

Applying Total Quality Management in the Classroom and Solving Students Failure

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ABSTRACT

This paper aims to investigate how TQM can be applied in industry and education. Total Quality Management (TQM) is a management philosophy developed for industry aims to improving the quality of production, but educators believe that the TQM can also be applied in education. It reviews one of the interpretations of TQM, which focuses on enhancing the quality of the production system so that a quality product with “zero defects” will be produced. This may result in a process of teaching and learning, which particularly emphasizes gaining good results in examinations. This is, however, against a second interpretation of TQM, seeing improvement in the production system as a never-ending cycle. In the context of education, this may result in steadily boosting the quality of instruction to motivate the students to become creative and critical thinkers in a fast-changing technological world.

JEL Classification: D21; I23

Keywords: Total Quality Management, Quality Control, Zero Defects, Continuous Improvement

1. INTRODUCTION

TQM is a statistical process control (Mahesh and Prabhuswamy 2010). It was originally developed by Edwards Deming after World War II to improve the quality of products and it was first introduced to the Japanese industrial leaders (Svensson and Klefsjo 2006). Americans did not use TQM seriously until 1950 when the Japanese renewed their business activities and industry after the war. By using TQM, the Japanese managed to control the world markets by 1980. Meanwhile, the U.S. companies had eventually admitted that

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the model of assembly line factory belonging to the nineteenth century was out of date and needed serious updates in the global competitive economic markets (Dheeraj 2004).

In fact, TQM is part and parcel of the management philosophy. Yang (2005) believe that TQM is a set of practices that focus on the regular improvement, fulfilling the customers' needs, and lowering rework. He also stresses the increased involvement of employees and more teamwork, the process redesign, competitive benchmarking, constant measurement of the outcomes, long-range thinking, team-based problem solving, and closer relationship with the suppliers.

Although TQM was first designed for the industry and was not appropriate for education, many educators maintained that the TQM could also be applied to education especially for bringing educational reforms (Dheeraj 2004) and reducing waste school resources and increasing productivity (Cunningham 2007). There are some TQM theorists such as Deming, Crosby, Juran, Oakland and Ishikawa that developed TQM and set up the principles of TQM (Liang 2010). This paper aims to concentrate on the interpretation of TQM supported by Deming and Crosby.

Deming (1986) believes that a never-ending cycle of progress in the system of production should change into gaining better performance and quality standards for the product. Instead, Crosby (1995) emphasizes enhancing the system of production in order to obtain "zero defects" regarding some static quality standard, But Deming turns down the concept of "zero defects" as insufficient. In other words, while Crosby tries to make sure that failure in products of the next year will occur less often than that in the previous year, Deming insists that it must be a better product altogether.

1.1 Total Quality Management in Industry

Figure 1 shows a simplified model for industry. The input is the raw materials. They enter the production line and the workers start to make a product. Next, the product goes through a quality control (QC) before it is dispatched to the customer as an output. However, the items that cannot pass through the QC are either reworked or discarded.

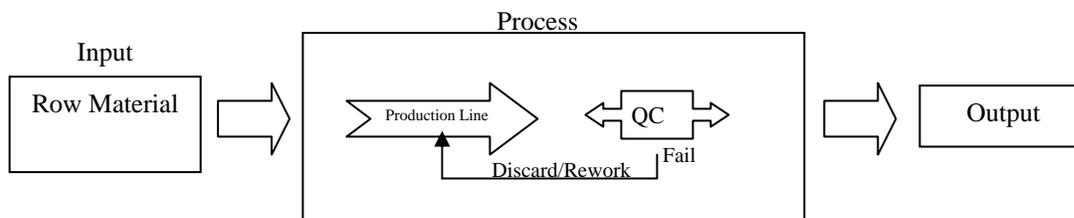


Figure 1. A simple model for industry process (Crawford and Shutler 1999)

It seems that everything is in order but, Deming (1986) believe that after elimination of the main causes of failure, there are still some drawbacks on the over emphasis on the quality control which are as follows:

- It is extremely time consuming and practically impossible to inspect all the items one by one very accurately.
- It is costly to employ and pay quality control inspectors although they fail to give any added values to the goods.

Deming (1986), in fact, believes that mass inspection of every single item is unnecessary and it is not easy to make sure there is sufficient quality. In addition, the concept of "zero defects" is a misleading issue in a

place where there is competition in manufacturing. Finally, he casts doubts on the reliability of the quality standards that manufacturers themselves set for the evaluation of the products.

However, Crosby's (1995) believe that, there are some crucial drawbacks to the system of quality control: both eliminating the defective items and reworking them waste the resources and time already spent on them, and in the case of the latter, more time and resources are wasted (Pranckevicius, Diaz, and Gitlow 2008). Hence, it results in a rise in the overall costs. These heavy costs are also passed on to the customers and finally this makes the product less competitive in the market. Consequently, sales may decline and jobs may be endangered (Salop 2010).

1.2 Total Quality Management in Education

Figure 2 shows the schooling process in which the students enter school as an input and go through a teaching process performed by teachers (Stigler and Hiebert 2009). The students have to sit for an examination (QC) before they enter the next level.

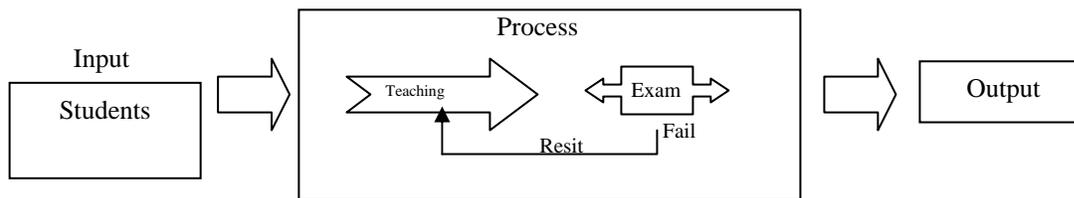


Figure 2. A simple model for schooling process (Crawford and Shutler 1999)

However, those students who cannot pass the examination may either join the workforce as unskilled workers without any academic credentials, or re-sit the subjects they have failed (Ware and Vika 2009). This world-wide examination system is not effective because it allows the failing students to join the workforce and this is a waste of money and time already used in their education (Wolk 2011). Furthermore, it forces the students to re-sit their examinations. This also consumes even more money and time. Consequently, the overall costs of studying at an institution will go up, making it less competitive in the education market. In such a situation, the supporters of the Deming (1986) model believe that over-emphasis on final examinations bears some additional disadvantages which are as follows:

- It takes a great amount of time to examine every student on every single item they have studied and it also reduces the number of teaching periods. Moreover, since there is not sufficient time to examine each student carefully, the examination process may be unreliable.
- The time that the teachers spend on setting and marking the papers may not play any direct role in student learning.

In Deming's view, schools do not require to depend on examinations to guarantee quality. If the quality of the teaching system is sufficiently taken into consideration, it will not be necessary to examine every student on every single item they have studied. In this way, the examinations may just represent a sample of the students in depth; hence, time and effort are saved and more accurate results are obtained. Therefore, examinations will turn into a diagnostic tool to assure the quality of the system rather than the quality of every single student. Finally, the teacher can now allocate more time to teaching the students who will be able to cover more material earlier and at lower tuition fees. Schools, hereby, can make even better competition in the education market (Wolk 2011). However, the followers of the Crosby (1995) model support the TQM in education and offer the following strategies:

1. Emphasize the quality of the teaching system rather than the results of the examinations.
2. As the name “total” implies, pay attention to all the constituents of the system.
3. Look for the factors affecting the exam failures and try to eliminate them at source.

Following the above teaching strategies can produce students who can pass their examinations. Hence, the number of failures will be down which means that less time and money will be wasted. Instead, the saved money can make the schools better compete in the education market.

Deming also pointed out in educational standard there is nothing absolute. So, it is not enough for schools only to reach “zero defects”, i.e. no examination failures, just by competing successfully in the education market. Without regular progress in the curriculum itself, students’ educational needs cannot be fulfilled. The modifications to the curriculum should not be restricted to boosting the technical content, but there should be a dramatic move towards creative thinking and skills as well as independent learning.

Organization of remaining papers is as below: section 2 details significant implications for the application of TQM in education. As study is based on literature review so it contains detailed review. Section 3 concludes review.

2. SIGNIFICANT IMPLICATIONS FOR THE APPLICATION OF TQM IN EDUCATION

The teachers who attempt to apply the Deming model believe that examinations are not an end, but a means to an end. They mostly pay attention to constantly promoting the methods of instruction; they maintain that in this way more efficient curriculum results can be obtained. In fact, the supporters of the Crosby model concentrate on getting better grades, whereas the supporters of the Deming model emphasize the improvement of the curriculum (Crawford and Shutler 1999).

On the contrary, the teachers who like to apply the Crosby model modify the process of teaching and learning in order to stop examination failures. To do so, they strongly emphasize getting better results in the examination. When all the students passes the examination at their first attempt, the teacher achieves “zero defects” However, there is a problem which lies in the fact that the entire content of the syllabus and its presentation become subordinate to the purpose of achieving the desired results in examinations.

2.1 Solving the Students’ Failure with Deming Model

When applying the Deming model, first of all the main reason of the student failures should be identified. These are the same as the items mentioned in the previous section, i.e.:

- Weak students;
- A lack of attention in teaching;
- A lack of focus given to performance standards;
- Unmotivated teachers;
- Ignorance of the student’s examination skills (Wolk 2011; Kaushik and Khanduja 2010; Graber 2009; Kamphoff, Hutson, Amundsen, and Atwood 2007).

When the emphasis is on the improvement of the quality of the teaching system, the preventive actions may be totally different. Following Deming, some measures should be taken in the field of education which is as follows:

- “Drive out fear.” When the students are punished because of their wrong answers, they become passive. To reverse the situation, the students should be motivated whether or not they give the correct answer.
- Build quality into the system by replacing the outdated approach of full learning and heavy focus on rote learning with more student-centered approach where students learn to reach their goals of achievement, learn how to become more efficient and learn how to evaluate the quality of their own work. This can be conducted in the following ways:
 - ✓ active inquiry projects: this can help to motivate the students to make hypotheses, look for and evaluate contradictive evidence and arrive at outstanding conclusions;
 - ✓ problem-solving exercises: this makes the students seek solutions to different problems;
 - ✓ group and co-operative work: this aims to enhance team work and collaboration, and respect for others’ views;
 - ✓ application of knowledge exercises: this emphasizes the real-life challenges;
 - ✓ more egalitarian relationships: this insists on the relationship between teachers and students on the basis of equality. That is, the teachers are considered as team-mates and helpers to the students to help eliminate the barriers to academic success.
- Remove work standards, numerical goals, quotas, and “zero defects”. These only serve to frighten and deter the students who cannot achieve without acknowledging conscientious attempts, perseverance, enthusiasm, and correct methods.
- Eliminate the obstacles to acknowledge workmanship. Pay attention to quality teaching rather than the examination results. This can be accomplished by directly appreciating the teachers through observing how they run their classes instead of assessing them on the examination scores.
- Stop relying on the final examinations as a criterion for quality. Tests and other indices of student learning should be considered as diagnostic and prescriptive tools in all over the learning process as samples of student work. These may be process portfolios, records of achievement, or exhibitions which express student achievement during a long period of time. When the instruments are especially adjusted to the quality which is going to be measured, it is not necessary to waste huge amount of time on teaching the examination skills (Crawford and Shutler 1999).

2.2 Solving the Students’ Failure with Crosby Model

When applying TQM by means of the Crosby model, the first step is to find the main cause of students’ examination failures. Some of the reasons can be summarized in the following:

- Weak students are slow in cognition and look for certainty in their learning, particularly in the forms of direction and answers.
- Weak students lack appropriate concentration on the examination material; they usually have no or ill-defined goals. Weak students do not pay attention to performance standards.
- The teachers who are not well-motivated and duly rewarded can cause examination failures. Students’ examination skills are usually neglected (Wolk 2011; Kaushik and Khanduja 2010; Graber 2009; Kamphoff, Hutson, Amundsen, and Atwood 2007).

The second step in the teaching system is to take action to hinder these problems from happening at all. This may be fulfilled by taking the following corresponding steps:

- Extra tutorial and remedial help should be given to the weaker students and the goals and objectives should be clearly defined and established.
- The instructional program should be organized into a sequence of learning units accompanied by appropriate instructions for the objectives and the relevant criteria.

- The teachers and students should be encouraged to discover the performance standards. The students should be reminded that they will achieve a total mastery of the teaching material by the time they cover the program.
- Both the teachers and students should be duly rewarded with respect to the quality of the students' performance in the examination.
- The students should be trained and directed as to how to deal with the exams with the help of appropriate techniques (Wolk 2011; Kaushik and Khanduja 2010; Graber 2009; Kamphoff, Hutson, Amundsen and Atwood 2007).

These strategies are probably accepted in countries where schools are ranked in terms of the percentage of students who take public examinations and pass them successfully. Besides, these students are surely welcomed by those who consider education merely in terms of examination results (Crawford and Shutler 1999).

2.3 Major Obstacles to Implementing the Deming Model

It seems that change and innovation cannot enter the highly conservative profession of teaching. Thus, reliance on the final examinations as a measure of quality can hardly be removed. A great number of educational administrators, teachers, employers, and parents believe that the traditional methods are the most tangible criteria of academic achievement. Furthermore, many students especially those who are mostly dependent on teachers for instruction and guidance find it hard to get along with the new student-centered approaches to learning. They often feel uncertain as to the strategies that are implemented to boost independent learning. They like to be directed and instructed as to how to do a certain job. Finally, many teachers are unwilling to take up new teaching methods because their 30 years of using mastery learning proved that they were successful, so there is no need for change (Crawford and Shutler 1999).

2.4 Drawbacks and Dangers of the Crosby Model

The strategies dealing with examination skills, however, have some noticeable disadvantages which are given below:

According to Bonstingl (1992), the first weakness is that these strategies make schools particularly product oriented, and merely emphasizes examination results rather considering the broader features of education. In this way, the marks and the ranks of the school earn significance and the final goal of the school instruction will be directed to achieve correct responses to the questions. Although these strategies can guarantee success in examination, the students who will be produced in the long run will be inflexible, passive and without any imagination and creativity to work independently and generatively. In fact, they can just take orders very well (Joyce, Weil, and Calhoun 1992).

The second disadvantage of these strategies is that many students often get detached from their main topics because the chief emphasis is only on how to pass examinations successfully through certain techniques and models. This can impair the students' sense of creativity, and discussion skills.

The third weakness is that once achieved the performance standard of "zero defects", the teachers and students have nothing to do. They will become complacent and stop going ahead any more. Furthermore, the schools with "zero defects" can just produce a single type of students, but when the needs of the society change, they will face problems (Crawford and Shutler 1999).

3. CONCLUSION

The notion of Total Quality Management (TQM) developed by Deming is a management philosophy that is now attracting growing attention among educational practitioners and theorists. However, various interpretations of TQM may result in extremely different educational outcomes and processes. The teachers who try to apply the Crosby “zero defects” model may only insist on obtaining better examination results irrespective of the content taught, while the advocates of the Deming model may place emphasis on a never-ending cycle (continuous improvement) in the processes of teaching and learning and disregard the importance of final examinations. The Crosby model can result in a condition in which students pass examinations at the first attempt. However, they may lose their sense of activity, creativity, and flexibility. They will lose contact with the topics they are studying because the sole emphasis is on the examination techniques, and complacency. In contrast, the Deming model can take the students to a context where they are actively engaged with problem-solving exercises, inquiry projects, application of knowledge exercises, group and co-operative work, and equal relationships with their teachers, and as a result they become creative and critical thinkers and sufficiently ready to meet the challenges of a fast-changing technological world.

The successful application of either by adapting to the Deming model of TQM or Crosby model of TQM in schools probably rests upon certain criteria relevant to the intention or the learning outcomes of the curriculum, regardless of the chosen model, TQM in the education sector should first and foremost fulfill the principles of TQM. It most also relates to the teacher’s training programs.

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