Sub-theme:	Different approaches to QA and their impact on efficiency, effectiveness and sustainability
Title:	A Maturity Model for Quality Assurance
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Abstract

The Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAVQ) is responsible for the quality assurance of qualifications that can be recongised under the Hong Kong Qualifications Framework (HKQF) which covers the academic, vocational and continuing education sectors. This paper argues that it is inefficient and ineffective to apply the same philosophy of quality assurance to all providers under the HKQF. At the same time, the legal requirements of the ordinance that underpins the HKQF must be satisfied. It is proposed that a maturity model can be adopted so that different quality indicators are appropriately selected for providers at different maturity levels. Depending on their readiness, providers can opt to seek accreditation at a particular maturity level. Demonstration of maturity at higher levels requires a significant body of evidence, but will be rewarded with a trust to quality assure the learning programme within a longer period of time. In this way, providers can make an informed decision about what accreditation service to request from the HKCAAVQ. It is reckoned that the effectiveness and efficiency of accreditation can be enhanced both from the providers' and HKCAAVQ's perspective.

Introduction

Many countries over the world have already set up qualifications framework. In Hong Kong, the Qualifications Framework (HKQF) has been officially launched on 5 May 2008. The primary objective of setting up the HKQF is to facilitate articulation between qualifications from the academic, vocational and continuing education sectors. The establishment of the HKQF is underpinned by the Accreditation of Academic and Vocational Qualifications Ordinance (AAVQO). For qualifications from the non-self-accrediting institutions, the Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAAVQ) is responsible for the quality assurance of qualifications that can be recognised under the AAVQO.

Due to the wide coverage of the HKQF, there exists a wide disparity in the nature of education/training providers and programmes that are be seeking recognition under the HKQF. In one end of the spectrum, there are small start-up providers offering short-term training programmes spanning a few weeks. On the other end of the spectrum, there are higher education institutions with a long history offering academic programmes spanning a few years. These providers are at different stages of maturity and their abilities to set up quality assurance mechanism vary significantly. In addition, the programmes are of different nature and design. Nonetheless, all these qualifications have to be quality assured by the HKCAAVQ under the provisions of AAVQO. It would be very inefficient and ineffective to apply the same philosophy of quality assurance to all these providers. At the same time, the legal requirements stipulated by AAVQO must be satisfied by all qualifications seeking recognition.

It may be tempting to use ‘fit for purpose’ as an answer to the above scenario. There are two potential problems. Firstly, to what extent the concept of ‘fit for purpose’ is compatible with the legal requirements is debatable. Secondly, while the concept of ‘fit for purpose’ is not strange to institutions in the higher education sector, many new and small providers found this concept incomprehensible, especially if they fail an accreditation exercise. This paper explores an attempt to develop a framework to address the problem, with a view to optimizing scarce resources for quality assurance, both from the provider’s or HKCAAVQ’s perspective. It starts the discussion by first revisiting some of the fundamental concepts of ‘quality’.

A Short History of Quality

Before the industrial revolution, quality was a result of craftsmanship. At that time, quality was more a form of art than science. With the introduction of assembly line and division of labour, there was a need to ensure that parts produced separately can be assembled together as a product. This called for a more scientific treatment of quality – quality control (QC).

According to Oakloand (2004), QC is often associated with the question "Have we done the job correctly?". In other words, the focus of QC is on the product and the product is checked against a prescribed specification. Once a product is found to be compliant, then how the product is produced is of little significance. The main problem of QC is that the problems are usually identified too late, at the end of production, resulting in wastage of raw materials, missed deadline and unsatisfied customers. Quality assurance (QA), as described by Oakland, *is broadly the prevention of quality problems through planned and systematic activities around processes*. In other words, QA focuses on the processes. QA is not supposed to replace QC, but to include QC. However, setting up a quality assurance system is usually a lot more sophisticated than performing quality control.

Despite producing products that consistently meet the specifications, it is not uncommon that a company may find its sales decreasing. This is because the products are not what the customers want. Here come the concept of total quality management (TQM) and 'fit for purpose', which take an integrated approach to meet the needs of the customers. A basic belief of TQM is that quality is not associated only with the product or production process, but with the development of a quality culture by everybody involved in the delivering of a product.

In comparison, educational quality assurance is a relatively new development. The notion of quality assurance in the higher education started to gain its momentum around late 70's and throughout the 80's. A lot of concepts in educational quality assurance originated from the industrial or service sectors. There is no shortage of discussion in the literature about the notion of quality in education (Harvey and Green, 1993; Bowden and Marton, 1998). This abundance of discussion probably suggests controversy rather than consensus. In order to see how the concepts of quality can be applied in the context of education, it is beneficial to visualise education/training as a process.

Education/Training as a Process

To apply the concepts of quality in education/training, the embodiment of education and training can be considered as a process with intermediate products at different stages. It starts with the setting of mission, values and objectives. The first intermediate product is the provider itself. For example, the setup (including the governance) of the Hong Kong University of Science and Technology is quite different from that of Chinese University because of their different missions. After a provider has come into existence, it develops learning or training programmes. Again, because of the differences in the setup, a programme from the Hong Kong University of Science and Technology would be different from a programme from the Chinese University. A programme can be considered as another

intermediate product in the process, which in turn produces the learning outcomes to be achieved at the completion of a programme. However, learning outcomes should also be regarded as an intermediate product. This is because once a student has been equipped with particular skills or knowledge at graduation, the student is supposed to perform in a society according to the mission, values and objectives set in the beginning, which is the final product in the process. Ideally, this should be the definitive check of the quality of education or training. Quality check can be performed at different stages in the process. However, performing quality check for the final product is more difficult. This is because checking the final product sometimes involves longitudinal research lasting for years, if not decades. The above process is summarised in the following diagram:

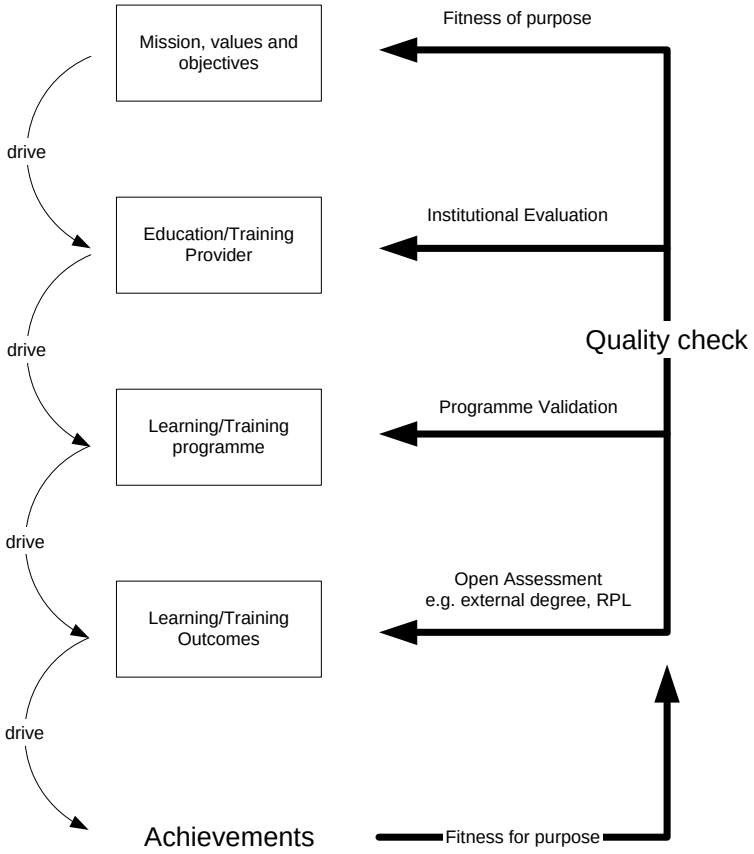

Figure 1: Education/Training as a process.

As can be seen in Figure 1, depending on where quality check is applied in the process, different philosophies can be adopted. For example, in open assessment, once a student has achieved an ‘A’ in Physics, nobody will and should question the qualification and experience of his/her Physics teacher. The grade is the only quality indicator that is relevant. The following sections examine the problem of selecting quality indicators.

Quality Indicators

In order to measure quality, quality indicators have to be developed. Traditionally, quality indicators are selected based on the input-process-output model. Some typical quality indicators in these three categories are tabulated below:

Input	Process	Output
▪ Staffing ▪ Students ▪ Financing ▪ Facilities	▪ Programme Design ▪ Teaching and Learning ▪ Counselling	▪ Learning outcomes ▪ Employment ▪ Attrition rate

The selection of quality indicators appears to be highly dependent on the philosophy and belief of a particular accrediting agency. Most of the time, a mixture of quality indicators are selected from the input, process and output categories. One example is the accreditation criteria selected by ABET for engineering programmes. It appears that theories for the selection of quality indicators are quite scarce in the literature.

In the context of the HKQF, one can easily see that it would be quite inefficient and ineffective, if not impossible, to apply the same set of quality indicators to all providers in the spectrum. If different quality indicators are to be applied to providers of different nature, it is of paramount importance that these quality indicators are developed within a common framework to achieve the same objectives. Only in this way, the framework will not be criticized for setting different standards for different types of providers, or exercising favoritism. It should also be remembered that the framework should address the legal requirements of the ordinance. As such, there should be a formulation for a unified model of quality indicators.

Process versus Product

When considering quality indicators, as a general issue in quality management, the debate of process versus product has never subsided. This debate is intimately related to the concept of QA and QC. As explained previously, the focus of QC is on the product and the product is checked against a prescribed standard. From a consumer point of view, if a product is found to be compliant, then how the product is produced is of little significance. If you are buying from an unknown supplier, it is most logical to buy a few batches of product from the supplier to start with. Only when you are comfortable to establish a long term business relationship with the supplier, then you would spend time investigating their capability of producing quality product consistently, that is, to check the quality assurance system. In the context of

the HKQF, this suggests that asking a new provider to have an established QA mechanism at the beginning is impractical.

Following this logic and equipped with the above model of the education/training as a process, it is argued that the approach adopted for quality assurance should gradually shift from more QC-oriented to more QA-oriented, depending on the maturity of the providers. As a result, the quality indicators should also be adjusted accordingly.

Figure 2: QC versus QA.

In a QC-oriented approach, the focus is on the product. As discussed above, there are a number of intermediate products. Where should we start? It is suggested it should be focusing on the learning programme. The HKQF is primarily an outcome-based framework. For a qualification to be recognised under the HKQF, a requirement is that the learning outcomes of a programme can be pitched at a level under the HKQF. A learning programme can be regarded a product designed (by an institution) to deliver the intended learning outcomes. There are five essential elements of a learning programme:

- Staffing
- Assessment
- Programme content and structure
- Equipment/facilities
- Admission requirements

These are the elements that will have a direct impact on the learning outcomes. Other factors can be considered as driving forces behind working to come up with a right specification of a programme. Therefore, if evidence is available that all these elements are congruent with the intended learning outcomes, how this programme is designed in the first place is not important. One may argue that a provider is supposed to monitor the operation and delivery of a programme and to make continuous improvement. Simply focusing at the five elements above tells nothing about this capability. This is actually the QA mentality that this paper is trying to argue against for immature providers. The reason is twofold. Firstly, not being able to continuously improve a programme does not necessarily mean that the programme has failed to meet the requirements under AAVQO. Secondly, as a QA agency, there is also an enabling role for the HKCAAVQ to play. A learning programme should not be excluded from the HKQF simply because its provider has yet to prove the capability of continuous improvement. Therefore, for immature providers, the HKCAAVQ should be regarded as part

of the feedback loop for a provider. It should be emphasized that the shifting of approach does not signify a shifting of standards. They are just different means to achieve the same ends.

The concept of maturity has been mentioned many times in this paper. In order to apply this concept, it must be clearly defined so that providers understand why they are treated different under the same framework.

A Maturity Model

The concept of maturity is not a new one in the world of quality assurance. The Capability Maturity Model (CMM) is a well established model in software engineering. Since then, it has been adopted and adapted in areas outside the software industry. According to Crawford (2001) the key characteristics of the five levels of maturity are:

Level of maturity	Key characteristics
Initial	Few processes are defined, and success depends on individual heroics.
Repeatable	The basic processes are in place to repeat earlier success.
Defined	The processes are documented, standardized and integrated.
Managed	Detailed measures of the process and product quality are collected. Both processes and products are quantitatively understood and controlled.
Optimising	Continuous process improvement is enabled by quantitative feedback from the process and from piloting innovative ideas and technologies.

Table 1: Five levels of maturity.

This model provides a solid basis for evaluating the maturity level of a provider. In order to demonstrate a higher level of maturity, a provider has to provide more evidence. Therefore, a start up provider could opt to aim at the lower levels of maturity, reducing the cost and complexity of the accreditation exercise. Nonetheless, a provider at the lowest level of maturity will be given an opportunity to operate a recognised learning programme under the HKQF, as long as the learning outcomes can be pitched at a particular level under the HKQF and the provider is competent to operate the learning programme. This will be more effective and efficient both from the providers' or HKCAAVQ's perspective.

There should be sufficient incentive for the providers to move up the maturity ladder. The key incentive would be the validity period, which can be translated into time and money. By rating a provider at a lower maturity level, this means that the provider is not capable of

performing continuous improvement itself. In this case, its learning programmes will be given a shorter validity period so that the HKCAAVQ can perform regular reviews of the programmes to evaluate the operation and make recommendations for improvement. On the other hand, for providers at higher maturity levels, who have demonstrated their capability of continuous improvement, a longer validity period is warranted. In this way, the providers can see the benefit of investing on setting up a quality assurance system and to provide the corresponding evidence. As a provider moves up the maturity ladder, a different set of quality indicators will be selected to evaluate the provider against the appropriate characteristics at that level.

Conclusion

Starting with a description of the background of the HKQF, this paper argues that it is ineffective and inefficient to apply the same philosophy of quality assurance to all providers under the HKQF. However, any differential treatment of providers must be able to withstand scrutiny from the legal perspective.

After revisiting some of the key concepts in quality management and how they are applied in the context of education, it is argued that a maturity model can be adopted so that providers at different levels of maturity are evaluated by a different set of quality indicators. When a provider becomes more mature, there will be a gradual shift of emphasis from product (programme) to process. It is pertinent to conclude that for the immature providers, the HKCAAVQ should actually be part of the feedback loop, instead of acting as an external agent to review a quality system. This is how the HKCAAVQ can play the role of gate-keeping and be enabling at the same time.

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