

APPLICATION OF DEMING'S PHILOSOPHY TO IMPROVE THE QUALITY OF TECHNICAL EDUCATION

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ABSTRACT

Quality has become a decisive factor in attracting the bright and meritorious students and faculty in technical institutions. Many systems are adopted such as TQM, ISO 9000 standards, benchmarking etc. for improving the quality of technical education. This paper describes simple and effective philosophy, which is known as Deming's philosophy. In this paper Deming's cycle and its 14 points are revisited to ensure the quality of technical education process. Deming's cycle is applied to the faculty member which is in direct contact with students. Deming's 14 points are revisited in context of technical education and are discussed how well can be applied into the classroom.

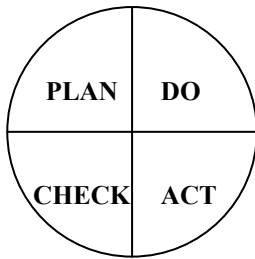
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INTRODUCTION:

Recent developments, rapid advancements of several technologies and methodologies for improving the quality in technical education demand excellence. It has been significant that like any other product delivered from a system; technical education too has to undergo all quality checks before it is passed to the customers. Quality has become a decisive factor in attracting the bright and meritorious students and faculty. With competition becoming global, universities and institutions set up worldwide are aiming for higher quality. For improving the quality of technical education many systems are adopted like TQM, benchmarking and ISO standards. But it is found that there are some disadvantages of these techniques. First, these techniques demand expertise and skill in application and follow up. Second, Well-trained and qualified personnel are required for successful implementation. Third, Top management may not show willingness and interest in techniques that are not easily understood by them. So there is a need to develop a suitable and easily understandable technique which is easy to implement. In this paper Deming's quality philosophy is examined in context of technical education.

DEMING'S QUALITY: AN OVERVIEW:

The eminent total quality management (TQM) guru and renowned statistician Edward W. Deming introduced Deming's cycle as: PLAN, DO, CHECK and ACT. This is called PDCA cycle. Deming created a diagram to illustrate this continuous improvement process. Deming taught a lot of quality improvement methods including PDCA cycle. He has given 14 points for quality improvements.



PLAN : Determine goals and methods of reaching goals.

DO : Implement plan and measure its performance.

CHECK : Assess the measurements

ACT : Take the appropriate action

Fig 1. Deming's PDCA cycle

DEMING'S PDCA CYCLE FOR FACULTY MEMBER:

Deming cycle can be gainfully applied to all academic activities that too without any immediate financial implications. But it will be better if this is applied to the most significant person that is who is much closer to the students. The faculty member or teacher is the more close to students and prime choice for quality initiatives because of his daily interaction with them. One of the important functions required for successful implementation of PDCA cycle is to act upon getting the feedback. But the question is how frequently or when the feedback is to be obtained. First, collect the feedback as and when feasible or at appropriate checkpoints. Secondly, collect feedback at the end of the session. Hence this method give ample opportunities to teacher to improve teaching.

DEMING'S 14 POINTS FOR TECHNICAL EDUCATION:

Edwards Deming, the Father of Total Quality Management, has a 14 point process for managers to improve quality and productivity which can very well be applied into any technical institution's classroom.

Point 1: *Create constancy of purpose for continual improvement of products and service.* Create and maintain constancy of purpose toward improvement of students and service. Many classes in many schools have rather poorly defined and confusing objectives. It is best that all staff, administrators and students work through consensus building to determine these goals, taking into consideration the mission, vision and values of the institution, the needs of the students, and the requirements of the society.

Table 1. Deming's PDCA cycle for faculty member

PLAN	DO
<ul style="list-style-type: none"> ➤ Class scheduling ➤ Syllabus planning ➤ Evaluation methods ➤ Teaching aids ➤ Learning tools ➤ Feedback methods ➤ Case studies and projects ➤ Expert lectures ➤ Industrial visits ➤ Improvements in Teaching methods ➤ Extra-curricular activities ➤ Computer based learning ➤ Practical coverage planning ➤ Lab development 	<ul style="list-style-type: none"> ➤ Classroom teaching ➤ Practical guidance ➤ Outside interaction ➤ Continuous self learning ➤ Conduct of exams and tests ➤ Conduct of practical in labs ➤ Demonstration ➤ Computer aided methods
CHECK	ACT
Evaluation (Tests, quizzes, viva-voce, seminars etc.) Progress of learning Review of feedback Analysis of results Scope for further exercises	Redesign the system Revise syllabus Modify and report Corrective actions on feedback

Point 2: Adopt *the new philosophy*. We are in the new economic age, created by Japan. We can no longer live with commonly accepted levels or delays, mistakes, defective materials and defective workmanship. Adopt the new philosophy: challenge, encourage, empower and trust students. All the quality gurus agree that students are willing and capable of doing good work, subject to the that they are provided with proper training, tools and time to do it. So, are students.

Point 3: Cease dependence on inspection: *Eliminate the need for mass inspection as a way to achieve quality by building quality into product in the first place*. Cease dependence on testing to achieve quality. Eliminate the need for inspection on a mass basis (standardized achievement tests, minimum graduation exams), by providing learning

experiences which create quality performance, creativity and experimentation. Students who do poorly in quizzes, tests, homework are mostly left behind - because the teachers need to through the curriculum. Students who do poorly in tests have not mastered the material but the unit is over and everyone has to move on. Yet, the students, who do not understand the work, usually know that they don't understand, but nothing is done to rectify the situation and so the system breaks down and those students are labeled "failures". It is inevitable for them to be failures if the teacher does not adopt the new philosophy and give them the necessary tools and time.

Point 4: *End the practice of awarding business solely on the basis of price tag.* Work with educational institutions from which students come. Improve the relationships with the institutions of student sources. Doing this will enable the organization/classroom teacher to build a long term relationship of trust and support among students.

Point 5: *Improve constantly and forever the system of planning, production and service to avoid problems, to improve quality and productivity, and thus to constantly decrease costs.* Improve constantly and forever your classroom techniques until all students have achieved a high degree of success and are doing quality work. Therefore teachers themselves must make personal and professional development plans if they are to become role models for their students. The next stage is the continuous updating of teaching techniques, evaluation of daily happenings, close observation of different learning

Point 6: *Institute modern methods of training and retraining on the job for all, including management to make better use of every employee.* Institute continuous training on the job in the classroom for each student and teacher. No one, staff, management or students can do their job properly if they do not know their job precisely.

Point 7: *Adopt and institute leadership aimed at helping people to do a better job.* Adopt and institute leadership: The main aim of teachers is to help students do a better job. According to Deming, 85% of the problems within any organization is the result of poor management and workers can control only 15%. This fact emphasizes that teachers have a new role as classroom managers. Teachers should become leaders rather than managers and serve as role models. It can be possible by: a) empowering students, b) being aware of difficulty people have with regards to change: c) students must be made aware of the fact that improvement means change for the better and therefore, they should learn to adopt change.

Point 8: *Drive out fear: Encourage for the effective two-way communication and other means to drive out fear throughout the organization.* Drive out fear by creating an environment that encourages people to speak freely so

that everyone can work for the college system. Unfortunately, many schools operate on fear of punishment, low grades. Fear may lead students to obey, but does not motivate them to be excited about school or learning

Point 9: *Break down barriers between departments and staff areas. Break down barriers between departments. People in teaching, special education, food service, accounting, research, administration, curriculum development must work together.* Institute is formed of different departments, which have their own interests, traditions, values and formal objectives. Even different subject teachers act or think differently

Point 10: *Eliminate the use of slogans, poster ad exhortations for the workforce.* Eliminate the use of slogan exhortations for perfect performance. In a quality classroom students in the same class work as a team. Therefore, it is better to eliminate exhortations and slogans as these create adverse relationships

Point 11: *Eliminate work standards that prescribe numerical quotas for the work force and numerical goals for people in management.* Eliminate the traditional, standardized grading system from the classroom. In his book “The New Economics for Industry, Government and Education” Deming points out: “Our educational system would be improved immeasurably by abolishment of grading. No one can enjoy his work if he will be ranked with others.” Classroom goals should not focus on numbers, as it is a known/proven fact that standardized test scores usually ignore more important measures of student knowledge. They cannot test critical thinking or problem solving skills. Therefore, it is critical that education today be “outcomes based.”

Point 12: *Remove the barriers that rob hourly workers, and people in management, of their right to pride of workmanship.* Remove the barriers that rob the students and teachers of their right to pride and joy of workmanship. Teachers always have to do a wide range of things in a very limited time space. Therefore, we tend to urge our students to do the task fast. Moreover, we don’t spare the necessary time for feedback. In other words, we do not provide the necessary time and tools but expect our students to do quality work. Therefore, it is crucial that teachers believe everyone wants to do quality work and make advance preparations for their students to perform the task, keeping in mind the individual differences

Point 13: *Encourage education and self- improvement for everyone.* Encourage education and self-improvement for every student and teacher. Things change fast in our world. Therefore, our students must learn to adopt themselves to change and not to be afraid of it. In a quality classroom, where students are continuously improving, there is naturally a “change”. Similarly, in a quality classroom where students are responsible for their own learning, peer assessing, assessing their own work and making joint decisions, there is self improvement.

Point 14: *Clearly define top management's permanent commitment to ever-improving quality and productivity.* Put everybody in the school to work to accomplish the transformation. It all begins and ends here. Without full understanding, belief, action, progress of the top management -the teacher in a classroom situation- none of the previous 13 points can be achieved. We as teachers should lead the whole class in the drive for ever improving quality of every single activity by providing the proper encouragement, training, facilities, and time. We as teachers must also accept that we have much to learn and in order to set examples, we must practice what we preach.

CONCLUSIONS:

Quality in technical education is very important for the success of any institution. Numbers of quality techniques are propagated to facilitate the quality improvement. One of simple and easy philosophy of Deming is revisited. Faculty members, who are in close contact with students, find several opportunities to adopt this approach and reap rich benefits. Deming's PDCA cycle is recommended for faculty members/teachers to improve the quality of teaching. Deming's 14 points are also revisited in context with technical education and are emphasized that teacher should lead for whole class in the drive for ever improving quality of every single activity by providing the proper encouragement, training, facilities and time.

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