annotating their level of class participation. The one-minute paper served as another effective means of eliciting student feedback. A more involved strategy, but one worth the effort, was the use of quality teams. Acting as intermediaries between the professor and the rest of the class, a small, self-selected group of students periodically met with the professor to offer comments about the course, as well as suggestions for improvement.

#### Collaborative Teams

Just as the workplace uses teams to solve problems and complete projects, professors made extensive use of collaborative work groups. Students first participated in informal, temporary groups to discuss syllabus requirements, course policies, and early content-related, ungraded assignments. After the students became more comfortable with each other and with the team concept, professors formed permanent student teams which worked together to complete a variety of collaborative, graded assignments. Further, students committed to the concept of CQI by revising and improving their assignments. The team approach enabled students to learn and practice "real world" skills such as cooperation, negotiation, and conflict resolution; planning and project management; and critical thinking and analytical skills.

#### Incorporation of Targeted Technologies

Implementing TQM/CQI in the classroom provides a good opportunity for incorporating technology into learning. In the statistics course, students participated in a classroom computer simulation which demonstrated the

result of the Central Limit Theorem, a critical concept for inferential statistics. The simulation was conducted using an LCD panel, laptop computer, overhead projector, and viewing screen. Students were also encouraged to use personal computers to handle problems with large data sets. Most courses lend themselves to the application of technology to strengthen classroom learning and prepare students to use technology in their future professions.

addition to the findings reported above, professors observe that students accept more responsibility for their work, work harder to achieve quality, meet deadlines, and attend class more regularly. Students appreciate being asked their opinions and provide valuable feedback on what works and what does not. Professors report that they too are invigorated by this process. Overall, the partnership between students and faculty results in better learning and teaching.

### FINDINGS

Pre- and post-assessments, using the Likert scale to determine student response, were administered to experimental and control groups in three types of courses: literature survey, technical writing, and engineering statistics. The assessment instrument for each group focused on individual skills, discipline and content skills, group experience and attitudes, and student knowledge of TQM/CQI. T-Tests for paired samples of the raw data reveal statistically significant positive changes in student attitudes in most areas. These preliminary findings demonstrate that the most important shifts were in student expressions of confidence in course content, in working effectively as members of a team, in their understanding of how to use consensus-building, and in their knowledge of TQM/CQI. Although some of the control groups also showed statistically significant changes in certain questions, the experimental groups evidenced higher frequencies and greater magnitude of such responses.

### CONCLUSIONS

As evidenced by data gathered during the study, as well as anecdotal testimony from students, the positive outcomes of implementing TQM/CQI in the classroom are many. In

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