

TOWARDS TOTAL QUALITY MANAGEMENT IN HIGHER EDUCATION: THE EXPERIENCE OF ASIAN INSTITUTE OF TECHNOLOGY

Prof. Dr. Worsak Kanok-Nukulchai
Dean, School of Civil Engineering
Asian Institute of Technology

Abstract

This paper revisits the quality culture at the Asian Institute of Technology (AIT). Comparing quality issues in manufacturing industries, it may be concluded that Total Quality Management is more appropriate to an institution of higher learning such as AIT. To expound on this, the article describes the AIT Quality Cycle, and identifies its impact and sustainability. It then presents the AIT 'Total Quality Management Manual' to demonstrate institute's efforts in Internal Quality Control and Quality Auditing. Several examples were given; most notable is the successful implementation of quality measures at the School of Civil Engineering (SCE) as provided in its Quality Manual and Faculty Productivity and Performance Audit reports.

Keywords: Quality, Academic Quality, Total Quality Management (TQM)

1. Introduction

The Asian Institute of Technology (AIT) was established in 1959 as an international post-graduate institution with a mission to produce highly qualified professionals committed to uphold the sustainable development of the Asian region. Now on its fourth decade of establishment, the institute has gradually evolved experiencing tremendous growth in number as well as in geographical scope. From merely 8 students from 3 countries in 1959, it has a current enrolment of 1,561 from 42 countries. The number of its graduates jumped from 8 in 1961 to 11,452 in 2002. From 3 countries, the alumni pool now represents 66 countries around the world. A majority of them play major roles in the development of their countries.

The institute remains conscious of the need to maintain academic quality since its inception. This is the reason why Total Quality Management (TQM) forms an integral part of its academic and policy orientation. Quality at AIT covers all the facets of its operation with clear measures on inputs, systems and outputs - from faculty/staff recruitment and

student admission; to course teaching, research and outreach activities; program, curricula and course reviews as well as support services (from library, laboratories, accommodation, and recreational facilities) to maintain high-calibre outputs, in terms of graduates and research innovations.

In 1994, a series of faculty workshops were conducted with the aim of instituting an AIT-wide quality management system. Out of these workshops, the first version of *Total Quality Management Manual* (AIT, 2002) came out in 1996; an update was released in July 2002.

2. Academic Quality

The definition of quality, as commonly adopted in higher education, refers to fitness of purpose (Green, 1994). Advocates of this approach believe that quality has no meaning except in relation to *the work order* of product or service. In other words, the quality of a product or service depends on its ability to meet its stated purpose.

AIT adheres to a mission *to develop highly qualified and committed professionals who play lead roles in the sustainable development of the Asian region and its integration into the global economy*. More than just imposing that students comply with the requirements for graduation, to meet this *work order*, Academic Quality in AIT guarantees every student with competitive learning experiences carried on through continuous improvement of processes supportive of its mission.

3. Rationale for Academic Quality at AIT

By emphasising Academic Quality, the institute continually upgrades its standards that allow its graduates to be abreast with the demands of their prospective employers. Being in touch with the emerging demands of industries, our graduates are able to raise public perception of AIT's reputation – a factor that upholds its image of being an innovative centre of learning. Despite the many changes in the education industry at large, it is only by fostering academic quality that AIT's competitiveness is maintained.

Assurance of Academic Quality

A sustained academic quality revolves primarily on the overall learning experience of students. The ability of students to assimilate and synthesize class instructions, research work, personal study and their

daily experiences, with what they learn from their advisors and colleagues help them build a portfolio of skills that would prove most valuable to their professional careers.

Apart from students' efforts, a long-term commitment to academic quality from individual faculty and staff, and the full support from top management are necessary. Since the journey towards quality never ends, an attitude oriented to continuous improvement must be cultivated in each stakeholder. A cultural change, which inculcates a deliberate willingness in working together to satisfy the demands of internal and external customers, and a clear strategy to implement, maintain and sustain academic excellence are of paramount importance in the quality journey.

Total Quality Management

At AIT, Total Quality Management (TQM) is a philosophy that strengthens the culture *to foster continuous organizational improvement through systematic, integrated, consistent effort involving everyone and everything, focusing primarily on total satisfaction of internal and external customers, where employees work together in teams with process ownership, guided by a committed top management, which takes a proactive participation*”.

Table 1 compares the quality issues in industries and in academic institutes. In factories, raw materials enter as inputs, which are processed in moulds. The output takes the form of products, which bring in profit and market share to the company.

However, in an academic setting, the students and their ideas serve as inputs, the faculty member are moulds that shape students through teaching and research supervision, while outputs are graduates and research innovations. As graduates begin to have impact in the society, the institute gains better image and becomes more reputable, attracting more and better applicants. Similarly, as research works get known, the institute's reputation increase pulling additional research funds.

Table 1: Comparison of Quality Issues in Industries & Academic Institutes

Factory	Academic Institute	
Raw material	Student intake	Ideas
Product	Graduates	Research output
Production process	Teaching and research training	Research
Mould	Faculty	Faculty
Impact (customer satisfaction)	Successful careers and roles in the society, satisfaction of all stakeholders	Innovative technology, satisfaction of all stakeholders
Return (market's share)	Reputation, leading to more and better applicants	Reputation, leading to more research grants
Management	Administration	Administration
Income	Tuition and fees	Research grants
Expenses	Payrolls + Operations	Research expenses
Profit (Reinvestment)	Surplus (reinvestment)	Overheads

TQM vs. Quality Assurance

But why does AIT emphasize on Total Quality Management and not on Quality Assurance?

In a production sector, Quality Assurance sorts out defective products by identifying causes, then by replacing weak links, and/or revising the production process. There have been many attempts to apply Quality Assurance to educational services but many find its weakness. In the industrial process, there is not much constraint to make a radical change in raw materials, the mould, the management, as well as in the production process.

In academic institutes however, it is not easy to make similar turnabouts; moreover, some changes are just mere impractical. In such situations, TQM is more pragmatic as it aims to gradually improve the attributes of the system without really replacing them.

TQM is implemented by a set of principles that encourages continuous improvement of all components in the organization. TQM focuses on

both the system and people in the system. Table 2 summarizes the key differences between Quality Assurance and Total Quality Management.

Table 2: Some key differences between Quality Assurance and Total

Quality Assurance	Total Quality
1. QA is only a part of TQ. It is a systematic approach which gives adequate confidence and satisfies given requirements	TQ is a process to give continuous improvement in the performance of all activities, which provides satisfaction for customers, both internal and external and includes principles, tools and techniques
2. Part of quality improvement process	A process for continuous improvement
3. A systematic approach, influences attitudes and working environment	Changes attitudes and the working environment and provides tools, techniques and systems for continuous improvement
4. Aims to ensure that customers' requirements are met every time	Creates a 'right first time' attitude to delight customers
5. Improvement is by eliminating recurring problems	Improvement is by cultural change, based on the measurement of performance and elimination of root causes and constraints
6. Requires a structured organization and a statement of key responsibilities	Creates a culture in the organization that seeks improvement in all its activities continuously
7. Directive and provides procedures for all activities and working procedures	Focuses on a full understanding of the various business processes by the day-to-day involvement of all concerned
8. Provides quality records of all activities	Uses quality records for measurement and for continuous improvement
9. The system relies on regular monitoring and audits to identify and correct non-conformances and improve procedures	Involves gathering ideas and suggestions for improvements from everyone
10. Regular management reviews of the procedures and working practices leads to improvement	Stresses the importance that products and services delivered to the customer (whether internal or external) meet the requirements, whether specified or not
11. Ensures that people are trained and experienced	Ensures that everyone in the organization receives education and training to enable them to do their job effectively and achieve personal satisfaction

Implementing Strategy

A strategy for quality implementation provides a blueprint for the successful attainment of total quality. The strategic action plan gives way to a smooth implementation of TQM upon initiation. The inability to carry through may result in costly setbacks for the institute because more often than not, there are no second chances. The strategy also improves communication and dissemination of policies, objectives and plans, imprinting transparency along the way.

Quality Attributes at AIT

Customer satisfaction is an important aspect of TQM. A higher educational institute has both internal as well as external customers, who in one way or the other are its stakeholders. Internally, the administration, faculty, staff, and students assume dual roles as either service providers and/or customers at different processes. External customers are donor agencies, patrons of students, future employers, the different professions, societies, and industries. The stakeholders of AIT are listed below, while Table 3 summarizes the services available at AIT, the service providers and their respective customers, both internal and external.

AIT Stakeholders

- AIT Administration
- AIT Faculty
- AIT Staff
- Students
- Donors
- Direct Patrons of students

- Research Sponsors
- Alumni
- Future employers
- Country
- The Region
- The World

Table 3: Types of Services Available at AIT and the Customers

Service	Service Provider	Customer	Type
<i>Human Resources Development</i>	<i>AIT Administration, faculty & staff</i>	<i>Donors & Patrons, the region, country, future employers</i>	<i>External</i>
<i>Vision and Mission</i>	<i>AIT Administration</i>	<i>All Stakeholders</i>	<i>External</i>
<i>Research</i>	<i>AIT faculty</i>	<i>Sponsors</i>	<i>External</i>
<i>Education</i>	<i>AIT faculty</i>	<i>Students</i>	<i>Internal</i>
<i>Lifelong Learning</i>	<i>AIT faculty</i>	<i>Alumni</i>	<i>External</i>
<i>Academic Supports</i>	<i>AIT Administration, AIT staff</i>	<i>AIT faculty, AIT students</i>	<i>Internal</i>
<i>Curriculum Development & Reform</i>	<i>AIT faculty, AIT staff</i>	<i>AIT Administration</i>	<i>Internal</i>

4. Analysis of AIT Quality Cycle

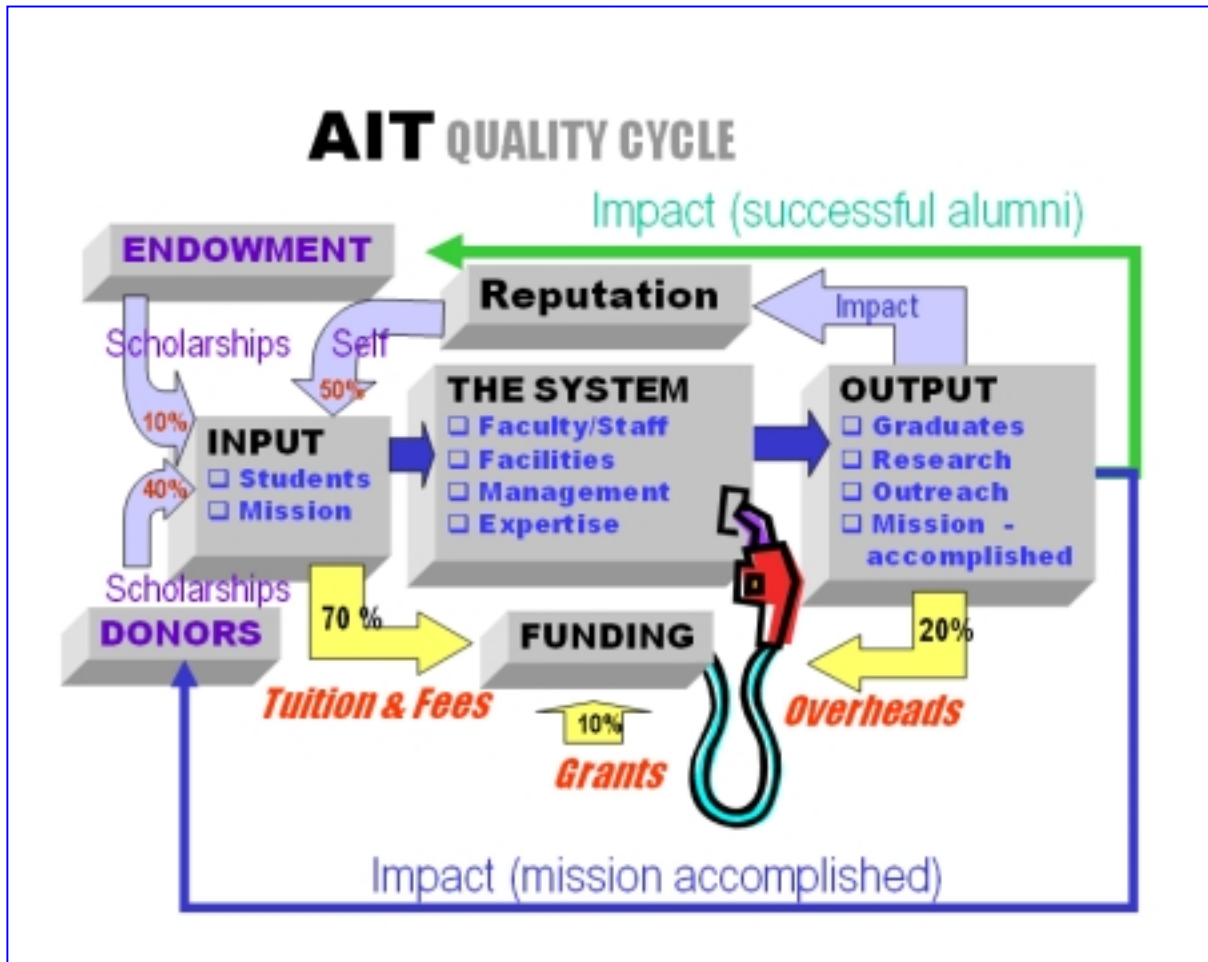
Figure 1 depicts the AIT Quality Cycle consisting of four main parts: the Input, the System, the Output, and the Impact.

The Input

Annually, new intakes of students arrive serving as input raw materials to the system. The mission of the institute provides the guiding “work order”. As a centre of higher learning, the students are the most important determinant of quality at AIT.

The System

In an academic system, the faculty serves as *the mould* that shapes students through teaching, consultation, thesis supervision and examination. Staff provides non-academic assistance that facilitates a conducive learning environment for students. The classrooms, laboratories, computers, library, recreational and campus facilities, serve



as modern hardware for the system while the management serves as the software.

Figure 1: AIT Quality Cycle

The Output

The outputs of the system are the graduates, researches and outreach services that include training courses, seminars, workshops and software development. The quality of outputs is measured in terms of how they fulfil the mission of the institute.

The Impact

The impacts of the outputs are the long-term actual benefits brought upon by the outputs. The impact of AIT graduates is often exhibited in the varied roles that they play in the society. The impact of AIT research outputs is reflected in their real application in industries, whereas the reach of outreach services takes the form of the recognition placed by the society on AIT's faculty members.

The Sustainability

When the effectiveness of AIT in fulfilling its mission receives recognition, donors entrust with more funds, which in turn support more outstanding student-inputs. The impact created by AIT's alumni and the successful acceptance of its research outputs in their respective market niches boost the institute's image, opening doors not only for more research grants but also for more self-financed students.

AIT's income is derived from three sources: (1) tuition & fees, (2) sponsored research overheads, and (3) grants. Ideally and to be sustainable, the ratio among the three is targeted at 70:20:10, respectively. Of the tuition and fees, 40% should come from scholarship donors, 50% from self-supported students, and the rest, 10%, from endowment.

5. Total Quality Management: AIT Style

Aligning with its mission, AIT is committed to creating a culture of excellence by exerting efforts in achieving the highest degree of quality possible from among its students, faculty and staff, and other spheres of operations. To this end, an integrated and Institute-wide mechanism is in place in fostering a conducive teaching, learning, and working environment. Through well-positioned feedback and monitoring system, quality indicators and standards are set. Only a constant and vigilant examination with a critical eye assures the level of quality at AIT.

All processes concerning inputs, system and outputs require concerned parties to follow a set of guidelines to come up with the quality expectations of its internal and external customers. Theoretically, quality evolves through three procedures:

1. Internal quality control

2. Quality auditing
3. Quality assessment

Internal Quality Control

Total Quality Management is embedded in the culture of every stakeholder – a concerted effort from all components. In an attempt to see that the abstract and elusive attribute called *quality* is present in all processes, the institute came up with a “*Total Quality Management Manual*” in 1996. The policies and procedures in the manual serve to remind its trustees, administration, faculty and staff, of the importance of being careful and persistent in the never-ending pursuit for quality.

At the School of Civil Engineering, a School-level “*SCE Quality Manual*” was completed in January 2002, serving as the first step in a 4-phased quality improvement process:

1. *Writing what we have been doing,*
2. *Writing what we should do,*
3. *Doing what we write, and*
4. *Recording what we do.*

Basically, the SCE Quality Manual describes existing processes in the School of Civil Engineering. With the aid of simple flowcharts, the manual identifies nine process operations at the school level: student admission, financial resource allocation, initiation of new ventures, master degree programs, doctoral degree programs, conduct of examinations, faculty recruitment, making and implementing academic policies, and visitor relations.

Quality Auditing

Quality auditing is a responsibility of individual schools at AIT. Auditing exercises create good platforms where accurate and objective assessment of outputs are undertaken, i.e., (1) number of graduates, (2) research outputs, and (3) outreach services including continuing education, professional consultancy and community services. An example is the “*Faculty Productivity and Performance Audits*” of the School of Civil Engineering, AIT.

Quality Assessment

Quality assessment measures the positive impacts of an output. In industries, the key impact of a product is easily measured with a review of its effect on market share. In the academic world, defining and measuring impacts are not simple tasks.

Normally, based on its mission, each unit must first build a consensus among its constituencies on the types of impacts most desirable. The weights attached to each type of impacts may vary from unit to unit and field to field. For example, one field of study may place more weight on the recognition of their research outputs, while another may pay more attention to the success of their alumni. At AIT, objectively assessing quality through impacts is a topic under ongoing deliberations.

6. Conclusions

TQM is an integral part of AIT's academic and policy orientation. The dimensions of quality encompass the quality of its programs, instruction, AIT graduates, and its non-academic attributes such as the library, laboratory facilities and other support services, including the governance of the institute.

At the School of Civil Engineering, the TQM system is designed to measure the output objectively and transparently through its 3-year rolling faculty productivity and performance audit report. A task that remains is the assessment of the impacts of these outputs, which is more subjective.

The integral involvement of faculty, students, staff, and AIT administrators and a regular audit exercise paves a path for its programs, courses, facilities and management to gradually transform to produce the best possible quality products. Their impacts can then be assessed in relation to relevant benchmarks and in accordance with AIT's mission.

7. References

Asian Institute of Technology, (July 2002), *Total Quality Management Manual*

Green, Diana, (1994), *What is Quality in Higher Education*, Society for research into Higher Education & Open University Press, pp.15

School of Civil Engineering, Asian Institute of Technology, (Jan. 2002), *SCE Quality Manual*,

School of Civil Engineering, Asian Institute of Technology, (May 2002), *Faculty Productivity and Performance Audit*.

