

Education & Training Program Development

The Design Process

The DON ESG established a team to begin the design process. The design team was comprised of representatives from the major logistics support commands, i.e., systems commands, training experts from the military and civilian sides of the house, Marine Corps headquarters, naval operations headquarters, and TQL subject matter experts.

The first meeting of the design team was on February 9, 1989. It met for two to four hours every other week with occasional special work sessions of two or more days at a time. The design team continued its work until the summer of 1994, two years after the E&T program was fully operational. By that time the responsibility for program management was firmly in place.

Using the guidance provided by the ESG, the design team developed an education and

training strategy which was approved by the ESG six months later, in August 1989. It contained overall program goals and general guidance on the content of TQL courses to be developed. A few months later the design team developed a supporting implementation plan which was likewise approved. Both the strategy and implementation plan were revised a number of times as the actual education and training program was being developed. Final approval of the policy, strategy, and curriculum content came in May 1991. While the basic education and training concept remained the same, many of the program details took time to evolve, hence, an interactive process of design and development was necessary.

There were a number of factors affecting the time required to go from initial strategy approval in 1989 to final approval in 1991. One factor was the shift from the initial focus of implementing TQL only in logistics support organizations to including the operational component (the Fleet) of the DON. Another was the in-depth training needs analysis required for specific TQL roles. This analysis resulted in revisions in course content during their development. Changing responsibilities for course development also affected program development time. Finally, membership on the design team changed as development of the program progressed from concept design to assigning specific program responsibilities.

The Education and Training Strategy

There were three basic components of the DON E&T strategy. First, a stand-alone TQL E&T program would be developed and delivered by DON military and civilian personnel. Second, a concurrent effort would be launched to integrate TQL concepts, principles and techniques into existing DON curricula, i.e., to make TQL an integral part of all standardized education and training within the DON. Third, when a sufficient level of integration had been accomplished, the stand-alone TQL E&T program would be disestablished.

The decision to develop an in-house stand-alone E&T program had been made in 1990 by the DON Executive Steering Group. The design team took that decision as its starting point and developed the strategy in more detail. A major component of the strategy developed by the design team was that selected representatives from DON organizations would receive extensive education and training in the full TQL curriculum and they would in turn teach portions of the curriculum to the rest of the organization as it was needed. This approach to E&T became known as the “train-the-trainer” approach.

A complete list of the components of the DON TQL education and training strategy includes:

-  An in-house TQL E&T capability

- 🔔 Train-the-trainer
- 🔔 Top-down E&T implementation
- 🔔 Education before training
- 🔔 Just-in-time skills training
- 🔔 Team training
- 🔔 Integrated training
- 🔔 Continuous training

The following is a brief discussion of these strategies:

An in-house TQL E&T capability.

DON subject matter experts in TQL and training technology would develop the curriculum. A cadre of DON personnel would be thoroughly trained in the curriculum. Special TQL “school-houses” would be established under the administrative control of the Chief of Naval Education and Training (CNET). The cadre of TQL E&T personnel, called “TQL specialists” would teach the TQL curriculum to selected organizational representatives at the schoolhouses. The TQL specialists would maintain and modify the curriculum as needed. There would be only one DON approved TQL curriculum.

The advantages of this approach were threefold. There would be consistency of TQL concepts, terminology, principles and methods presented to DON personnel. Instructional material could

be controlled for accuracy, consistency and quality. The total cost of developing, maintaining and delivering TQL E&T would be less than other methods such as organizations developing their own TQL curriculum or contractor developed and delivered training.

Train-the-trainer.

This approach was considered to be the most efficient and effective in delivering TQL E&T to a large number of individuals in a relatively short period of time. Selected representatives from DON organizations would receive TQL E&T from TQL specialists at the schoolhouses. These representatives would return to their respective organizations and provide TQL E&T as needed to support their organizations' TQL implementation plan.

Top-down E&T implementation.

This strategy required that an organization's top leader receive TQL education before being able to send their selected representatives to receive TQL E&T. The top-down E&T strategy was consistent with, and reinforced the top-down TQL implementation strategy adopted by the DON.

Education before training.

Understanding the concept and principles of TQL was considered necessary before learning how to apply it. The first courses in the curriculum were designed for the acquisition of knowledge about TQL. Subsequent courses provided specific skills in applying TQL methods.

Just-in-time skills training.

Skills necessary for leading teams, analyzing processes and process data, and collecting and analyzing customer requirements were to be provided as they were required by teams involved in process improvements.

Team training.

Improvement of an organization's processes were carried out by teams such as Executive Steering Committees, Quality Management Boards, and Process Action Teams. These teams were to receive education and training from the organization's representatives trained in TQL at the TQL schoolhouses.

Integrated training.

TQL E&T was designed to be an integral part of an organization's TQL implementation plan. It was also designed to become part of the curricula at all education and training establishments within the DON. This integration of training at the organization and DON levels would be accomplished over time and lead eventually to the disestablishment of the stand-alone TQL schoolhouses.

Continuous training.

Continuous process improvement requires continuous education and training. By integrating TQL E&T into an organization's overall training plan and into DON institutional training, TQL principles and practices would become a permanent part of the way the DON

conducted its business. These principles and practices would become refined and modified as they were applied throughout the DON. Self-education in more advanced applications of TQL would be required. It was expected that the label of “TQL” would slowly disappear, but the practice of TQL would become institutionalized within the DON as its natural way of “doing business.”

The first four strategies were used in structuring the overall education and training program and curriculum, while the latter four were directed at how the education and training would be implemented in the user communities. Specifically, the first strategy resulted in the in-house development of the DON TQL education and training program along with the curriculum of courses comprising the program. The second strategy addressed how the DON TQL curriculum would be deployed from the TQL schoolhouses to the user commands. The third strategy was implemented through the establishment of a prerequisite for all courses in the core curriculum, i.e., no one in a command was permitted to receive TQL education and training until the commanding officer of the command had received DON TQL education. The fourth strategy, education before training, was built into the sequence of courses in the curriculum. No one could take any of the skill-based courses until they first received the introductory knowledge-based courses.

The next two strategies, just-in-time skills training and team training were intended for

use within a command. Their execution was not under the control of the developers or managers of the DON education and training program. However, the nature of TQL and the content of the TQL curriculum provided a framework for training within a command that supported the two strategies.

The last two strategies, integrated training and continuous training, like the two previous strategies were intended to be implemented by user commands. Integrating TQL education and training into a command's TQL implementation plan reflects the critical role that education and training plays in implementing change. Integrating TQL into all curricula in the DON would require the commitment of the leaders of the various education and training institutions throughout the DON. And finally, it was envisioned that as the benefits and compelling nature of TQL became apparent over time, leaders and others would engage in a continuous process of self-education and learning as a means of improving their own and their organization's performance.

Translating these strategies into graphic form showing the time frame and population to be trained is presented in Figure 3.

As Figure 3 shows, there were three general target groups for TQL education and training. The first group included all military and civilian members of the DON. This group would receive education in the basic principles of

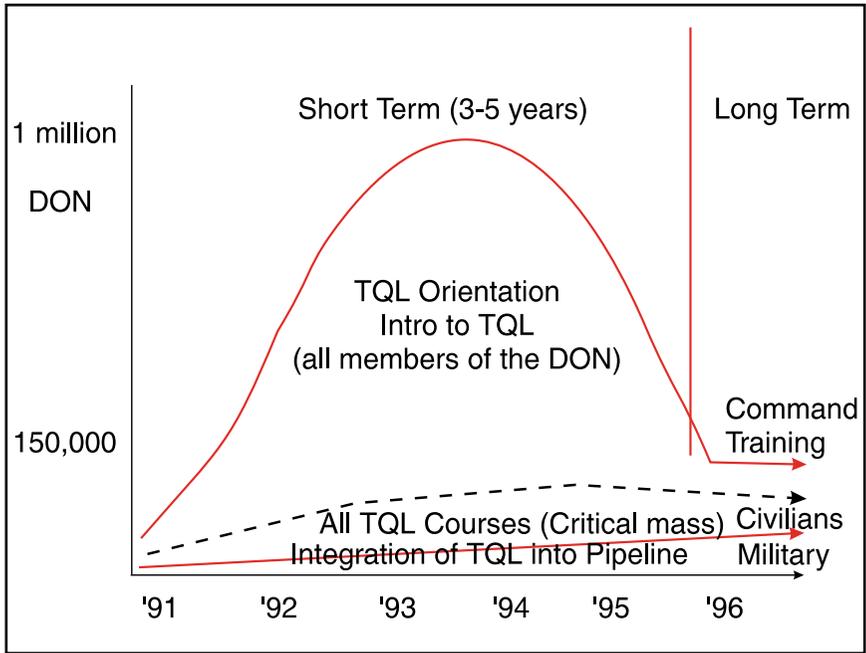


Figure 3. DON TQL education and training concept.

TQL. The size of this group was estimated to be approximately one million individuals. The second group was the “critical mass.” It was estimated that there would be approximately 150,000 individuals in this group (fifteen percent of the DON). These are members of an organization’s Executive Steering Committee, Quality Management Boards, and selected members of Process Action Teams. This group would receive all TQL education and training required for effective participation on teams. The third target group of TQL education and training was made up of individuals first entering the military and those who were designated as leaders progressing through the various levels of military leadership in the DON. There was no comparable leadership

pipeline or accession training for civilians in the DON, therefore this group did not include civilians. Education and training civilians in TQL would be carried out at the two TQL schoolhouses for as long as they were in operation.

It was envisioned that there would be a surge of education needs lasting about three to five years until all members of the DON were introduced to the basic principles of TQL. When that surge was met the need would taper off as members of the critical mass and DON leaders had their education and training needs met. It was expected that the principles and methods of TQL would then be practiced on a DON-wide basis and they would become part of the culture of the DON. Educating and training new members of the DON as they came on board, providing TQL education and training at all leadership levels in the DON, and training the critical mass members of improvement teams as it was needed was the desired outcome of deploying these strategies in the DON E&T program. The time required to achieve this outcome was judged to be between five and six years. Assuming that this would all begin sometime in 1991, the goal of meeting the surge requirement, the critical mass requirement, and the integration requirement would be achieved sometime in 1996. At this point the first phase of TQL implementation would be well underway at most commands in the DON, and the stand-alone TQL education and training program could be terminated.

The overall education and training strategy described above would become the DON policy on TQL education and training. The policy was communicated to all DON personnel through naval messages, the DON TQL Course Catalogue, and through the course developed for all DON TQL leaders, the Senior Leader's Seminar.

The Target Audience

Before a curriculum could be developed the target audience had to be identified along with the knowledge and skills required to carry out their new TQL responsibilities. An analysis of the requirements to implement TQL within DON organizations revealed that members of the critical mass constituted the majority of individuals in need of TQL knowledge and skills to carry out their new responsibilities for process improvement in phase one of TQL implementation. The following roles of the critical mass were identified:

-  The TQL leader
-  Executive Steering Committee members
-  Quality Management Board leader
-  Quality Management Board member
-  TQL team linking pin

 Process Action Team leader

 Process Action Team member

The number of critical mass individuals in an organization would depend on the size of the organization and the number of teams formed to work on process improvement projects.

In addition to these critical mass roles were two critically important TQL support staff roles. They were:

 TQL coordinator

 Quality advisor

In some smaller organizations these two roles would be filled by a single person. In large organizations there could be more than one quality advisor. The TQL coordinators and quality advisors were the individuals to receive education and training at the TQL schoolhouses and then return to their organizations to provide education and training. They were the trainers in the DON TQL train-the-trainer strategy.

Using line managers as trainers was considered but rejected for the following reasons. First, phase one of TQL implementation required cross-functional process improvements, but line managers' responsibilities reside primarily within a function. As trainers, they would be training teams of line managers and workers from other functions. This had

the potential of leading to conflicts among line managers. Second, it would require many thousands of line managers to be away from their jobs for up to three months to qualify them to teach the full spectrum of TQL courses in their organization. Third, these managers would also be required to serve as technical advisors and assistants to teams outside their functional areas thereby taking them away from their primary responsibilities as functional managers. Therefore, it was decided that line managers would not be used as TQL trainers.

A brief description of each of the TQL roles is provided below:

TQL leader.

This would usually be the commanding officer or civilian leader of an organization. The leader is responsible for getting TQL implementation and process improvement started. The leader, with the help of the TQL coordinator, is responsible for developing a training plan to support the TQL implementation plan. The TQL leader serves as Chair of the Executive Steering Committee.

Executive Steering Committee member.

Their role, along with the TQL leader, is to demonstrate leadership in TQL implementation and transformation of the organization. This includes identifying major customers or performance requirements of the organization, developing the strategic framework for implementation transformation, identifying process improvement

projects to be carried out by QMBs and PATs, providing the time and resources necessary to train team members and participate in process improvement projects, to remove barriers to process improvement beyond the authority of lower-level teams, and to remove organizational barriers to phase two of TQL implementation.

Quality Management Board leader.

The QMB leader chairs the QMB, conducts meetings, assigns responsibilities, assesses process improvement progress, and reports results to higher-level teams.

Quality Management Board members.

QMB members, including the QMB leader, apply process analysis and improvement techniques using the PDCA cycle. The QMBs charter lower-level teams to collect process data, apply the PDCA cycle, and make process improvements, where applicable. QMB members remove barriers to process improvement and modify processes based on data collected by lower level teams. QMBs might also be involved in the design of new processes as the organization reinvents itself.

TQL team linking pin.

These individuals are members of teams who communicate and clarify the terms of charters for lower-level teams. They ensure that lower-level teams have the appropriate time and resources to carry out their assigned task.

Because they are members of higher level teams, linking pins provide a systems perspective or context to the improvement and efforts of the lower-level teams to which they are linked to. This reduces the chances of suboptimization of units within the organization.

Process Action Team leader .

Their responsibilities are similar to those of QMB leaders. They conduct meetings, participate in the application of the PDCA cycle, collect and analyze process data, and make recommendations for improvement to high-level teams.

Process Action Team members .

These individuals collect, analyze, and interpret process data through the application of the PDCA cycle. They are typically members of an existing functional work group responsible for one portion of a process or subprocess. As such, they have expert knowledge of the process being studied and are able to identify causes of variation and opportunities for improvement.

TQL coordinator .

This individual advises, consults, and assists the TQL leader and the ESC in planning for, and improving process performance in the organization. They assist the ESC in formulating a quality-focused strategic improvement plan and a TQL implementation plan. The coordinator assists in the development of a TQL training plan in support of the TQL implementation

plan. The coordinator also provides TQL education and training to the ESC to assist them in performing their TQL responsibilities. They conduct organization assessments and inform the ESC of the status and progress of TQL implementation in the organization. The coordinator assists the TQL leader in facilitating meetings of the ESC as directed by the TQL leader. The coordinator also establishes and maintains, along with the quality advisor, a library of TQL educational materials. Finally, the coordinator is responsible for maintaining a file of process improvement projects undertaken by teams throughout the organization.

Quality advisor.

Their primary duties are to train, advise, and assist members of teams engaged in process improvement projects. They also conduct organization-wide education and awareness seminars for all members of the organization. Quality advisors assist the TQL coordinator in assessing the training needs of teams, monitor and maintain records on the progress of teams, and document lessons learned by the teams as part of a library on process improvement case studies.

The specific responsibilities and tasks required to perform the above TQL roles were new to the DON. To identify the skills and knowledge required to perform these roles it was necessary to conduct a conceptual or theory-based training needs analysis. This was done by internal TQL subject matter experts. The

results were used as the basis for determining the learning objectives and content of the course in the TQL curriculum.

The TQL Curriculum

Based on the requirements for TQL implementation and the roles played by members of the critical mass as described above, a curriculum of courses was developed. The courses were:

-  The Senior Leader's Seminar
-  Introduction to TQL
-  Fundamentals of TQL
-  Implementing TQL
-  Team Skills and Concepts
-  Methods for Managing Quality
-  Systems Approach to Process Improvement

Other than the Senior Leader's Seminar none of the courses in the curriculum were designed for specific members of the critical mass such as QMB leader, linking pin, PAT member, etc. Instead, modules from each course could be selected by the TQL coordinator or quality advisor for just-in-time training of the appropriate individuals. Knowledge and skills necessary to

perform specific TQL roles could be provided incrementally to teams as they progressed through their work. This approach was designed to allow members of teams to develop at the same relative pace consistent with the requirements of their process improvement effort.

Once TQL leaders attended a Senior Leader's Seminar they could send their TQL coordinator and quality advisor to the TQL schoolhouses to receive education training. Once trained, the coordinators and advisors were then qualified to deliver TQL education and training to the rest of their organization. Again, these were the individuals identified as the trainers in the DON train-the-trainer strategy.

TQL training sequence.

Courses in the curriculum were designed to be taught in a specific sequence. This same sequence of courses was recommended for use within an organization. Figure 4 presents the sequence of TQL courses to be taken by the TQL leader, coordinator, and advisor from the TQL Specialists at the TQL schoolhouses. It also shows the length in days of each course taught at the TQL schoolhouses. Train-the-trainer courses received by TQL coordinators and quality advisors employed extensive use of exercises and instructor training to prepare them for teaching the material back at their organizations.

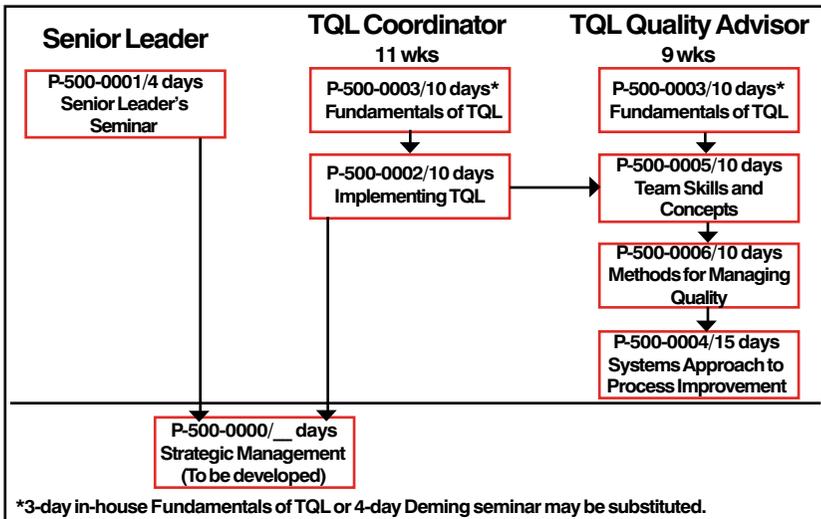


Figure 4. TQL education and training sequence.

Course Descriptions

Senior Leader's Seminar.

Course length four days. For organization leaders, i.e., the TQL leader. It provided the knowledge necessary to lead TQL implementation and transformation in their organization. It was the only course required for TQL leaders. It described TQL, the Deming philosophy, the DON two-phase implementation approach, and who the key players were involved in phase one of implementation. It described phase two, the role of strategic planning, and how strategic planning and process management combine for strategic management of processes. TQL leaders were given materials (viewgraphs, hard copies, and text) for conducting a two-hour briefing on TQL when they returned to their organization.

Introduction to TQL.

Course length one day. An awareness course for all DON personnel. Briefly described TQL, the Deming philosophy, process improvement techniques, and the team structure for process improvement. It provided an overview for personnel not immediately involved in TQL implementation. There were no prerequisites for this course. It was not taught in the TQL schoolhouses, but TQL coordinators and quality advisors were given a copy of the training materials and were qualified to teach it in their organizations after they attended the ten-day Fundamentals of TQL course at the schoolhouse.

Fundamentals of TQL.

Course length for trainers was ten days. For end-users it was a three-day course. This was the first train-the-trainer course to be taken by TQL coordinators and quality advisors. It prepared them to teach the one-day Introduction to TQL course and the three-day end-user version of the course back at their organization. It was primarily an education course rather than a skills training course. It surveyed the field of TQL providing information on the Deming philosophy, the organization viewed as a system, process variation and its causes, the TQL team structure for managing and improving processes, application of the scientific method through the use of the PDCA cycle, and methods and tools for analyzing and improving processes. The only prerequisites for taking this course were that the TQL leader had attended the Senior

Leader's Seminar and that the attendees were designated by the leader as either a TQL coordinator or quality advisor.

Implementing TQL.

Course length was ten days. It was for the individual designated by the TQL leader as the organization's TQL coordinator. It was the second course in the sequence for coordinators. The DON two-phase implementation approach was described, members of the critical mass were identified and the role they played in phase one of implementation. The elements of strategic planning were described within the context of a strategic planning model. Also presented was the relationship between strategic planning, process management, and strategic management. The course covered the importance of organization assessment, and how to conduct and evaluate the results of an assessment. There was extensive use of hands-on exercises designed to develop the skills necessary to advise and assist the TQL leader in developing a TQL implementation plan, and a training plan to support implementation.

Team Skills and Concepts.

The train-the-trainer version of the course was ten days. The end-user version of the course had no specified duration since it was designed to be presented in modular form to teams on an as-needed basis. There was extensive use of exercises in the course as a means of developing the skills required for effective team functioning. This course was for TQL coordinators

and quality advisors who had attended Fundamentals of TQL.

Methods for Managing Quality.

This train-the-trainer course was ten days long for TQL coordinators and quality advisors. The target audience for the end-user version of the course were the members of Quality Management Boards. The course prepared these teams for managing cross-functional processes. It employed a process management model based on the PDCA cycle. A unique feature of this course was the use of a case study which gave students experience in applying various analysis and planning tools at each phase of the process management model. Topics included: identifying customers and their requirements; using these requirements to identify critical processes; standardizing and streamlining processes; identifying process measures; collecting base line data; comparing process performance with customer requirements; initiating and evaluating process changes; and to continue the process management cycle for meeting and exceeding customer requirements. The prerequisites for this train-the-trainer course were that attendees be designated as a TQL coordinator or quality advisor, and they had attended Fundamentals of TQL.

System Approach to Process Improvement.

This train-the-trainer course was originally designed to be fifteen days long. The course was later revised to be taught in ten days. It was an

advanced course in process improvement using statistical tools to reduce process variation, stabilize processes, and determine capability of processes to meet customer requirements within the context of an extended system. Prerequisites for the course were being designated a quality advisor, and attendance at the train-the-trainer versions of Fundamentals of TQL, Team Skills and Concepts, and Methods for Managing Quality.

Strategic Management.

This course was intended for those leaders who were transitioning from process management in phase one of TQL implementation to strategic management in phase two. It was to be available in the second or third year of the education and training program. The course was never developed. Instead, the SLS was revised a number of times and included information related to strategic management such as integrating strategic planning and process management, transitioning from individual process improvement projects to organization-wide process management, and how to address some of the organization culture and structure barriers to process management expansion.

To assist TQL leaders in transitioning from phase one to phase two of TQL implementation, TQL specialists received extensive training in strategic planning facilitation. When trained, the TQL specialists began providing strategic planning assistance to TQL leaders

engaged in transitioning to phase two implementation. This assistance was provided a few years after the education and training program was launched in 1992.

Providing TQL Education & Training

Identifying education and training needs, developing instructional materials, and establishing an education and training concept and strategy are necessary but not sufficient conditions for actually providing education and training to those identified as targets for instruction. The missing elements in a comprehensive education and training program must still address the questions of who would train the trainers, how many were needed, how they would be trained, where the training would be conducted, what organization would manage and administer the program, and how many individuals would receive the training. The following sections address these questions.

Master trainers/TQL specialists.

To implement the train-the-trainer strategy of the TQL E&T program, a specific number of trainers who would train the trainers from DON commands needed to be selected and trained. The specific number was estimated to be seventy-three; sixty of these would teach the five core courses, while thirteen would teach the Senior Leader's Seminar. The sixty core course trainers were

initially known as master trainers. The other thirteen were designated as SLS Instructors. Both titles were eventually changed to TQL Specialists.

The estimate of the number of master trainers required to teach the core curriculum was based on a number of assumptions and factors. The most important factor was the number of individuals designated as the primary target audience for the TQL core curriculum. Starting with the goal of training 150,000 individuals, i.e., the critical mass, an estimate was made of how many trainers it would take to train them. That number was 3,000, or one trainer for each major command in the DON. It was assumed that each command trainer would train an average of fifty members of the critical mass, which would achieve the goal of 150,000 critical mass individuals trained in TQL.

The next question was how many trainers would it take to train 3,000 command trainers. There were many factors to be considered to make a reasonable estimate. One of them was the number of classrooms that would be available at the TQL schoolhouses. The number was not known at the time. Another factor was how many of the five courses in the core curriculum each command trainer would take. That was also unknown. A third factor was how many TQL coordinators and quality advisors (command trainers) would rotate to new assignments in five years requiring the training of their replacements.

Assuming that each command trainer took all five two-week courses, and each was replaced by another trainer who took all five courses, the number of classes required to be held at the TQL schoolhouses would exceed two-hundred each year for five years. Assuming, however, that not all 3,000 command trainers were replaced, and that each command trainer would not take the full five courses, the number of classes required to be held could be as low as one-hundred each year. This meant that somewhere between eight and sixteen two-week classes would be required each month. It was determined that sixty TQL specialists working in teams of two would be sufficient to meet this requirement. Therefore, it was recommended that sixty TQL specialists be selected and trained to train 3,000 command trainers who would in turn train a critical mass of 150,000.

The target population for SLS was estimated to be 6,000, which included the top two leaders in each of 3,000 major commands. Since the average tour of duty for commanding officers and executive officers was approximately three years, the actual target population for SLS over a five to six-year period was over 10,000. It was estimated that a dozen SLS instructors teaching in teams of two would be sufficient to reach this target population within the projected timeframe of six years. One additional SLS instructor was added to the estimate as a backup in the event that one of the others was unavailable or left the program.

An in-depth training period of approximately seventeen to eighteen weeks was planned for the TQL specialists. The core group of sixty TQL specialists were trained in three groups of twenty each. Training for the first group was begun in October 1991 and ended in February 1992. The second group was trained from March 1992 through July 1992. The third group received their training from July 1992 through November 1992.

The composition of the sixty TQL specialists was intended to be representative of the DON. Approximately sixty-percent were to be Navy military, twenty-percent Marine Corps military, and thirty-percent civilians. They included officers and enlisted at various ranks and rates, and civilians at mid-level pay grades with some of the civilians being hired from the private sector. Some general qualifications included high school algebra, previous TQL experience, and instructional experience.

The TQL specialists who were trained to teach the SLS had slightly different qualification requirements. Some were retired military officers at the rank of captain (O-6) or above. Others were civilians at a comparable pay grade. Each candidate must also have had significant experience with TQL in the DON, or similar quality management approach if from the private sector. The requirements for SLS instructors were different from the core course instructors. The grade or management level of the SLS attendees was higher than in the core courses, therefore the instructors needed to

be their equivalents or higher to have credibility with the students. Also, credibility of the instructors was enhanced if they had previous experience as quality leaders in their prior positions. These requirements made it difficult to locate and hire qualified SLS instructors during the first year of the program. This is one of the reasons that an additional SLS instructor was added to the original list of twelve.

Training materials.

Each train-the-trainer course had two training manuals. One for the trainers (TQL coordinators and quality advisors) and the other for the end-user (members of the critical mass). Accompanying each course was a series of books, videos, exercise materials, visual aids, charts, and a glossary. Each trainer received a complete set of materials for their own use. Extra materials such as end-user training manuals and materials necessary to teach a course back at their organization had to be ordered from the Aviation Supply Office (ASO) in Philadelphia, now Naval Inventory Control Point. Trainers at the TQL schoolhouses also had to order these materials from ASO for each class they taught. TQL training materials were not generally available to organizations outside the DON.

TQL schoolhouses.

There were two DON TQL training sites established in the United States. One was located at Little Creek, Norfolk, Virginia, and the other was located in Coronado, San Diego, California.

Both were housed in the same facilities as the Navy Leadership Schools. The intent was for the TQL schoolhouses to be disestablished once the TQL material was fully integrated into the leadership courses. It was expected that this would take five to six years. No specific provision or timeframe was allowed for integrating TQL into civilian leadership or management curricula because there was no specific requirement for civilians to attend training as a condition of career progression.

The TQL schoolhouses opened for classes in April 1992. There were approximately sixteen or seventeen TQL specialists at each location; ten at each location to teach the five core courses and six or seven to teach the SLS. As the second and third groups of twenty TQL specialists completed their seventeen weeks of training, they joined the other specialists at the two training sites. By November 1992 the two TQL schoolhouses were fully staffed and teaching a full schedule of classes. Official opening ceremonies at the two sites were conducted in July 1992 by the Under Secretary of the Navy and the Chief of Naval Education and Training.

Exportable training/mobile training teams (MTTs).

There was an immediate and growing need to take TQL training to the field as soon as the TQL schoolhouses opened. Specifically, the cost of sending twenty-five coordinators and advisors to San Diego and Norfolk from re-

remote locations around the world was much greater in aggregate than the cost of sending two TQL specialists to these remote locations to conduct training. Also, funds available to small remote units for sending individuals to San Diego and Norfolk were very limited. The bottom line was that it was less costly to the DON to send small mobile training teams (MTTs) overseas than it was for two-dozen individuals from the field to come to the U.S. for training.

Over the course of the six years of TQL education and training the percentage of MTT training grew from zero to over half of all TQL classes taught by TQL specialists from the schoolhouses. By 1997 the Navy and Marine Corps had established small TQL training units attached to existing leadership training units to meet the TQL training needs of deployed forces. These sites became hybrid leadership/TQL training units.

The five core courses were not the only ones exported to remote locations. SLS classes were also conducted at sites other than San Diego and Norfolk. One of these sites included Washington, D.C. The purpose of establishing Washington as an SLS training site was to make SLS available to Flag Officers and senior civilians. The content and delivery for this executive-level seminar was modified to include information about phase two of TQL implementation and transformation responsibilities for the top leaders at the DON headquarters level. Nominations for attendance at the execu-

tive sessions came from the Under Secretary of the Navy, the Chief of Naval Operations, and the Commandant of the Marine Corps.

Training schedules and quotas.

The general allocation of quotas among the three major branches of the DON were: DON headquarters (Secretariat of the Navy), five-percent; Navy, seventy-percent; and Marine Corps, twenty-five-percent. However, up to fifty-percent of the quotas for the first ten classes of Fundamentals of TQL were reserved for instructors and curriculum managers assigned to education and training organizations throughout the DON. The intent was to give a “kick-start” to the process of integrating TQL concepts and principles into all education and training conducted in the DON.

The first announcement of the TQL class schedule was issued on April 22, 1992. It covered available TQL classes from April through December 1992. The schedule anticipated the buildup of TQL specialists at the training sites from twenty in April to sixty by October 1992. By the end of year a new schedule was released covering 1993. The release of a full-year’s schedule was to allow sufficient time for scheduling and planning of attendees.

The schedule included the number, location, and tentative dates for MTT classes away from the San Diego and Norfolk schoolhouse sites. Organizations in the geographic region of an

MTT could contact an area coordinator to make nominations for attendance at the MTT session. The area coordinator was responsible for maintaining the quotas and ensuring the availability of an appropriate training facility to conduct the MTT session. The MTTs were responsible for ordering and shipping all required training materials necessary to conduct the class at the remote site. Coordination between the MTT team leader, the area coordinator, and the ASO (for training materials) was essential for a successful training experience.

Quota control.

A quota control system was established at each TQL schoolhouse to ensure that the right number of the right type of individuals were attending training. MTT quota control was the responsibility of the area coordinator. To properly execute the DON TQL E&T program it was essential that only those meeting the prerequisites for each class be allowed to attend that class. The two most important prerequisites were; that a nominee be from an organization who's TQL leader had already attended the SLS, and that the nominee be designated by the leader as the organization's TQL coordinator or quality advisor. This was to ensure that the two major elements of the program would be properly executed, i.e., top-down implementation of TQL education and training, and deployment of a train-the-trainer strategy.

Nominees also had to meet other prerequisites such as a minimum of two years left on a tour of

duty, attendance at prerequisite courses, and the appropriate grade level for attendees. All prospective class attendees were required to be nominated by their commanding officer and meet the appropriate prerequisites. However, some individuals who did not meet the required prerequisites were allowed to attend training on a space available basis. The intent was to ensure that all classes were fully attended.

In the case of SLS classes, nominees were required to send a brief biography to the SLS quota control agent to ensure that the right people were attending class. It also provided the SLS instructors with relevant information allowing them to meet the specific education needs of the attendees. By January 1994, the Chief of Naval Operations announced that attendance at SLS was required of all prospective commanding officers prior to assuming command of a Fleet unit. Attendance was also required of all prospective executive officers and prospective command master chiefs or command master sergeants (the senior enlisted person at a command).

Organization structure of the TQL schoolhouses.

It was decided by the ESG that the TQL schoolhouses would be organized under the Navy leadership training chain-of-command. This meant that the schoolhouses would be co-located with the Navy Leadership (NAVLEAD) schools at Coronado and Little Creek. The reporting chain was through the Commander,

Training Forces Atlantic (COMNAVTRALANT) and Pacific (COMNAVTRAPAC) up to the head of the Navy Leadership Program, and then to the Chief of Naval Education and Training (CNET) located in Pensacola, Florida.

The intent was to have a single focal point for management and administration of the TQL E&T program. Curriculum consistency was one of the benefits of this organization structure. Another advantage of this arrangement was that new administrative procedures and authorities would not have to be developed for the TQL schoolhouses - they would fall under the procedures and authorities already existing in the CNET chain-of-command.

Each schoolhouse had its own Unit Identification Code (UIC) allowing for personnel assignments, specified tours of duty, budget allocation, identification of TQL-specific training data, a mailing address, and a delegated set of specific authorities necessary to function in the DON.

By locating the schoolhouses in the CNET chain-of-command and specifically in the Navy Leadership Department, existing procedures for instructor certification, curriculum maintenance and revisions, and integration of TQL with Navy leadership training was facilitated. Eventually, TQL Specialists and NAVLEAD instructors were able to teach selected sections of courses in each curriculum.

Curriculum revision.

Procedures for revising courses and integrating these revised courses in the curriculum were established shortly after the E&T program was operational in 1992. The purpose of the revision process was to continually meet the emerging TQL education and training needs of the program's primary customers, i.e., TQL leaders and members of the critical mass. Curriculum Model Managers (CMM) were identified for each course. These CMMs were responsible for collecting and incorporating feedback and recommendations for course revision from TQL specialists at the TQL schoolhouses. Course revisions were coordinated among designated CMMs to ensure content consistency within the TQL curriculum at the schoolhouses.

In March 1993 all seventy-three TQL specialists attended a three-day curriculum integration workshop to learn how the curriculum revision process would operate and be managed. This event marked the first major revision of the TQL curriculum. Once the CMMs and TQL specialists became familiar with the revision process, future course and curriculum modifications took place on an ongoing basis. This dynamic revision process continued for the duration of the E&T program.

In summary, the process of designing the DON TQL education and training program began in February 1989. By November 1992 the program was fully operational. TQL schoolhouses were

established and fully staffed with trained instructors, and a full curriculum of DON TQL courses was being offered to trainers from individual commands who would carry out the DON train-the-trainer strategy. Figure 5 is a summary of the major milestones in the evolution of TQL in the DON, and the education and training program established to support its implementation. For a more detailed list of these milestones, see Appendix A.

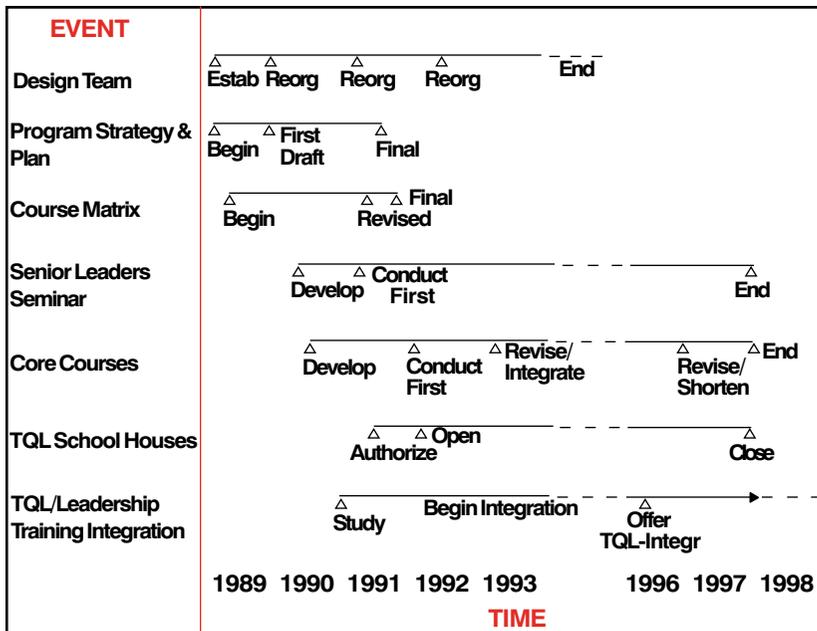


Figure 5. Major TQL education and training milestones.

Ancillary TQL education and training efforts.

In addition to the formal DON TQL E&T program executed through the two TQL schoolhouses, there were a number of education and training initiatives

launched that were supportive of, but outside the formal DON program. One of these was the training of five mobile training teams to accelerate the introduction of TQL in the Fleet. These teams received three months of extensive training in all aspects of TQL in preparation for training and assisting designated pilot projects with TQL implementation. The intent was to apply TQL principles and methods in operational Fleet units to develop some real-life examples and case studies that could be used to enhance Fleet implementation of TQL.

The mobile training teams (later known as CNO Fleet teams) were launched in April 1992. They continued to operate, teaching and assisting Fleet units with TQL implementation until 1998 when they were gradually phased out. These five teams helped thousands of Fleet personnel to understand and apply TQL principles and methods to improve operational readiness and effectiveness. The knowledge and skills they imparted during that time continue to thrive and spread throughout the Fleet today.

A related effort by the CNO to accelerate TQL implementation in the Fleet was the development of a “CNO Starter Kit.” Over three-thousand of these pocket-sized handbooks were distributed throughout the Fleet to give motivated leaders and hands-on “deck plate” personnel some simple TQL tools and techniques to help improve processes that

were part of their daily work. The kit did not replace formal TQL education and training, but it allowed many Fleet personnel to get started with improvements while waiting for access to DON TQL education and training.

Another Fleet initiative designed to accelerate the TQL learning process was the creation of modified SLS for officers not senior enough to attend the DON SLS course. This course was developed by Fleet personnel (mostly from the CNO Fleet teams) for Fleet personnel. This three-day course filled a gap in SLS coverage and augmented the DON TQL E&T program by educating future TQL leaders to the principles and methods of TQL to improve mission performance in the Fleet.

The three initiatives described above were brought about because of the vision and leadership of the CNO, Admiral Frank B. Kelso II. As early as 1990, ADM Kelso embraced the concept of quality. In his memorandum to all Flag Officers dated 10 August 1990, ADM Kelso recognized that the Navy would not have the resources it once had to do its job with an acceptable degree of risk. Instead of viewing this as a problem, he viewed this as an opportunity and a challenge. He saw the pursuit of quality as a means to take up the slack in resources while continuously improving the superiority of the Navy's product - combat readiness.

It was in this memorandum that ADM Kelso first coined the term "Total Quality Leader-

ship.” It would replace the term Total Quality Management as the Department of the Navy’s approach to continuous improvement and transformation. The definition and components of the two terms remained the same, but by using the term, “leadership” ADM Kelso appropriately refocused the responsibility for transformation squarely on the shoulders of the Department’s leaders. It was because of this strong commitment by the Navy’s top military leader that TQL education and training was most prominent in this component of the DON.

Program Results

The purpose of the DON TQL E&T program was to support the implementation of TQL within the Department. TQL was chosen as the strategy for improving mission performance and readiness. There were three primary goals of the E&T program. The first was to educate and train a critical mass of 150,000 individuals to enable them to begin the transformation of the DON, i.e., to begin phase one of TQL implementation. The second was to introduce the concepts and principles of TQL to all DON personnel. And the third was to integrate TQL concepts and principles into all existing DON education and training, particularly pipeline training focused on officer and enlisted leadership training.

Educating and Training the Critical Mass

Data collected by the two TQL schoolhouses show that about 23,200 individuals attended

TQL classes from April 1992 through December 1977. In addition to these 23,200 individuals attending the five core courses, over 9,500 leaders attended SLS classes from January 1991 through December 1997. The total number of individuals attending each of the courses offered by the two schoolhouses (both on-site and remote) were as follows:

Course	Approximate Number Of Attendees
Fundamentals of TQL	8,000
Implementing TQL	3,000
Team Skills and Concepts	5,000
Methods for Managing Quality	4,800
Systems Approach to Process Improvement	2,400
Total Attendees of Core Courses	23,200
Senior Leaders Seminar	9,500

In addition to the individuals taught by TQL schoolhouse instructors there were many others who received TQL training. For example, a modified version of SLS was incorporated in the Navy's Shore Station Commander's Course and in courses of the Navy's Leadership Continuum curriculum. Every new commanding officer and executive officer in the Navy was required to attend the Shore Commander's Course. All officers and enlisted personnel assuming new leadership positions in the Navy were required to take courses in the Navy Leadership Continuum. This means that over the last six years many

officers and enlisted personnel had received TQL education and training from sources other than the TQL schoolhouses.

Looking at the schoolhouse data above we see that about 8,000 individuals attended Fundamentals of TQL. Most of these individuals were TQL coordinators and quality advisors who were supposed to provide TQL training when they returned to their organization. Based on a pilot study conducted in 1994⁵ and a follow-up study in 1995⁶, about sixty-percent or more of these individuals actually did provide TQL education and training in their organization. Since Fundamentals of TQL was a prerequisite for TQL coordinators and quality advisors attending the other four core courses in the TQL curriculum, we can see from the data above that not all coordinators and advisors took all five courses in the core curriculum. One possible explanation is that some of the attendees at Fundamentals of TQL were just preparing to teach that course and Introduction to TQL to all personnel at their organization, while others were preparing to teach all or most of the TQL core curriculum to the critical mass at their organization.

Regardless of the reasons that not all attendees of Fundamentals of TQL took all the other courses in the core curriculum, and only about sixty-percent of these attendees provided TQL education and training at their organization, there is still evidence that the train-the-trainer strategy was successful in training a critical mass of 150,000 individuals in the DON. If we take

sixty-percent of the 8,000 individuals attending Fundamentals of TQL as an estimate of the number of individuals who functioned as TQL trainers in their organization, then there would have been almost 5,000 individuals conducting TQL end-user training throughout the DON. Some of these 5,000 individuals presented Introduction to TQL to all personnel at an organization, while others conducted TQL education and training for the organization's critical mass. To educate and train 150,000 members of the critical mass throughout the DON it would take only about 3,000 - 4,000 trainers, each one training about forty or fifty members of the critical mass.

In addition to the numbers of individuals trained at the TQL schoolhouses, thousands of individuals received TQL education and training at remote locations around the world at ad-hoc TQL schoolhouses set up to augment the DON TQL schoolhouses. Various Fleet Training Centers (FTC) around the world sent people to the TQL schoolhouses to receive train-the-trainer training in the five core courses, then made end-user training available at these FTCs. This training filled the gap during the early years of the TQL E&T program when demand for DON TQL schoolhouse E&T exceeded supply. How many end-users and members of the critical mass received TQL education and training through these FTCs is unknown, but the number could be in the thousands. Because of the many opportunities to receive TQL training in the

Navy, Marine Corps, and civilian training communities outside the DON TQL schoolhouses, it is impossible to say precisely what the actual number of people who have received TQL training in the DON.

Based on the two surveys already conducted, it appears that a growing number of TQL coordinators and quality advisors have been presenting TQL training in their organizations. It is unknown at this time exactly how many individuals in the DON have received TQL education and training. However, all indications are that the goal of training a critical mass of 150,000 individuals has been accomplished.

Introducing TQL to All Members of the DON

The second major goal of the DON TQL E&T program was to introduce all members of the DON to the TQL philosophy. The strategy for accomplishing this goal was the same for training 150,000 members of the critical mass, i.e., train-the-trainer. The two “courses” developed for this purpose were the two-hour orientation brief given to all attendees of the SLS, and the one-day Introduction to TQL given to all attendees of Fundamentals of TQL. The two-hour orientation brief was given to TQL leaders to be used when they returned to their commands. Therefore, they would become part of the train-the-

trainer strategy. The Introduction to TQL was given to the TQL coordinators and quality advisors to be used when they returned to their organization. At the present time there is only partial data available on the extent to which these two training/orientation packages were actually deployed to introduce all DON members to the TQL philosophy.

According to the surveys conducted in 1994 and 1995 the trend was that there was an increasing number of organization members being introduced to TQL by TQL trainers in their organization.

Integrating TQL into Pipeline Training

The third major goal of the E&T program was the integration of TQL concepts and methods into leadership training pipelines. Work on this integration began as early as 1991. For the next six years the Navy and Marine Corps were working to achieve this goal. Based on an examination of the Navy Leadership (NAVLEAD) curriculum, it is apparent that much progress has been made, but it is not yet completed. The integration of TQL into the NAVLEAD curriculum began at the senior leader level and has worked down to the more junior levels. At the senior level, almost one-third of the course contains TQL material taken from the SLS and other courses in the DON TQL E&T program. The percentage decreases at the lower leadership courses.

Interviews conducted with the head of the Leadership Training Department at the Chief of Naval Education and Training indicate that the integration process is ongoing and incremental.

Progress is also being made in the Marine Corps. A TQL group was established at the Schools Command in Quantico, Virginia, to work closely with the directors of the various schools to integrate TQL into their curricula. The Marine Corps has also developed their own versions of the DON TQL courses and are offering these courses at Marine Corps locations other than Little Creek and Coronado.

In the civilian community of the DON there has been less progress in establishing TQL education and training. Part of the reason is that the leadership of the DON civilian community has not pursued TQL as strongly or consistently as the leadership of the military community. Although the civilian Navy Leadership Development Program provides a structure for civilian employees to pursue leadership training, no specific TQL curricula has been developed and there is little focus on TQL in the program. Civilians have received their TQL education and training primarily through the DON TQL schoolhouses.

Now that the TQL schoolhouses have been closed, civilians have no formal or structured mechanism for receiving TQL education and training except as established by their local commands. However, many civilians partici-

pated in the TQL education and training provided by the TQL schoolhouses for six years. TQL principles and practices have become a way of doing business in the DON. Therefore, TQL knowledge and skills are passed on to civilians in the course of conducting the DON's business.

The Navy is gradually integrating TQL principles and methods in most of its regular training programs, especially leadership training. In the judgement of top Navy leadership the major goals of the DON TQL E&T program have been achieved. Therefore, as of January 1998, the two DON TQL schoolhouses were officially closed. However, the Marine Corps is continuing to offer a limited number of TQL classes for Marine Corps personnel at the two Navy leadership training sites in Little Creek, Virginia, and Coronado, California. While the stand-alone TQL education and training program has been officially disestablished, the concepts and methods of TQL continue to be taught and applied throughout the DON.

Effectiveness of TQL Education and Training

Although one of the primary goals of the E&T program was to train 150,000 members of the critical mass, the success of the program cannot be measured in numbers alone. A widely

accepted model of evaluating training effectiveness was developed by D. L. Kirkpatrick in 1966.⁷ This model has four levels of criteria to evaluate training effectiveness. The four levels are: 1) reaction; 2) learning; 3) behavior; and 4) results. Assessing whether coordinators and advisors trained 150,000 critical mass members falls in the fourth level of criteria. As stated above, the trend of training in the organization by coordinators and advisors was increasing in 1995, but the complete picture will not be known until the survey initiated in 1998 is completed.

But what about performance at the other three levels of evaluation criteria. Kidder and Rouiller (1997)⁵ looked at these three levels also. For level one, reaction criteria, they found that the percentage of trainees having a positive reaction to training was in excess of eighty-five percent. This trend started in 1991 with the SLS and continued at that level through 1995 for all courses. For level 2, learning criteria, Kidder and Rouiller found that the level of learning as measured by pre and post-test scores for all courses had substantially increased. The results were found to be statistically significant. Evaluating education and training at the first two levels, i.e., reaction and learning was built into the TQL E&T program. Most education and training program evaluations are targeted at these levels. Questionnaires and knowledge tests were administered to all trainees for the first four years of the program. This evaluation was discontinued when it was found that there were no significant changes in these data over that time period. Evaluation of levels three and four, i.e., behavior and results was not built into the program. These evaluations were planned and executed after the program had been operating for a few years.

Evaluating training at levels three and four is far more complicated than at the first two levels. First, the measurement process is more complex, and second, the interpretation is more complex because it must take into account factors other than training that may have caused a change in performance. These two levels attempt to assess the extent to which training transfers from the classroom to behavior and performance in the workplace.

To assess level three, Kidder and Rouiller asked three general questions. Are trainees applying what they have learned in training back on their jobs? Does the amount of training make a difference? What are the critical environmental factors that promote the use of knowledge and skills? A set of measures was developed to answer these three questions. They found that training received in each course was being applied at least some of the time by trainees back at their jobs. They also found a clear relationship between the amount of training received and the occurrence of training-related behaviors. A single factor was dominant in promoting the use of training in the workplace - a supportive supervisor. The general conclusion drawn for level three evaluation criteria was that TQL training was transferring from the classroom to behavior on the job. In other words, TQL was being implemented at commands throughout the DON.

Part of the level four criteria, i.e., were trainers (coordinators and advisors) conducting training back at the workplace, has been addressed above. Kidder and Rouiller looked at other measures that addressed the level four criteria, i.e., results. They found that the amount of training received was positively related to TQL performance and work group outcomes. The tentative conclusion is that the train-the-trainer strategy was working to some extent.

There is additional evidence to support the conclusion that TQL education and training was supporting the implementation of TQL and the transformation of some DON organizations. From 1992 through 1996 DON organizations won numerous quality awards. These awards included Presidential awards, Governor's awards, U.S. Senate awards, Secretary of Defense awards, awards from newspapers, and awards from professional organizations. There were nineteen awards or finalist winners in the DON for the five-year period after the DON TQL E&T program was launched. A major factor in each of the awards was the vision and courage of the organization's leader. But without a sufficient number of knowledgeable people with sufficient power in the organization, these awards would probably not have been won. There is at least the implication that the "sufficient number of knowledgeable people" may have received that knowledge from the DON TQL E&T program. Admittedly, a tenuous, but plausible possibility.