

Assessing Service Quality for Continuous Improvement in Higher Education

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Abstract

To address quality issues in higher education, instruments must be developed to appropriately identify and measure service attributes, as well as allow for an understanding of the users' expectations and values. Furthermore, these instruments should facilitate the identification of the critical areas for improvements and their priorities. Identification of priorities is useful, since continuous improvement in an area that is not valued is an inefficient use of resources. In this paper, we present the fundamental principles for developing the tools that will allow for consistent assessment. These results will provide planners with comprehensive feedback for improvement which will allow them to achieve a higher level of quality. To illustrate this generalized approach, two examples of assessing for quality improvement are discussed.

Introduction

With the increase in the share of any service comes the increased concern over the perceived deterioration of the service quality (Mersha & Adlakha, 1992). Higher education is one of the most critical service sectors and its quality is essential to society's future and continuing growth. For this reason there have been several publications on improving quality in higher education (Madu & Kuei, 1993; Owlia & Aspinwall, 1996; Koch & Fisher, 1998; U.S. Department of Education, 2006).

In 2004, the Association of Universities and Colleges of Canada (AUCC), the American Council on Education (ACE), the Council for Higher Education Accreditation (CHEA), and the International Association of Universities (IAU) issued a statement on *Sharing Quality Higher Education Across Borders: A Statement on Behalf of Higher Education Institutions Worldwide* which outlines a set of principles that should guide the provision of quality education. Among the many questions in the issued statement, the following fundamental question was raised regarding quality in an institution of higher education: "Does the institution have in place a process of ongoing quality review, feedback, and improvement that relies on faculty expertise and incorporates the views of students?" (ACE, AUCC, CHE, & IAU, 2004).

It is clear from this question that one of the most important and fundamental issues to address in promoting the continuous improvement and achievement of quality in higher education is to have a process in place for ongoing quality review. The success of any ongoing quality review process, however, depends on monitoring the process through appropriate measures. In fact, having a reliable measure is the key to success for the entire continuous improvement process.

In what follows we discuss the fundamental principles for developing effective quality measures. We also illustrate the creation of quality gaps and quality indices. To demonstrate the versatility and ease of use of quality indices in simplifying the continuous improvement process, we present two examples of service improvement in higher education.

Developing Quality Measures

Definitions of quality vary; however, much of the terminology within the definitions is consistent. For example, the International Organization for Standardization (ISO) defines quality as "the totality of features and characteristics of a product or service that bears its ability to satisfy stated or implied needs" (8402-1986). Similarly, according to the American Society of Quality (ASQ), it is "a subjective term for which each person or sector has its own definition. In technical usage, quality can have two meanings: 1) the characteristics of a product or service that bear on its ability to satisfy stated or implied needs; 2) a product or service that is free of deficiencies. According to Joseph Juran, quality means 'fitness for use'; according to Philip Crosby, it means 'conformance to requirements'" (ASQ, 2010).

A commonality in both of these definitions is that the terms *needs*, *fitness for use*, and *requirements* are all defined by the receiver of the product or service. The *receiver* is the person or group of people that is obtaining the product or service. For example, in a classroom setting, students would be classified as the receivers since they are obtaining the product (knowledge). To be consistent with these definitions, the elements used to develop our quality indices will also be in the receiver domain.

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To determine quality we must determine the receiver's perception about the service in three ways. First, we must find out the *Level of Importance* of the product or service: that is, how important the product or service is to the receiver. Second, we must determine the *Level of Expectation*: that is, what the receiver expects of this product or service. Finally, we need to establish the *Level of Satisfaction*, or how satisfied the receiver currently feels about the product or service. Note that all three of these perceptions are measured on a five-point Likert scale.

To create the index for quality, we first need to determine how closely the receiver's current level of satisfaction with the product or service approximates their expected level. We term this deviation as the *Quality Gap*:

$$\boxed{\text{Quality Gap (QG)}} = \boxed{\text{Level of Satisfaction}} - \boxed{\text{Level of Expectation}} \quad (1)$$

Following Griffin and Hauser (1993), we can take the Quality Gap and weight it by its Level of Importance to the receiver to obtain the *Quality Index*:

$$\boxed{\text{Quality Index (QI)}} = \boxed{\text{Level of Importance}} \times \boxed{\text{Quality Gap}} \quad (2)$$

From Equation 1, it is clear that if the Level of Expectation is higher than the Level of Satisfaction, a negative Quality Gap will result. A negative Quality Gap will result in a negative Quality Index which implies an unsatisfied receiver. On the other hand a positive Quality Gap and Quality Index indicate a delighted receiver since the product or service is more than meeting his or her expectations. A zero Quality Gap and Quality Index imply a satisfied receiver. Given the five-point Likert scale capturing the receivers' perceptions, the QI for the least satisfied receiver would equal -20, whereas the QI for the most satisfied receiver would equal 20.

Thus, to use quality indices to assess a product or service, each receiver's levels of importance, expectation, and satisfaction regarding the attributes of the product or service should be determined. The resulting survey data from different receivers could then be compiled to calculate a simple average Quality Index for all respondents, or used to perform more rigorous statistical analyses.

For illustrative purposes, we present two usages of the Quality Index resulting from Equation 2. We demonstrate how this index can be used for assessment and continuous improvement in the service sector of higher education.

Example 1: Assessing Course Learning Objectives

Course learning objectives outline what a student should expect to learn within a particular course. To ensure that these learning objectives were met to the students' satisfaction, the Quality Index, defined in Equation 2, was utilized. Each team within a capstone course was assessed and an average *Initial Quality Index* (QII) for each objective was generated. These quality indices were based on the targets and priority sets for each learning objective and used as indicators of the gap to be closed for each team. These gaps were used to identify areas for improvement of the course itself as well as guide and monitor the activities of each team until the end of the course. At the end of the course, using the same targets and priorities, *Final Quality Indices* (QIF) for each team were again developed to measure improvement.

The course Initial Quality Index (QII) and the average Final Quality Index (QIF) assessment data are reported in Table 1 and displayed in Figure 1. The QII figures indicated that negative Quality Gaps existed within all of the course learning objectives. By identifying where these gaps existed, the target areas for improvement were identified, enabling the instructor's effort to be focused in the appropriate areas. For the specific course presented in this example, it is clear from the QIF that significant improvement occurred. The course had met expectations in two quality measures and exceeded them in three out of the five learning objectives.

Example 2: Assessing and Improving the Quality of an Educational Conference

The Academy of Process Educators is an international group of faculty and administrators who, among other things, are concerned about improving the quality of measurements and practices for all aspects of higher education. In 2008, the theme of the Academy's annual conference was "Aligning and Implementing Continuous Quality Improvement in Higher Education." When planning for this conference, attention was focused on the need to self-apply Process Education™ principles to the design of the conference to increase the probability that it would meet its intended goals. The planning group used a set of quality characteristics previously established by the Academy to assess the conference. Using the survey data collected at the end of the conference, an average Quality Index for each quality characteristic was developed using Equation 2.

These quality indices were used for both assessment and continuous improvement of the conference. We sorted the Quality Index from the lowest to the highest

Table 1: Course Initial and Final Assessment Data

Assessment is based on the following scale:					Initial Quality Index (QII)	Final Quality Index (QIF)
1 Low	2	3 Medium	4	5 High		
Showing leadership in contributing to the success of their teams (Importance = 4, Expected Level = 4)					-0.33	1.33
Work collaboratively to synthesize information and formulate, analyze, and solve problems with creative thinking and effective communication (Importance = 4.5, Expected Level = 4.5)					-2.63	0.375
Make professional decisions with an understanding of their global, economic, environmental, political, and societal implications (Importance = 4, Expected Level = 4)					-1.33	1.0
Apply modern tools and methodologies for problem solving, decision making, and design. (Importance = 5, Expected Level = 4.5)					-2.50	0.0
Commit to professional and ethical practices, continuous improvement, and lifelong learning (Importance = 4, Expected Level = 4)					-2.33	0.0

Figure 1: Initial and Final Course PEO's Quality Indices

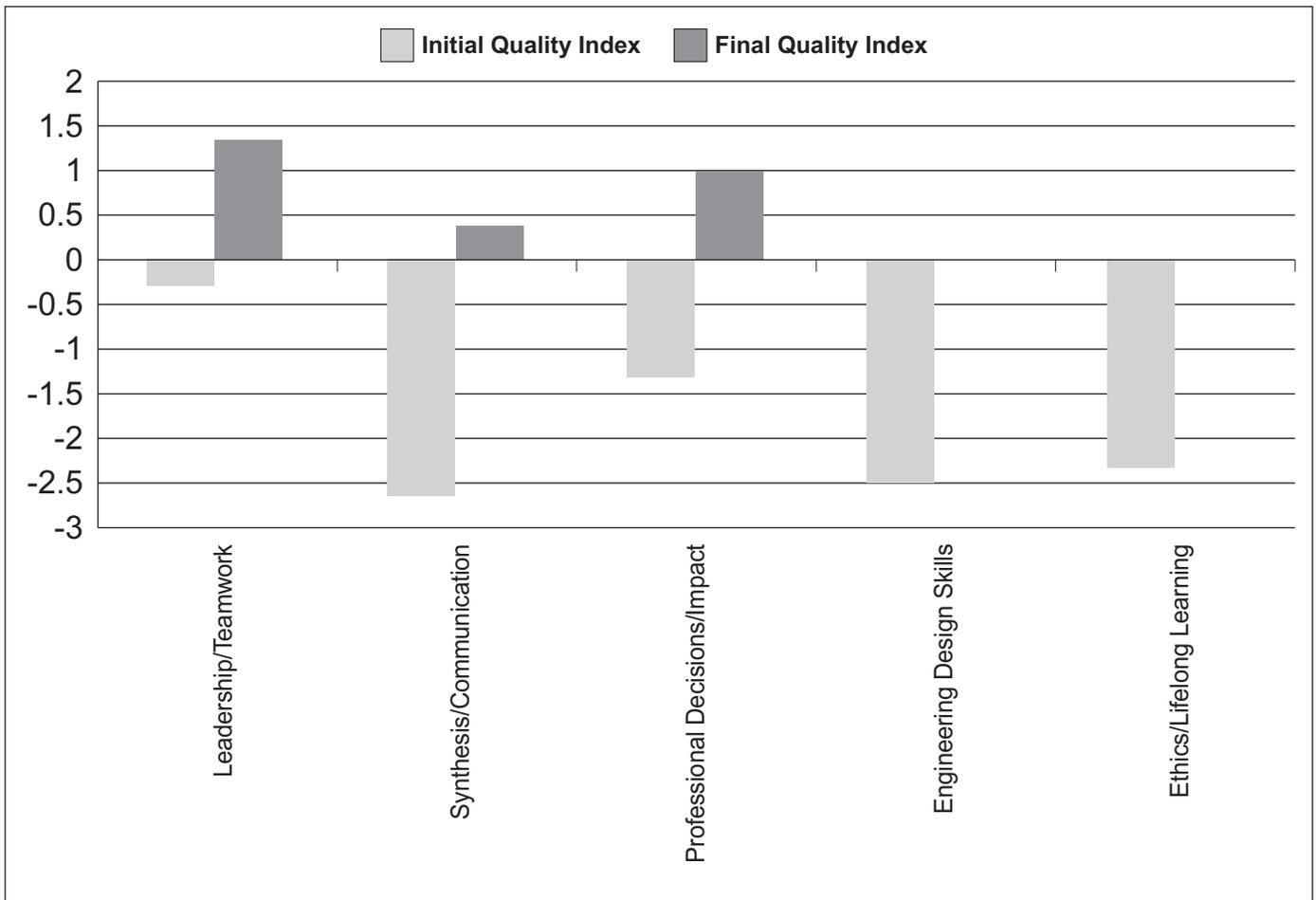
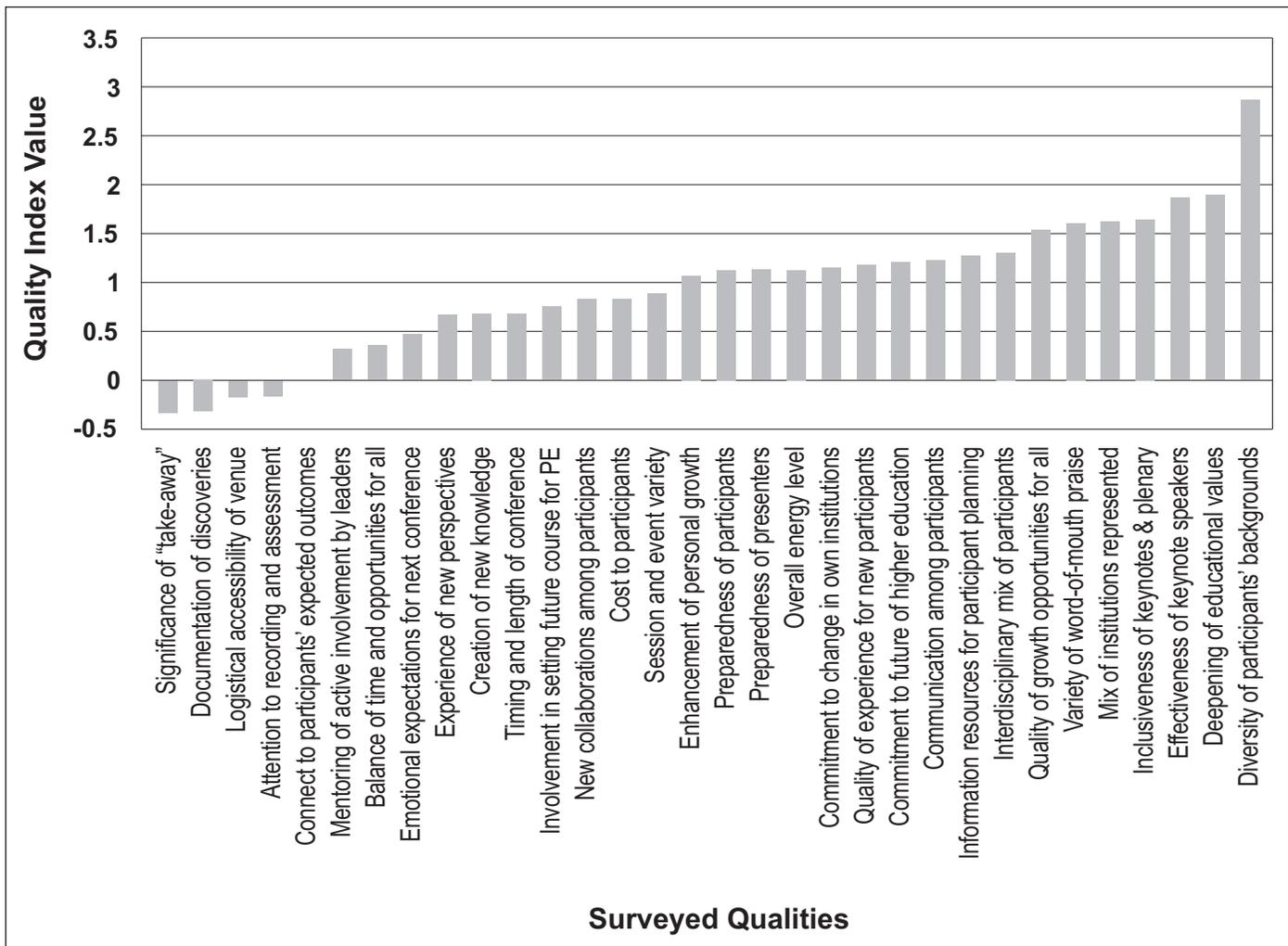


Figure 2: Visual Representation of 2008 Conference Quality Indices

values to easily determine the strengths and areas of improvement for the 2008 conference as depicted in Figure 2. The conference strengths included such characteristics as diversity, success in deepening educational values, and effectiveness of keynote speakers. The conference, however, had the following four areas of improvement: significance of "take-away," documentation of discoveries, logistical accessibility of venue, and attention to recording and assessment.

In keeping with the Academy of Process Educators' philosophy of continuous improvement through assessment, as participants began the process of planning for the 2009 conference, they addressed how to close the quality gaps that had been identified as areas for improvement in the assessment of the 2008 conference. In addition, the assessment team determined that improvements should be made in the assessment tool itself. It was realized that focusing on *characteristics* generated a survey that was too long and had much redundancy. Therefore, the assessment team identified nine key *attributes* that a quality conference

should exhibit. A quality conference should be: 1) highly productive, 2) synergistic, 3) creative, 4) mind-expanding, 5) values based, 6) egalitarian, 7) participant based, 8) accessible, and 9) credible. The assessment team ensured that each of the characteristics assessed using the 2008 instrument were encompassed within the definition of an *attribute* that was to be assessed in the 2009 conference instrument. For example, within the definition of particular attributes, the four identified areas for improvement are now included (see Table 2). *Significance of the Take-Away* is now encompassed in the *Highly Productive* attribute. *Documentation of Discoveries* is encompassed within the *Mind Expanding* attribute. The *Logistical Accessibility of Venue* characteristic is measured within the *Accessible* attribute. Finally, *Attention to Recording and Assessment* is contained in the *Participant Based* attribute.

Based on these attributes an improved assessment tool was developed and administered at the end of the 2009 conference. From the assessment data of the 2009 conference as shown in Figure 3, the conference had met

Table 2: Definitions of the Attributes for a Quality Conference

Highly Productive	Participants are well prepared by the conference website, preliminary information, and the conference program notebook to engage in learning that will transform their educational theory and practices. The conference program builds on past program activities and content; it has an efficient schedule that results in high energy and significant takeaways.
Synergistic	Brings together a very diverse and interdisciplinary group of PE educators from community colleges, liberal arts colleges, and research universities with different experiences, practices, and research bases, producing a productive learning environment in which participants and presenters are willing to share, challenge, and learn from each other through various forms of activities and reflection time.
Creative	Takes risks to use non-standard approaches, incorporates best practices from professional development, integrates best practices and features of conferences from many disciplines and, by means of its assessment culture, continually explores new ways to enhance the conference's outcomes by incorporating ideas from the diverse population of participants.
Mind Expanding	Challenges all participants about current thinking through new paradigms, theory, and associated practices through modeling, active discussion, research activities, breakout sessions, casual conversations, and documentation of discoveries.
Values-Based	Participants find their educational values and principles to be validated and deepened by the learning and growth experiences in a program that demonstrates how to actively and directly apply Process Education to many contexts and purposes important for the future of higher education. Participants feel an increased commitment to become part of the larger process movement and to bring change to their own institutions.
Egalitarian	Everyone feels welcome and has many opportunities to express their views and insights. Sessions and events are varied so that those new to Process Education as well as those with more experience find a full set of satisfying conference experiences. The keynote and plenary sessions invite all participants to discuss, question, and make decisions about how Process Education can make a difference for all of higher education.
Participant-Based	Design of the program meets stated outcomes of participants by encouraging and mentoring active involvement in relevant roles and growth opportunities during the conference that will also add value and expanded perspectives for others; involvement of leaders and participants will be balanced in terms of time, program options, and interactions. Assessment of participants' expectations results in substantive modification of planning for future a conference.
Accessible	The location and overall venue for the conference meets the practical and logistical needs of participants. The timeliness of information, number of days, registration cost, lodging, food, airline options, local travel arrangements, and social opportunities are better than most conferences experienced by participants.
Credible	The conference generates positive and extensive word-of-mouth praise that will strengthen participation in the future. The keynote speakers are well known and provide powerful messages to move participants to action. The proceedings demonstrate careful recording, assessment, and peer review to provide professionally valuable documentation of sessions and of the conference as a whole.

the participants' expectation in the area of being *Values Based* and exceeded expectations in all other areas, with significant strengths in the areas of *Creativity* and being *Mind Expanding*. Additionally, it is clear that the four identified areas for improvement from the 2008 conference had been successfully addressed.

Conclusions

To address quality and continuous improvement issues within higher education appropriate measurement tools are necessary. The approach presented in this paper for developing quality indices addresses the satisfaction level of the receiver as well as the receivers' expectation level and the importance of a specific attribute for a product or service. By calculating the difference in the receivers' satisfaction level and level of expectation, a quality gap can be identified. Weighting this quality gap by the receivers' perceived level of importance generates a Quality Index. One of the most beneficial features of this Quality Index approach is the visual presentation of data that highlights the areas of strength and areas for improvement along with the relative magnitude for each. Identifying the target areas for improvement as well as

the receivers' perception of their importance is essential since it is an inefficient use of resources to expend effort to improve areas that are not perceived as important to receivers.

To illustrate the possible uses of the Quality Index approach, we presented its use in both a classroom and conference setting. When the quality indices are determined early in a course, it is possible to identify performance gaps and establish the correct strategy for continuous improvement throughout the semester. These quality indices were used again to assess whether improvements in meeting the course learning objectives were achieved. The Quality Index approach was also used to assess quality for an annual conference. The indices not only identified areas for improvement within the conference, they were also useful in improving the assessment tool itself. Although we only present two examples of how this Quality Index approach can be used as a measuring tool for continuous improvement, this approach has the ability to address many aspects of service quality in higher education.

Figure 3: Visual Representation of 2009 Conference Quality Indices

