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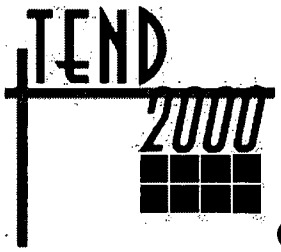
ABSTRACT

Continuous quality improvement (CQI) models, which were first applied in business, are critical to making new technology-based learning paradigms and flexible learning environments a reality. The following are among the factors that have facilitated CQI's application in education: increased operating costs; increased competition from private schools and nontraditional modes of learning; students' increased awareness of what they need to succeed in the workplace; and the need to keep costs down while maintaining quality and demand. A macromodel for quality and CQI in student learning has been proposed as a comprehensive approach for strategic planning and management of "educational products." Components of the model include the following: institutional vision, primary values, and goals based on the strategic implications of using technology-based educational solutions; a program quality assurance system; a faculty development plan that includes provisions for delivering the technical and nontechnical training needed to incorporate technology into the curriculum; assessment of learning from a distance and in the classroom; enabling policies, structures, and resources; and cross-departmental, cross-functional support groups. The CQI process must promote the following items: self-paced learning; standardization; anytime, anyplace learning; reduced operational costs; and development of "virtual team" skills in students. (MN)



Crossroads of the New Millennium

The Application Of Continuous Quality Improvement Models And Methods To Higher Education: Can We Learn From Business?

Prepared and Presented

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Workshop 1

Abstract

This paper examines some of the influences that created the demand for putting the quality back in education. Using a hybrid business / education model the author discusses how this model can be applied to the ever changing environment of Instructional Technologies.

The Application of Continuous Quality Improvement Models and Methods to Higher Education: Can we Learn from Business?

QUALITY IN EDUCATION, WHEN DID WE START TO CARE?

The search for "quality" in education was a reaction to the increased consumerism of students in the 1970s and their critique of the education "product". This was analogous to what the American automobile manufacturers experienced in the 1960s when in ignoring the Japanese competition when they thought they had a controlling market share. The Japanese entered the market with what the consumers wanted the result was disastrous for the Americans. The lesson learned was; "give the customers what they want", not what we think they should have. This sense of complacency was not the error of only industry but also academe.

The prevailing attitude of some administrators in the early 1980s was that students were to be seen, not heard. The materialistic "me" generation and an older student population introduced a consumer oriented student on campuses that were in search not of "knowledge" but of a money degree. Good grades would get them into a prestigious graduate school and then a high paying job. The term "deferred gratification principle" was coined during this time. Tuition costs rose every year, students graduated with diplomas and an $80 - $100,000.00 USD debt from easy to obtain student loans. These loans had to be paid off over many years. This put more pressure on students to not waste time and start earning money as soon as possible.

Universities were not prepared to deal with this new type of attitude. Undergraduate classes were large; lecture sections of 500 were not uncommon on large campuses. Quiz sections with teaching assistants had 20 to 30 students meeting several times a week. Teaching assistants (TAs) worked for free tuition and many were not native English speakers. The American graduates were off campus, either on the job or had gone to other schools for advanced degrees. As a result, a large number of foreign teaching assistants entered the campus workforce in the late 1970s.

Many "new" students were adult returning students and had very high expectations of a "quality" return for their investment of time and money. Students with difficult courses found they could not understand their quiz section leaders (TAs). Students under pressure to get good grades now had another obstacle to their goal. The new consumers of the education "product" did not accept this passively as before. There were protests on campuses. Laws

were passed in state houses, policies were formulated and new departments formed to deal with this crisis. Special training programmes for teaching assistants who couldn't speak English were developed and as well as for professors who couldn't teach. This was a process that took years to identify, develop and establish. There were millions spent to find a solution and millions were wasted on the wrong solutions. The university had lost touch with their "customers" and had suffered the consequences. The quest to find out what went wrong, fix it and make sure that it wasn't repeated started.

"QUALITY" ON CAMPUS

Quality Control was something that was only lightly considered before these developments and not for academic departments. Discourse on quality was reserved for service businesses and assembly lines. This was, however, exactly what the schools were in need of. University schools were similar to the medieval guilds where each guild (school) had their own members, codes, evaluations and methods of governing and hadn't realised they were out of touch. Tradition was no longer relevant to students, they were much more practically driven. Students felt the university was out of date and out of touch. Business and Industry thought the same and established training systems to orient new employees to real world needs and best practices.

BUSINESS / INDUSTRY AND LEARNING TECHNOLOGIES

Business is training oriented, not education oriented. The focus, by necessity, was much more practical and applied. Certificates not degrees became more important and training time was considered "down time" or wasted time. This created a need for only very practical approaches to training and the application of technology-based tools. Computer Based Training (CBT), Multi-media and now Web-based or Online Learning have come out of the need to find more efficient and effective ways to develop and deliver training. These are the tools of today and meet today's needs. Schools needed to realise the "New Paradigm" for learning and that flexible learning environments are a reality. Are our schools ready for this type of challenge? Without a well thought out strategic plan and CQI Model, I think not. The exercise of developing technology-based learning systems does a great deal to clarify standards and content for a course. Business has known this for many years. In academe many decisions that were not made or left in the "gray area" of management and curriculum design were clarified with this rigorous process of fitting loose processes into a technology. The application of technology became like the famous "Procrustean Bed" of Greek mythology. The processes must be "cut" or "stretched" to satisfy the technology. No half

measures or gray areas are allowed. This was the case with processes and delivery of course content. Course content delivered at the whim of the instructors who liked to over emphasise their favourite topics was no longer an option. Technology demanded standards, regulated the scope and sequence of a curriculum and guaranteed coverage of the required skills and knowledge.

THE HYBRID OF EDUCATION AND BUSINESS IN QUALITY CONTROL MODELS

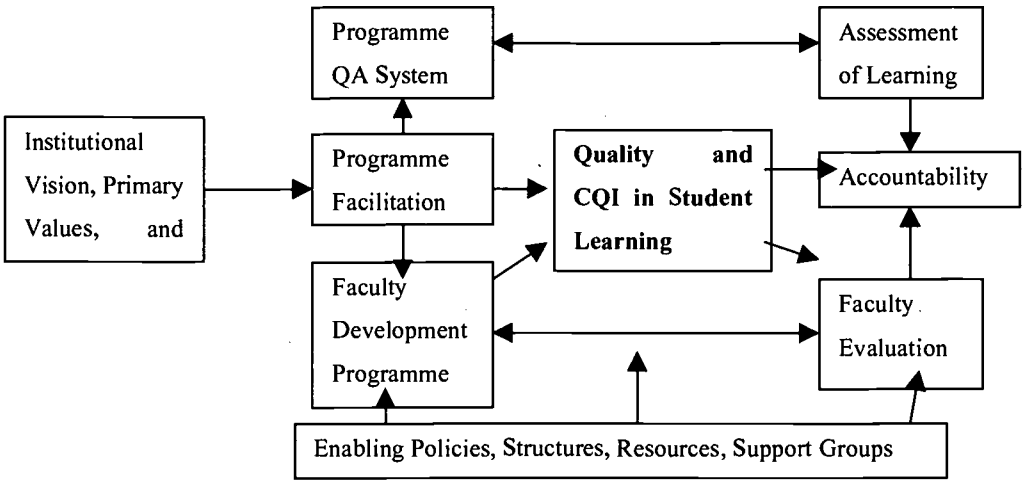
Continuous Quality Improvement models from business have found their way into education. They "bought their way in" by identifying specific needs. Some of these needs identified in business were:

1. Sharp increases in the costs of material, energy and labour.
2. Increased competition among companies in saturated or dwindling markets.
3. Changing customer values and more exacting quality requirements.
4. A need to introduce more products more rapidly.
5. A need to lower the breakeven point.

Academe found many similarities between the factors influencing business and the factors causing schools to rethink their academic "business" model. An academic version of the above list might look like this:

1. Increases in the costs of faculty and staff wages, operational costs, buildings, land and energy.
2. Increased competition from private schools, non-traditional modes of learning, e.g.; online learning, distance learning, certificate programmes.
3. Changing values of the students, the students knowing what they need for success in the world of work and demanding it from the school.
4. The need to keep up with the requirements to design, develop and implement new programmes in a timely manner, when the demand is high.
5. The need to maximise the return on income from the tuition to student ratio. Keeping costs down while quality and demand are maintained.

As a result, an academic version of CQI was developed. An Educational-based Quality Assurance Model would look like this:



(Boyle, 1997)

"QUALITY CONTROL DEALS WITH THE QUALITY OF PEOPLE." (IMAI, 1986)

This macro-model for "Quality and CQI in Student Learning" represents a comprehensive approach for strategic planning and management of the "educational product." Some specific ways in which this model should be updated are the following:

1. The Institutional Vision, Primary Values and Goals must take into account the strategic implications of using technology-based educational solutions; cost to own or lease equipment, telecommunications costs, support, training of faculty and students on new technologies, short and long term plans, goals for converting traditional curriculum to a technology-based curriculum.
2. Programme Quality Assurance System must include quantitative and qualitative links to the "new learning environments" created by the technology. Conclusions and recommendations should affect both the macro and micro level of programme design and development.
3. A faculty development programme must include both technical and non-technical training necessary for the incorporation of technology into the curriculum. This must also be closely linked to Faculty Evaluation. "Faculty development activities and programmes need to be designed and facilitated strategically so as to lead to quality improvement in programmes, and programme improvement initiatives need to enable faculty development."(Boyle, 1998) A school that wants to promote technology should include a performance measurement for faculty related to how they have worked to incorporate

technology and new methods into their courses. This incorporates the "humanware" aspect of business and CQI.

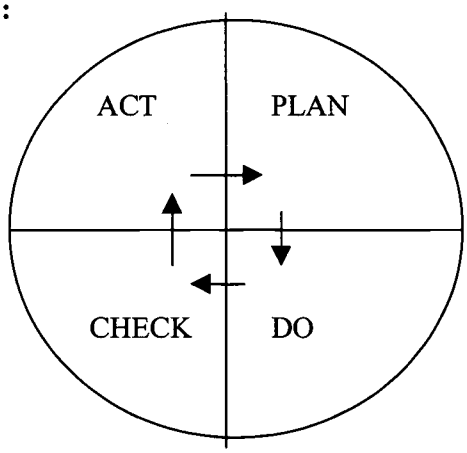
4. Assessment of learning is now possible from a distance as well as in the classroom. As we look at more case-based or problem-based curriculums we will be using different types of assessment models. Competency-based as opposed to knowledge-based or "recall" based assessments will help to measure how well students have applied the knowledge and skills that they have acquired in class. The new learning environments allow discussion and collaboration in a synchronous or non-synchronous (asynchronous) mode.
5. Enabling policies, structures, resources and support groups need to be developed for technology to be effective. Policies regarding attendance need to be redefined, traditional models may not be applicable to mature students who are working, have a family and are trying to pursue an advanced degree. Reporting structures between departments and centralised technical support groups need to be redefined and clarified.
6. Support groups that are cross-departmental and cross-functional need to be formed to discuss quality from several different facets; fiscal, instructional, technical, administrative and strategic.

Other changes that must be made for this model to keep current are the following:

- This must not be a "once a year" exercise but a continuous effort.
- The department or organisation in charge of quality must report to the highest level of the school administration and have the "clout" to initiate change.
- Strategic planning for the school must include technology use and implementation as one of its major goals. Technology should not be treated as a separate item on its own but as an integral part of the overall process.

THE DEMING WHEEL IN EDUCATION:

(Imai, 1986)



The Deming wheel is the most famous model in CQI. This is at the core of all CQI models. The interrelationship of continuous planning, doing, checking, acting and starting the process over again serve as the basis for most applications of CQI.

1. Planning based on previous information or experience and through the collaboration of either "Teaching Learning Roundtables" or Quality Circles.
2. "Doing" or implementing the improved process which has been defined through the planning step.
3. Checking to see if the process improvement has had the desired effect. Using quantitative and qualitative measures to determine efficiency and effectiveness.
4. Act on identifying a new process or re-examining the current process to identify opportunities for change. Then starting over again on a new process or to further refine the previous process.

The improvement of curriculums and instruction through new teaching and learning technologies and methodologies is an on-going or living process. It must be a continuous and always dynamic activity. The marriage of CQI and Learning Technologies is a logical and correct approach for the deployment and success of these programmes. Schools must take a more business-like approach to how they manage their product development and implementation.

The best uses of technology must be promoted and refined through the CQI process:

- Self-paced learning
- Standardisation
- Any time / any place learning
- Reduced operational costs, after the initial investment
- Increasing "virtual group" or "virtual team" skills in students. This emulates how work will be done in the future.

CONCLUSION

CQI has had some success in education but it must be applied properly using the same standards that business has developed. This is not an academic exercise but a necessity to survive in the modern world.

Schools will have to compete internationally, not only regionally from now one. Universities are launching programmes to sell their degrees (products) to the world through Distance Learning technologies. Britain has announced recently a new government supported programme to start the first e-university, which could award degrees from Oxford, Cambridge or London universities. "Behind the announcement lies the Prime Minister's desire to increase dramatically the market for overseas students as a way of making money for UK universities. A target of 75,000 extra overseas students by 2005 in universities and further education colleges has been set. Overseas students currently bring in $1,120,000.00 USD in fees. It is hoped that the e-university will raise a similar amount." (Hodges, 2000) Most of the students studying in this way will be pursuing degrees in technologies; engineering and technology, business and administration, law, medicine, computing and economics.

Education has become a bigger and more complex business in the last ten years. Applying business principles and processes to manage the quality and improve the product is the right thing to do. Setting up the processes, having the clout to influence the loose confederation of "schools" in a university setting and making this a continuous process are most important to the success of CQI for Education.

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