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“TQC FOR CREATING MANAGEMENT STRUCTURES”

from “Total Quality Control,” Vol. 44, No. 9 (September 1993) JUSE



Akira KUROIWA
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Being awarded the Deming Prize is much like receiving one's first driver's license. As you know, simply receiving a driver's license does not mean that one has become a veteran of the road. It simply means that from now on one is allowed to drive. One still has a mountain of experience to acquire to become a veteran driver. What I am suggesting, then, is that our real work in terms of TQC has only begun.

With the systematization of ISO, if documents must be made in accordance with the prescribed form, then this may be seen as a sort of TQC activity. We also are engaged in Total Productive Management (TPM), and working with it over many years, the philosophy and processes involved have come to resemble closely those of TQC. I think that in the final analysis, our work may be summed up as a form of TQC.

We are engaged in various management and improvement activities, but the difficulty in these lies in getting people to understand the policies of the top management. We wonder if we truly are being understood. This is the greatest cause of worry. Among the younger employees we hear opinions like, “Why do we have to deal with such bothersome things as TQC and TPM?” and so on. But I would answer by pointing out that we do such things to make all of our work easier. Sometimes this seems difficult for people to grasp.

For this reason, also, I think the development of policy management plays an important role in the advancement of TQC. It is essential to make policies

issued from the top level both easy to understand and as concrete as possible for the lower echelons who receive them. Activities to achieve those policies should be conducted according to and utilizing their abilities and effort. If parts of a policy are difficult to understand at the policy development stage, then it may be said that policy management is incomplete.

People who are not engaged in TQC, or who choose not to engage in TQC will be heard to say, for example, that attaining the Deming Prize requires tremendous expense, or that it is illogical to give priority to TQC activities over normal operations. Some suggest that the Deming Prize should be made easier to attain, or that the way to carry out TQC should be made easier to understand, and so on. I feel, however, that such things are entirely unnecessary. Rather, I think that people should simply proceed with more confidence and give TQC a try.

The point of TQC is not to make work more troublesome. Apply it, rather, to areas where it may be implemented easily, or if it can be easily disposed of through a certain structure, then go ahead and create that structure. Further, for things which do not fit well within that structure, a little thinking by everyone to recreate the structure so that they will fit in order. These are things I have always suggested. If those driving and guiding TQC lose confidence then there can be nothing but decline. ★

“TOTAL QUALITY EDUCATION AT UNIVERSITIES AND OTHER SCHOLASTIC INSTITUTIONS”

– CURRENT STATUS AND PROBLEMS –

from “Total Quality Control,” Vol. 44, No. 11(November 1993) JUSE



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INTRODUCTION

Japan's universities have more engineering departments and students enrolled in them than their American and European counterparts. This abundant source of prospective engineers has given Japanese industry a competitive edge over other countries. But the fact remains that quality control (QC) education at colleges, universities and other seats of learning has not been adequate enough. Also in spite of expansion among their information science departments, Japan's national universities have experienced a reduction in the number and size of their management engineering and related departments.

This situation contrasts sharply with the circumstances in the United States and Europe, where at colleges and universities enthusiasm has been displayed with respect to developing specialized courses in total quality management (TQM) and the introduction of TQM education to the curricula of engineering and related departments.

This treatise seeks to present the results of discourse at a study group of the Japanese Society for Quality Control and to discuss the status of QC education at universities and other scholastic institutions as well as the challenges facing such organizations.

In College-level QC education mainly statistical methods have been stressed. But the basic concept of quality management is universally and fundamentally applicable to all fields of study. Thus, it is desirable that TQM education in each discipline be advanced in the proper way. Moreover, colleges and universities are required to assume increasingly important roles in promoting lifelong education capable of meeting the divers needs of individuals.

Fortunately Japan has a great amount of expertise as

regards fostering QC education in its industrial sector, and in the course of acquiring an impressive repertoire of TQC activity examples has accrued, any and all of which can be used as case studies. It is hoped that by taking advantage of this valuable infrastructure, Japan's QC education can burgeon at colleges, universities and similar institutions.

REPORT ON THE CURRENT STATUS OF QC EDUCATION AT UNIVERSITIES AND OTHER SCHOLASTIC INSTITUTIONS

Last year a survey using questionnaires was conducted on the current status of QC education at Japan's colleges, universities and technical schools by a committee of the Union of Japanese Scientists and Engineers (JUSE), which publishes an English-language periodical, "Reports of Statistical Application Research, JUSE." The survey was headed by Makoto Kadoyama, a professor at Tokyo International University.

The JUSE committee sent questionnaires to a total of 78 college departments whose faculty members are enrolled in the Japanese Society for Quality Control, and 64 responses were received. The results of the survey are slated for release in an English-language report issued by JUSE (of. 1). Some of the main points of the survey results are given below.

Question 1

Does your institution have a course in QC?

Replies

Have a course: 38

Have a program equivalent to a QC course: 14

Have a program related to QC: 13

Question 2

For what educational year(s) is your QC program intended?

Is the course compulsory or elective?

Replies

Juniors and seniors: 85%

Elective: 66.7%

The course is mainly a two-or four-credit program.

Question 3

What is the name of your program equivalent to a QC course?

Replies

Fourteen stated having courses equivalent to QC instruction, and they were variously called:

Management Engineering, Quality Engineering, Production Management, Statistical Engineering, and the like.

Question 4

What is your QC-related course called?

Replies

Thirteen answered that their QC-related courses were variously called:

Statistics, Design of Experiments, Operations Research (OR), etc.

Question 5

Do you have any opinions regarding QC education?

Admittedly it is difficult to accurately determine the total number of colleges and universities across Japan that offer QC or QC-related courses. But considering that more than 50 of the 64 schools polled offer these courses, we have good reason to believe that the number of Japanese colleges and universities scheduling them is hardly small, compared with their availability in the United States and Europe.

Nevertheless, many of the surveyed departments responded to Question 5 by citing problems in their QC education in terms of whether their courses should be open to all students and if their curricula is organized well. Specifically, Question 5 was phrased, "Do you think it will be necessary for colleges, universities and technical high schools to offer QC education in the future? If so, how do you think QC education should be promoted? Please state your candid opinions.

The JUSE committee said that it had yet to fully analyze the collected replies to Question 5.

ANALYSIS BY THE STUDY GROUP FOR EDUCATION AND TQM

For the past two years the Study Group for Education and TQM, a committee of the Japanese Society for

Quality Control headed by Kenichiro Imai, former chairman of the society, has addressed itself to investigating ways to introduce TQM education to scholastic institutions, and to discussing problems involved in TQM education.

The author of this treatise, as an educator committed to TQM instruction at universities and other seats of learning, considered a plan to research the current status of Japan's TQM education by sending questionnaires and through other means. But he ruled against the idea, which would have required the pollees to spend their valuable time answering queries similar to those presented in the JUSE questionnaires. Instead, the author prevailed upon the JUSE committee to share with him the replies to its survey's Question 5, and from them made an analysis of respondent opinions.

Details of the author's analysis were presented in a report issued by the above mentioned study group (cf. 2). The main points of the report appear below. However, some time has passed since the questionnaires were set and returned, thus the following may differ somewhat from the present state of affairs.

1 Problems in current college-level QC education

At present QC education as conducted by the departments surveyed is aimed primarily at teaching quality control in its narrow sense or giving statistical approaches to it. Only a handful of schools offer undergraduate courses in TQC as a form for management of administration, treating mainly the basic concept of TQC.

QC courses or related instruction are offered chiefly in engineering departments with industrial management or management engineering programs. Very few engineering departments that have mechanical engineering or electrical / electronics engineering curricula offer QC courses. This being the case, it becomes clear that there is a dearth of proper QC education in commercial, business administration and pharmaceutical departments, where QC-related courses should, by their very definition, be established.

Question 5 respondents cited a plurality of reasons for this unfavorable situation regarding QC education at colleges and universities. Among them are a need for instructors capable of teaching QC, inflexibility of curricula owing to the requirements of other courses, lack of proper texts and other teaching materials, insufficient interest among students in practical subjects, and absence of popularity with respect to QC as a program.

2 Recognizing the need for QC education

Most respondents insisted that QC education should be conducted not only by engineering departments but by other departments as well, although to varying degrees, since TQM is applicable to any field of study. Some pollees stated that QC education should be upgraded in graduate schools when quality control figures as a tool for developing practical skills or when students have had little working experience.

Certain respondents wrote that they believed in teaching statistical quality control (SQC) as part of practical learning. Others said it would be desirable to systematize TQC/TQM education not only as part of practical learning but also as a management science.

These findings indicate that quite a few schools strongly hope QC education will be clearly defined as part of technology or as a science.

Many respondents cited a need to teach TQC from a broader perspective in an effort to cope with the rapid changes of our times as brought about by a steadily advancing information society, technological developments that assure automation and a high degree of reliability, plus calls for greater safety, environmental conservation and the recycling of resources. They also insisted that colleges and universities should teach students of cultural sciences TQC-oriented concepts as existing in Japan as part of a general indoctrination in an age of globalization and information.

3 QC education to meet the divers needs of departments, programs and specialities

A few respondents were of the opinion that colleges and universities should provide independent types of QC education for students of cultural and technical sciences. But the dominant view was that more diversified forms and methods of QC education should be developed to precisely satisfy the needs of their respective specialties.

Certain pharmaceutical departments answered that a proposal was under consideration with respect to extending the period covered by the existing curricula to six years - so as to better prepare graduates for the national examination for pharmacist licenses. Should the proposal meet with a favorable response and be implemented, they said, a more clearly defined content of QC education might be devised. But they added that under the circumstances, currently tight curricula scheduling prevented them from devoting more time to promoting QC education.

Evidently the needs of pharmaceutical departments

would be better served by their offering instruction in quality control, not only as regards its narrow meaning but also its basic concept.

Other pollees answered that TQC / TQM should be more significantly incorporated in the teaching of management of administration theories in commercial, economics and management departments. As a matter of fact, some reported that lessons of the type were already being given. Still, only a few schools offer such courses.

The survey fell short of examining the present condition of QC education in hotel management and tourism departments, which form areas where quality control as applicable to the service industry needs to be taught. The basic concept of TQM, if properly presented in the classroom, could become an excellent course as part of general education for students of cultural sciences.

Success in teaching statistical approaches to quality control would depend on the degree of prior student knowledge of the subject. It would be possible, though, to help them learn the QC seven tools necessary for conducting quality control and how to use them in actual quality improvement.

Students of engineering sciences should be urged to take QC courses. They should understand, via experiments and exercises, experimental design, quality function deployment and other aspects of QC as vital tools for developing new products. It is regrettable, however, that there has been a gradual decrease in the number of departments offering QC programs plus certain management engineering and industrial management courses.

QC education in engineering departments generally stresses SQC, with only limited referenced to QC as a device for management. Education in QC as a means of management of administration should be included in the curricula offered by graduate schools. Additionally, QC instruction given by departments of engineering sciences should feature practical methods, to include classroom exercises and practice.

4 Upgrading of curricula

As part of their cultural sciences or general education curricula, colleges and universities should offer instruction regarding QC in an easily understandable way, giving top priority to quality itself, the concept of customer satisfaction, customer approach, management cycle, process management, and the kaizen method.

To this end, educators should provide students with

practical means to learn QC-oriented avenues to the solution of problems and easy statistical approaches to quality control.

In recent years we have seen such innovative ways to teach regression analysis and experiment design as the use of computers and including practical experiments in the curricula.

It would be necessary for colleges and universities to upgrade their teaching syllabuses and present a framework of TQC education that satisfies our changing times. Figuring prominently in such a curricula would be policy, cross-functional and daily management, QC examination and QC awards in other countries, quality system, quality assurances, ISO 9000 series, new product development, customer satisfaction; quality in planning, design and manufacture; inspection, production process management, software and service quality, QC circle, employee satisfaction, control of environment, PL, safety, quality function deployment, quality engineering, SQC, problem solving, multivariate analysis, and reliability engineering.

5 Improving teaching methods

Respondents submitted a number of proposals for ways to improve the current QC education. They range from practical studies using more exercises in class, visits to factories, other types of field work, case studies of actual TQC activities and quality improvement programs, to the publishing in academic journals of more papers detailing examples of QC activities and the greater use of personal computers and other teaching aids.

6 Measures to implement proposals

As a means to actualize their educational proposals, pollees gave several suggestions: cooperation among colleges and universities (exchanges of students, instructors, credits, etc.), industry-university cooperation (sending employees to teach and help conduct experiments at universities and train instructors, accepting students to take part in exercises and for purposes of observation, etc.), and cooperation and coordination as regards statistics related courses.

TQM EDUCATION AT GRADUATE SCHOOLS

Proposals cited in the preceding sections are aimed at improving undergraduate-level education in quality control. But to foster true quality control specialists would necessitate upgrading QC education at the graduate level too.

The European Master Programme in Total Quality Management (EMTQM) was designed in concert by many European universities under the leadership of Prof. Gopal K. Kanji of Britain and other TQC experts, and it got underway this autumn.

This ingenious plan provides for a student's enrollment in a university of choice, where he or she writes a master's dissertation under the guidance of one or more professors. During four semesters in two years, he or she is allowed to attend classes or receive direction at other universities for one to three semesters.

The program affords flexible and diverse styles of education. Basic courses taught at participating schools have been standardized, while each institution offers advanced curricula with distinctive features peculiar to the college or university.

Articles publicizing the program appeared in Total Quality Management magazine (cf. 3, 4). Also, digests of the articles were included in the report issued by the Study Group for Education and TQM. Moreover, there has been quite a bit of enthusiasm shown at business and graduate schools of engineering sciences concerning the establishment of TQM courses or incorporating TQM classes in their curricula.

In Japan no college or university offers a master course in TQC or TQM. But it is possible to earn a master's degree or doctorate in quality control at graduate schools for industrial management and management engineering. Such programs are available at educational institutions like Chuo, Tamagawa, Waseda and Osaka Electro-Communication universities; the University of Tsukuba, Musashi Institute of Technology, the University of Tokyo, Nagoya Institute of Technology, the Science University of Tokyo, and Tokyo Institute of Technology.

A review of the current state of affairs makes it plain that TQC education at Japan's graduate schools has enjoyed little or no systematic organization. Thus a substantial reform of the prevailing situation is sorely needed.

The University of Tsukuba's Otsuka Campus in Tokyo offers a management system science program as part of its night master course for working adults. The curriculum includes a class in quality management that focuses on the following themes.

- The growth and characteristics of total quality control in Japan
- The basic concept of TQC and the structure of its management
- Case studies of policy management, cross-func-

tional management

- New product development and quality function deployment
- Case studies and exercises regarding quality function deployment
- Case studies of quality improvement and the presentation of examples of corporate quality control
- Case studies of customer / employee satisfaction
- Quality and environment management systems

However, the program comprises only ten 75 minute lessons. Consequently it must make up for areas not covered in class by having students write and submit papers for evaluation. But the course features excellent classes on organizational theories and management strategy, as it stresses mathematical science, to include OR and statistics, plus information systems. It also offers such unique things as lectures by corporate executives and CIM instruction. The program would be more successful, though, if it contained improved lessons on TQC and TQM.

It is hoped that scholastic institutions and private enterprise will join hands in upgrading Japan's TQM education, since we can expect an increase in the number of graduate schools for working adults.

CONCLUSION

It is popularly believed that quality control both begins and ends in education. This emphasis on educa-

tion has helped to build great enthusiasm for in-house training and company-sponsored corporate training. JUSE and other associations have played an important role in encouraging QC education for the personnel of private enterprise.

In recent years, though, a growing number of employees have developed the idea they should improve their career through personal volition and expense. In addition many firms are breaking away from their traditional thinking that colleges and universities should educate students about basics, and the companies in turn merely need train new employees so as to give them whatever skills are required to do their job.

Colleges and universities are expected to play an even greater role in QC education, to include basics for TQM in individual fields of study, training in QC-oriented approaches to problem solving that embrace statistics and OR, innovating specialized programs, and graduating skilled researchers and experts.

This treatise has focused on discussions concerning QC education from the viewpoint of universities and colleges. The report issued by the Study Group for Education and TQM dwells on the hopes of private enterprise as regards universities plus the problems of in-house education awaiting to be resolved.

Readers are advised to refer to the report for further pursuit of knowledge concerning the theme presented herein. ★

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JUSE INTERNATIONAL SEMINARS

FROM OCTOBER TO DECEMBER 1993

TQC Seminar
for Brazilian Facilitators
November 29 to December 16, 1993
Number of Participants: 45



International Seminar for Top Management
October 4 to 14, 1993
Number of Participants: 32

“1993 The Deming Prize”

Prize Awarding Ceremony, The Winners, Celebration Party



The winner of the Deming Prize for Individuals
Dr. Yasutoshi Washio
Professor, Keio University



The Winner of the Deming Application Prize
Mr. Shiro Fujita
President, NTT Data Communications CO., LTD.



The Deming Prize Committee · Chairman
Mr. Gaishi Hiraiwa
Committee Members · 1993 Prize Winners



Keidanren Hall, Tokyo (Venue of the Ceremony)



The Celebration Party

JUSE INTERNATIONAL SEMINAR ON TQC FOR TOP MANAGEMENT

(A) ESPAÑOL CURSO

Date: abril 11 a 21, 1994
Seminario Sitio: JUSE
Higashi-koenji dependencia, Tokyo

(B) ENGLISH COURSE

Date: May 16 to 26, 1994
Seminar Venue: JUSE
Higashi-koenji Annex, Tokyo

COURSE CONTENTS

- Concepts and Features of TQC
- Role of Top Management
- Techniques for Quality Management and Control
- Quality Assurance of New Product Development
- Quality Assurance at production (incl. Pre-production)
- Quality Assurance at Sales and Services
- Administration and Promotion Scheme
- QC Circles and Human Resources Development
- Education and Training
- Policy Management
- Case Study (Visit to Deming Prize Winner Companies)

* Post tour : Technical visit to Deming Prize Winner Companies in Kyoto, Osaka and Nagoya

More detailed information will be announced later on.

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CONTENTS

“TQC for Creating Management Structures” by A. KUROIWA	1
“Total Quality Education at Universities and other Scholastic Institutions”—Current Status and Problems—by T. YOSHIZAWA	2
“JUSE International Seminars”	6
“1993 The Deming Prize”	7
JUSE International Seminar on TQC for TOP Management	8