



Using TQM Principles to Teach Current Topics in Information Systems

ABSTRACT: The objective of this innovative technique is to use Total Quality Management concepts in the design and implementation of an MIS course such that students focus on Information Systems content while developing attitudes and behaviors implementing TQM process principles. The result expands the learning process beyond the traditional barriers. Student outcomes indicated a high level of effectiveness and benefit; specifically, active vs. passive attitudes, demonstrated creativity and lateral thinking, improved degree of self-satisfaction, acceptance of individual responsibility, enhanced colleague interaction, communication, and understanding of consequences of behaviors and actions, as well as ownership in both content and process. Students developed greater self awareness of strengths and weaknesses in resourcefulness in finding and discerning information from the perspective of both the source and content.

KEYWORDS: *Total Quality Management, Information Systems, Current Topics*

FOCUS AND OBJECTIVE

A wide gulf exists between learning a subject intellectually and using the subject to learn experientially. This innovative approach in teaching a senior level MIS course assumes that the latter premise is a more effective methodology. Technology skills do not on the surface seem to fit into the established area of "knowledge" acquisition where a concept can be grasped and understood without actual participation. For example, students can know and comprehend marketing concepts without becoming involved directly in marketing activities.

The problem here, however, is that part of technology related learning is the ability to USE it, not just be aware of and understand it. Today, teaching some courses without implementing the technology is like a theater major having had no experience in a stage

production, or music majors never having played an instrument or participated in a concert. It is nearly impossible to understand a tool or technique without developing some level of proficiency in using it to accomplish the task of the course or program.

The objective of this innovative teaching plan is thus to: Use the Total Quality Management concept in course design and implementation in the MIS curricula, Develop attitudes and behaviors associated with this type of thinking in the students, Provide flexibility in the development of senior level courses, and Expand the learning process beyond traditional barriers while developing increased knowledge and skills in information technologies.

UNIQUENESS OF APPROACH

This approach is unique in that it



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incorporates a new technology—TQM directly into the learning process. This process focus creates an environment in which the undergraduate student takes a concept or idea about which they know very little—planning, organizing and controlling their traditionally passive learning environment—and transforms it into an active, participative one. In the process the student builds the course content, determines schedules, evaluation methods and criteria and then proceeds to carry it out.

LEVEL OF STUDENTS

Students are generally seniors in their final semester. They have completed nearly all of their course work in the business core, have had at least two programming languages, and MIS courses such as telecommunications, systems analysis and design, and management models. Their course of

study is tightly constrained within the 124 required hours for graduation leaving only three to seven hours of electives. Several students have double majors such as accounting, finance, international business, or math.

CONTENT AND PROCESS OF LEARNING CURRENT IS TOPICS

A variety of inefficiencies and waste exist in the traditional learning environment. Examples include: tying all course information to a single source—the professor; sub optimizing the depth and breadth of learning activity for individuals via satisficing for the class as a whole; inflexibility of course content of a single syllabus when students enter with varying degrees of experience and background as well as different career goals; and maintaining the locus of control and power in the professor. Using the Total Quality Management philosophy to design the course requires a focus on the student as the “customer/client”, on the process, and on continual improvement of the learning activity.

Traditional teaching/learning activity focuses on content, i.e. knowledge, not process. Therefore, students expect to only be held accountable for that content with little attention paid to the process of building their knowledge. When they are brought into the process as designers and creators, they develop behaviors which inherently focus on improved quality of performance and knowledge acquisition.

This is especially applicable in the field of Management Information Systems as a thorough understanding of the acquisition, manipulation, and storage of information is fundamental. Additionally, the dynamic field requires continual learning and upgrading of knowledge and skills. Knowing the “what” is often not nearly so critical as knowing “how to find out” about the “what.”

TQM is primarily a mentality which must be absorbed into the activities of one’s daily work with a focus on making the product or service outcomes more effective, efficient and thus satisfying. The approach outlined below operationalizes that philosophy in a teaching/learning environment which enhances the ability to learn information systems concepts and applied technologies.

ORGANIZATION

Students are instructed at the first class meeting that these are the criteria for the course:

1. This is not a “class” like any other class, it is a learning experience.
2. The learning experience will be individual specific and designed by the student (with appropriate help and guidance).
3. Their focus will be upon course content learning as well as learning as a process activity.
4. Each individualized study plan must focus on current and relevant information systems topics and must include:
 - a. a group project/study activity
 - b. an individual project/study activity
 - c. an outside presentation
 - d. production of incremental knowledge building upon relevant MIS fields or topics.
5. Course goals include:
 - a. development of documentation skills through
 - (1) development of a complete course proposal,
 - (2) taking, verifying and disseminating minutes of meetings,
 - (3) establishing and recommending agendas
 - (4) accountability via work activity.
 - b. development of leadership/knowledge building skills through
 - (1) presentation of incremental knowledge gained through live study and experience,
 - (2) calling and presiding at meetings,
 - (3) facilitating teamwork,
 - (4) making effective decisions,
 - (5) influencing others,

- (6) creating, executing, and evaluating plans,
- (7) accepting responsibility, demonstrating professional integrity
- (8) use of judgment and reason,
- (9) THINKING.

6. The professor’s role is that of facilitator and advisor.
7. Reference guides are distributed for locating research literature relating to MIS topics. Students are instructed to read and skim a minimum number of articles in the field. They are then to word process a two-page synopsis of 5 relevant topics along with a rationale for why they are important and why those were selected.
8. Classes meet once per week for three hours.
9. A course syllabus is distributed (See Figure 1)

PRESENTATION ACTIVITY

Initial Class Activities

The second class meeting is devoted entirely to collectively sharing and assessing pertinent topics gleaned from the research. The students’ assignment for the following class meeting is to take the knowledge they have gained from this discussion, assess their own interests, career goals, and their individual strengths and weaknesses via a letter of application, resume, and transcript and return with a tentative course of study **worthy of three hours of university credit**. The instructor selects a student to record the minutes of the third class meeting.

The third class meeting is then devoted to discussion of similarities and differences among the course plans (which tend to be very incomplete and undecided at this point). Groups then form to discuss appropriate alliances as well as divergent needs or foci. Students tend to be very frank and challenging when someone appears to not be “putting out the effort” to meet the challenges set before them.

A Course Plan Guide handout is pro-

vided at the end of that meeting and a discussion of the requirements for completeness of the course proposal is delineated regarding specific requirements. (See Appendix, Figure 2) Additionally, sample daily, weekly, and semester calendars are distributed to encourage documentation of tentative plans. It is noted that these will be used as a basis for determining project meeting times and dates as well as research activities.

An important component of the course study plan is the establishment of a project/research activity with an external constituent to whom they will have responsibility. Examples of these types of activities have included analysis, design, purchase, and installation of a local area network for a non-profit organization, installation of software and training a small business owner on his PC, development of multi-media presentations for beginners to learn software, and Internet presentations at Regional conferences.

Each student is required to set up an appointment for consultation regarding their individual study plan. They are instructed to meet with other group members of their respective groups prior to the meeting with the instructor so that those agreements can be included.

For all following "staff" meetings (as they are to be called) a recorder will take minutes. These are to be created and distributed via e-mail to all participants for their review and comments prior to the next meeting. The recorder will then become the chair of the next meeting and will select another student to record for that meeting. Thus, each student accepts responsibility for reporting, communicating, and directing meeting information.

By the fourth meeting, course study plans are nearing final stages of revision. Minutes of the previous meeting are noted with corrections. A format for conducting meetings is established by the students. Students

arrange for a one-on-one meeting with the faculty member outside of class time and a more detailed evaluation is done following the guidelines on the "Course Plan Guide."

By the fifth week, meetings are being entirely run by students, courses of study have been thoroughly analyzed and evaluated, schedules are set, and contingency plans are in place. Students at this point really begin to show initiative and leadership behaviors. Their professional focus and interaction is clearly observed. It is helpful at this meeting to have developed a composite guide of course proposals in a spreadsheet format.

Students are not told they are participating in a TQM activity. By the time they get to this point in their business related curriculum, they have been inundated with the "words" about this topic, it is therefore, not presented as a part of the course content. Instead, they are simply lead through a process of developing the skills related to the concept. Each meeting becomes a learning and sharing experience where continuous improvements are sought in how meetings, communications, and learning activities are efficiently and effectively handled.

ELECTRONIC COMMUNICATION'S ROLE

Our campus is equipped with electronic campus mail facilities to all campus buildings and a limited number of dial-in ports are available for off-campus students. Extensive use is made of e-mail facilities for distribution of announcements, group activities and updates, as well as discussion between individuals and exchange of information. For most students e-mail is not viewed as a primary mode of communication between faculty and students as well as between other students. Therefore, proper etiquette of handling e-mail is incorporated into the course activities.

Minutes of meetings and agenda for up-coming meetings are composed and distributed via e-mail. Continuous contacts can thus be maintained and immediate feedback can facilitate the time spent in "staff" meetings. Many issues or questions are resolved between two or more members without taking any of the limited and thus precious meeting time.

This not only enforces the technology component as a "matter of course" for users, but also encourages exploration on the Internet for a variety of sources of information. It frees up the participants to engage in conversation multiple times and in multiple locations under a variety of circumstances. For example, a study group may be in the library and need a response to a question. They e-mail the message(s) as the meeting is in progress. Everyone is instructed to check their mail frequently. Responses often come immediately as someone may be working on the computer system when the message posts and transmits a response.

E-mail also encourages creative ways to get their point across and create influence upon others. It is a difficult medium to develop skill in using effectively and this experience greatly enhances that potential. Each one is encouraged to provide appropriate documentation for each message, sign it, and give complete information. Anyone not responding to their e-mail messages is questioned by and/or in front of the group and reason must be given for their laxity.

EFFECTIVENESS AND SPECIFIC BENEFITS

The outcomes of this approach have been tremendously positive. Student actions have changed from passive to active. Thought processes have demonstrated creativity and lateral thinking which is often initially regarded as a frightening experience, but culminates in high levels of self-satisfaction.

Figure 1. 57-414 CURRENT TOPICS IN INFORMATION SYSTEMS

PREREQUISITES: 57-317**INSTRUCTOR:** Nancy Thomson, Ph.D.

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COURSE OBJECTIVES:

1. To provide students with the opportunity to develop skills in information systems, technologies, and software/hardware topics which are currently important in the dynamic IS field.
2. To give students experience with applied projects and team activity.
3. To develop individual/group research skills imperative to maintaining currency in a rapidly changing technological environment.

COURSE PLAN and REQUIREMENTS: Individual responsibility and initiative is an absolute necessity in this course. It is imperative that students understand and accept the uniqueness of the course, its content, and each other for appropriate learning objectives to be achieved. Study plans will be conjunctively developed between class members and professor with the goal of maximizing individual learning.

TO BE COMPLETED ONE WEEK FROM THE FIRST MEETING OF THE CLASS:

Students will develop a list of current topics in information systems relative to their major field of study.

TO BE COMPLETED THREE WEEKS FROM THE FIRST MEETING OF THE CLASS:

Students will select and be selected for specific study and application projects via individual and group analysis with professor.

TO BE COMPLETED ACCORDING TO INDIVIDUALIZED DESIGNATED TIMETABLES:

Students will develop a document of course of study relative to their individualized plan including specific goals, resources, and dates of completion.

STUDY PLANS WILL SPECIFICALLY DELINEATE:

1. STUDY PARTICIPANTS AND THEIR SPECIFIC RESPONSIBILITIES AND ACCOUNTABILITIES BOTH INDIVIDUALLY AND AS NECESSARY, A GROUP
2. STUDY GOALS FOR EACH SEGMENT OF THE COURSE PLAN
3. METHODS, MATERIALS, RESOURCES TO BE UTILIZED IN COMPLETING EACH SEGMENT OF THE COURSE PLAN
4. EVALUATION METHODS FOR DETERMINING QUALITY OF GOAL ACCOMPLISHMENT
5. CONTINGENCY REQUIREMENTS FOR UNSATISFACTORY PERFORMANCE

GRADING POLICY: Project/study grades will be determined according to the comparison between the stated goals of each course plan and the accomplishment of these goals. Course grades will be assessed by analysis of individual accomplishment goals evaluation in conjunction with adherence with group requirements, individual attitudes and general cooperativeness.

ACADEMIC RESPONSIBILITIES: Regular attendance is expected. All assignments/exams, etc. are to be completed. Academic honesty is expected—policies found in the University catalog will be followed.

ences for a variety of reasons.

The students become active participants in the knowledge building process because they gradually become aware that they are using the technology. They realize for the first time that there is a way to gain information extending beyond traditional means which requires thought, insight, courage, and innovation.

They understand that there are no "answer books" for most of their life's

work. And they begin to articulate the "missing pieces" and ineffective behaviors related to information and knowledge acquisition. They understand how much more there is to learn than has been acquired. This type of insightful and immediate feedback from students in the traditional courses is seldom achieved.

The students express appreciation for the sense of power they have, for the ability to control their time and sched-

ules to their best advantage, for the opportunity to work with and get to know others in the class, to deepen their understanding or explore new topics of particular interest. They like the opportunity to interact with and to be responsible to outside faculty and/or professionals. They show excitement about telling others about their experiences in the course and enhancing their resumes by enhancing strengths and overcoming weaknesses.

The above items were taken from an interview given to the campus newspaper by the students in the class. The reporter and photographer observed a portion of the course then asked for feedback as to what or how this course is effective. Other comments were taken from the written mid-term and end of semester evaluations contributed by students who have previously taken the course.

The process focus of TQM has thus transformed into their educational experience an understanding not limited to a subject matter, but including the learning process itself. They are acquainted with not only a variety of information resources for further learning, but also with the type of effort necessary for life-long learning to take place.

It helps provide opportunity for faculty development as the process of learning a myriad of topics conjunctively with students challenges and encourages new thinking. It gives an opportunity for contact with a larger number of information providers and industry people than do traditional methods. ■

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Nancy S. Thomson, Ph.D., is an associate professor in the Computer Science/Information Systems Department in the College of Business, Government, and Computer Science at Northwest Missouri State University in Maryville, Missouri.

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