

## **Quality, Cost, and Value-Added in Comprehensive Institutions of Higher Education: Toward New, Testable Approaches**

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The following proposal is predicated on the premise that the higher education community needs to be more analytical and systemic in its understanding of costs and their relationship to quality. Because data drive discussion, we are proposing to develop a process that will lead faculty and others to ask the question: *Through what measures of quality in relation to cost can we demonstrate that students are uniquely advantaged for having selected our institution, our degree program, or my course?* Our thesis is that the outcome of such questioning will be an uncommon attention to course design, course sequencing, collaboration within and across disciplines, strategies to improve efficiency, and short cycles of formative evaluation. We also believe that the process being proposed will result in similar dynamics in student and support services. In other words, our goal is to design a process that will kindle a thoughtful discussion about what cost-effective quality is in a comprehensive institution, at Northwest, throughout Missouri, and nationally.

Developing the process—which we will call the “Q/ABC Seven-Step Process” or, simple, the “Q/ABC Process”—will require the accomplishment of eight major objectives. At the end of each academic year, Northwest will report to the Sloan Foundation regarding progress toward, or the accomplishment of, these objectives:

1. To integrate Activity-Based Costing into Northwest's existing Seven-Step Planning Process.
2. To align Northwest's budgeting and rewards systems so that use of the process in all sectors of the University is encouraged.
3. To develop and publish a handbook for using the process containing definitions, detailed instructions, worksheets, caveats and examples.

4. To have Northwest's faculty use the Q/ABC Process and report that it adds substantive value to the way they plan and evaluate their activities.
5. To help other institutions in Missouri and nationally pilot test the process.
6. To use a variety of channels for disseminating what is being learned and to build support for this approach by developing a web site and preparing articles for submission to appropriate journals.
7. To draft a final detailed report and book manuscript describing the project and its results.
8. To convene a conference at the end of the project.<sup>1</sup>

### **THE CONTEXT**

Public concern over the price of post-secondary education is driving Federal, regional and state policy makers to review the cost structure and pricing policies of the nation's public colleges and universities. According to a recent American Council on Education (ACE) poll, 71 percent of the respondents believe that a four-year college education is not affordable for most Americans. Much of the scrutiny is aimed at the nation's "non-medallion", primarily undergraduate, comprehensive state colleges and universities. These institutions are the workhorses of American higher education, enrolling the largest percentage of students, training the most teachers and providing the entry point to baccalaureate level education for the majority of first generation college bound young people. These institutions are also at the forefront in responding to new markets and demands for internet-based instruction.

Working under a Congressional mandate, on January 21, 1998, the National Commission on the Cost of Higher Education issued a report entitled, "Straight Talk About College Costs and Prices." The report identified nine cost and price drivers: financial aid, people, students, administrators, faculty, facilities, technology, regulations, and expectations. On pages 21-23 of their report, the Commission suggests strategies for controlling costs in these areas, the first of which is for individual institutions to "conduct efficiency self reviews." Subsequent to the issuance of this report, Congress again passed legislation (Public Law 105-244) relating to the costs of higher education, this time calling for the development of a price index that measures the price behavior of

the goods and services used by colleges and universities in producing their outputs. The law charges the Bureau of Labor Statistics to work with the National Center for Education Statistics in developing the index. So far, the BLS has refused to get involved. Nonetheless, it is clear that Congress is determined to understand, influence, and, at least to some extent, control the cost and price of higher education.

On June 3-5, 1998, 110 political and higher education leaders from 12 states attended the Higher Education Policy Summit in Oak Brook, Illinois, sponsored by the Midwestern Higher Education Commission, the Midwestern Legislative Conference and the Midwestern Governors Conference of the Council of State Governments. Issues relating to the relevance, affordability, access, quality and appropriate state funding levels for higher education were debated. Although more than one of the presenters brought in to provide background information on these issues urged the group to seek a more informed understanding of the complex relationship between cost and quality, the final recommendations regarding affordability contained in the published report—*Taking up the Challenge*—skirt the issue of quality.

On December 9, 1998, the Missouri Coordinating Board for Higher Education established the Missouri Commission on the Affordability of Higher Education and charged the group to recommend policies regarding “access, quality, and efficiency for the state’s system of higher education.”

## **THE CHALLENGE**

Given that public colleges and universities will be asked to demonstrate their efficiency, there is an urgent need to develop a process for cost analysis that begins with a consideration of quality. The commonly accepted definition of institutional quality that drives faculty and institutional aspirations—along with rankings such as those published by *U.S. News and World Report*—is that quality is a function of inputs (e.g., high admissions standards, large endowments, etc.) and/or an artifact of developing a research reputation. Many assert that the public even believes that quality is highly correlated with price.

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<sup>1</sup>Robert Zemsky suggested the possibility of disseminating the results of the project in partnership with the *Knight Higher Education Collaborative: President’s Roundtable*, which he directs. Missouri is part of that program.

We propose to change this focus by developing a process in which the techniques used in activity-based costing are integrated into a mature, process-oriented model developed and used at Northwest Missouri State University for defining and improving quality. All work is process. A process is a sequentially linked set of activities designed to produce a desired outcome. Activities produce results and generate costs. Our proposed Q/ABC Process defines acceptable results as measurable indicators of quality. Those who use the Q/ABC Process (administrators, faculty, external stakeholders) will be challenged to think about quality in different terms than they traditionally do; namely, as a measure of value-added resulting from maximally efficient processes. Such a definition does not suggest an indifference to inputs or faculty creativity. It does, however, suggest careful and sustained attention to the links between instructional strategies, student learning and costs.

### **A REVIEW OF RELATED ACTIVITY AND LITERATURE**

In order to understand the current state of quality management and activity-based costing in higher education, a faculty member, Dr. Rahn Wood, and three teams of Northwest graduate students were asked to review related literature. The students reviewed literature relating to cost and quality in higher education while Dr. Wood focused on activity-based costing and possible applications in higher education. The students were unable to find sources where the analysis of quality and cost were integrated as is being proposed here. Dr. Wood found only one example of an attempt to apply activity-based costing techniques in higher education. What follows is a summary of current activity relating to quality management in American higher education followed by a summary of the history of activity-based costing including the single source relating to higher education.

After more than a decade of tentative curiosity regarding the possible benefits of applying quality management principles to higher education, there appears to be a growing conviction on the part of educational administrators that—in this area, at least—the academy can learn from the factories. Current attention to quality appears to be driven in large part by the success of the Malcolm Baldrige National Quality Award in business and the adaptation of the criteria for use in education. Those criteria were formalized following a pilot test at Northwest Missouri State University in 1995. Since

that time, the 37 states that sponsor Baldrige-based quality awards have added education categories; nearly all have had applicants. In January, 2000, the first national award will be given in education. Sixteen applicants are vying for this recognition.

One of the earliest efforts to systematically promote quality management in higher education was the TQ Forum, founded in 1989 by then president and CEO of the Xerox Corporation, David Kearns, shortly after his company won the Baldrige Award. In addition to the founding universities, industrial giants such as Procter and Gamble, General Motors, and IBM joined Xerox in committing time and resources to the group. The stated mission of the Forum is “to prepare graduates for success in our global, knowledge-based, culturally diverse, and rapidly changing environment.” The goals adopted by the group include: “to promote interchanges between the business and academic communities in an area of common interest—teaching Total Quality; to educate future leaders of our nation in the principles and methodologies of Total Quality; and to develop and communicate the knowledge that will accelerate the practice of Total Quality.” Participants include 62 universities and 34 companies representing 32 of the 50 states. After a period of disillusionment and introspection prompted by the apparent difficulty of penetrating the academic veil with quality principles, the influence of the Forum seems to be growing.

In 1991, a similar group targeted on two-year institutions was organized called the Continuous Quality Improvement Network for Community and Technical Colleges (CQIN). Started with 13 members, this group has grown to 29 members from all over the United States. Currently, they are actively seeking members from among four-year institutions. While the TQ Forum has focused primarily on teaching quality, CQIN seeks to stimulate “active organizational transformation via ‘out-of-box’ learning and sharing practices.” In addition to sponsoring training and sharing activities for presidents and chief academic officers, the group has developed strategies to enhance active institutional learning for faculty, staff, and trustees. Recently, the group began seeking grant funding to work on expanding the use of the Baldrige Criteria in education.

The latest similar large group was formed earlier this year (1999) and is called the National Consortium for Continuous Improvement (NCCI). Among those attending the organizational meeting were representatives from 39 institutions and associations, including non-profit associations that support higher education. A set of goals similar to

those of the TQ Forum and CQIN were adopted including “to support the use of the Baldrige framework in higher education, uses of dashboard/balanced scorecard indicators, and a focus on continuous improvement in higher education.” In addition to annual institutional membership fees, this group is underwritten by the National Association of College and University Business Officers (NACUBO).

Finally, the most notable indicator that quality is gaining a foothold in higher education is the spate of current reengineering activity going on among accrediting organization, both regional and program specific. In the past, accreditation has focused mainly on compliance with some attention to planning and, most recently, assessment. Now several accrediting bodies are seeking to wed evidence of compliance with evidence that systems are in place to ensure continuous improvement into the future. Northwest successfully piloted the use of a Baldrige-based award application in lieu of a traditional self-study as part of its ten-year North Central Association review. Subsequently, the NCA received a \$1.5 million grant from the Pew Charitable Trusts to develop an alternative path for re-accreditation based on the Baldrige Education Criteria. The Western Association of Schools and Colleges also is embarking on a renewal of their criteria that will incorporate principles of quality management. Finally, several specialized accrediting associations are exploring or have integrated quality management concepts into their processes.

While quality management enjoys a growing cadre of advocates and practitioners in higher education, currently there are few published examples that suggest the use of activity-based costing in higher education other than as an opportunity for exploration<sup>2, 3</sup>. No case examples exist yet, since there are no published examples of ABC having been implemented, and a dearth of literature suggesting how ABC might be implemented.

The August 9, 1999, issue of *Computerworld* contained a useful list of ABC-related definitions:<sup>4</sup>

- **Activity:** Any event or transaction that causes a cost to be incurred in an organization.

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<sup>2</sup> Berry, L. E., and J. Scheumann (1998). “The Controller’s Good Intentions,” *Financial Executive*, January-February, pp. 56-62.

<sup>3</sup> Foster, G. and S. Young (1997). “Frontiers of Management Accounting Research,” *Journal of management Accounting Research*, Fall, pp. 108-122.

<sup>4</sup> Chutchian-Ferranti, Joyce (1999). “Activity-Based Costing,” *Computerworld*, p. 54.

- *Activity Center*: A collection of similar activities in one place.
- *Cost Driver*: A unit of output that's used to calculate the cost of each activity.
- *Chargeback*: Identifying the cost of providing a product or service to a customer and billing the customer for that product or service.
- *Activity-Based Management (ABM)*: The use of activity-based costing to help managers focus on the continuous improvement of operations and processes.
- *Process Value Analysis (PVA)*: A systematic approach to understanding the activities required to provide a product or service. PVA identifies all resources-consuming activities involved in producing the product or service and labels these activities as being either value-added or nonvalue-added in nature.

As these definitions suggest, activity-based costing identifies activities as the fundamental cost object of the organization. It uses the cost of these activities as the basis for assigning costs to other cost objects such as products or services. The process is straightforward. First, identify all activities used to achieve outcomes. Second, determine the cost of each activity. Third, assign costs to outcomes on the basis of the amount of each activity used by the outcome, and finally, re-assign resources to those activities that result in improvements in outcome, typically profits and/or greater value-added. Internal benchmarking or external benchmarking against other organizations may be used as part of the last step.

The term activity-based costing is relatively new. It was first used in the late 1970's by management at Texas Instruments<sup>5</sup>. The origination of the concept, however, dates back much earlier. Examples of similar cost assignment methods can be traced back to the 1890's to accountants in England<sup>6</sup>. They identified the services or activities they provided, such as legal aid, bookkeeping, and so on, determined the time and therefore cost associated with each service, and billed the client accordingly on a cost-plus basis. The result was more accurate costing of the service and therefore more accuracy determining the profitability of the service. With few changes, similar costing and profitability analysis practices are found today at public accounting firms,

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<sup>5</sup> Weisman, D. and T. Mitchell (1986). "Texas Instruments Recalculates Their Costing System," *Journal of Cost Management*, Spring, pp. 63-68.

<sup>6</sup> Hearsh, M., R. Kaplan and J. Waldron (1991). "New Costing Systems?," *Journal of Accounting Historians*, Vol. 4, pp. 6-22.

law firms, medical practices, and banking. In the past, the literature has cited case studies of the improvement in cost assignment and profitability analysis for service industries. Current literature, Horngren, Foster, and Datar's latest edition of *Cost Accounting*<sup>7</sup> for example, continues this treatment of ABC.

Use of ABC, or more accurately, one of its predecessors, job-order costing, was not widely found in a manufacturing environment until late in the American industrial revolution when it was adopted by the Ford Motor Company<sup>8</sup>. Companies that had standardized inputs, typical of mass production lines, found cost assignment useful in determining the true profitability of products and as an aid in controlling standardized costs. Again, the literature has more current examples of companies, such as Hewlett-Packard, that have increased profitability through a better understanding of financial and non-financial measures of cost<sup>9</sup>.

Today ABC can be found in many diverse areas of the service, government, and manufacturing sectors, with new applications being continually discovered. Various surveys<sup>10 11 12</sup>, such as those by the American Productivity and Quality Center<sup>13</sup>, suggest that as much as 24 percent of U.S. based companies use some form of ABC. The cited benefits common to all the surveys is: (1) more accurate cost information for product costing and pricing, (2) improved cost control and management, (3) improved insight into cost causation, (4) better performance measures, and (5) more accurate customer profitability analysis.

Many of the benefits attributed to ABC would apply to the not-for-profit environment of Northwest Missouri State University and to public post-secondary education in general. The obvious exception is the profitability component. Gains or value-added, through the re-assignment of existing resources should be possible with

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<sup>7</sup> Horngren C., G. Foster and S. Datar (2000). *Cost Accounting: A Managerial Emphasis*, 10<sup>th</sup> edition, Prentice Hall, Inc., Upper Saddle River, NJ.

<sup>8</sup> Hearth, M., R. Kaplan and J. Waldron (1991). "New Costing Systems?," *Journal of Accounting Historians*, Vol. 4, pp. 6-22.

<sup>9</sup> Berlant, D., R. Browning and G. Foster (1990). "How Hewlett-Packard Gets Numbers It Can Trust," *Harvard Business Review*, January-February, pp. 178-82.

<sup>10</sup> Armitage H. and R. Nicholson, (1993). "Activity-Based Costing: A Survey of Canadian Practice," *Supplement to CMA Magazine*, April.

<sup>11</sup> Clarke, P. (1996). "A Survey of Activity-Based Costing in Large Manufacturing Firms in Ireland," Working Paper, Trinity College, Dublin Ireland.

<sup>12</sup> Blayney, P. and I. Yokoyama (1997). "Comparative Analysis of Japanese and Australian Cost Accounting and Management Practices," *Abacus*, vol. 6, pp. 33-50.

ABC. A notable exception to the lack of examples of ABC in higher education is the seminal piece by William Massey and Andrea Wilger of the National Center for Post-Secondary Improvement<sup>14</sup>. Massey and Wilger used surveys and personal interviews to identify activities that encompasses the varied activities of administration, faculty, or support staff. The greatest challenges arise when assigning costs to those activities and measuring how much activity a particular outcome, in this case a Key Quality Indicator, has consumed. As noted by Massey and Wilger, these challenges, although of concern, should be viewed as spurs for improvement that will lead to better decisions than conventional external reporting accounting measures.

### **THE PROPOSED Q/ABC PROCESS**

The Q/ABC Process will be tested in the three central subsystems of a typical university: instruction, student services, and support services. Implementing the Q/ABC Process will require the accomplishment of four major tasks:

1. Engage faculty and other decision-makers in the campus community in identifying Key Quality Indicators (KQIs) for the courses, programs, and/or activities under their purview.
2. Select appropriate value-added measures and indicators for each KQI.
3. Identify those activities designed to produce the desired results (i.e., the KQI) and use Activity-Based Costing techniques to link costs to outcomes.
4. Use benchmarking techniques to identify more effective or efficient approaches for accomplishing the KQIs. (Step 4 will take place after the first three steps have been completed.)

The purpose of focusing on activities designed to achieve KQIs is to ensure that the measurement of value-added (i.e., student capabilities or improved services) can be accurately linked to costs, as shown in Figure 1. In addition, the value-added component requires that improvements be determined as a gain resulting from participation in those activities, rather than a status (outcome) or as a gain from all possible sources. That is, the improvement calculation is to be based on the path

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<sup>13</sup> APQC/CAM-I (1996). Activity Based Management Consortium Study, American Productivity and Quality Center/CASM-I, Washington D.C.

<sup>14</sup> Massey W. and A. Wilger (1999). "Good Enough Isn't: Quality, Productivity, and the Academy," Working Paper, National Center for Postsecondary Improvement, Stanford University.

shown as BC. While we recognize that some of the gain measured at the end of the activity may result from variables not under our control (e.g., smarter students learn faster, other courses being taken simultaneously may exert an influence, etc.), we will not attempt to control for all possible additional increments of learning represented by path A or, similarly, for all possible miniscule increments of cost associated with facilitating the activities. Although for purposes of illustration Figure 1 pre- and post-tests student capabilities in relation to KQIs, the process will call for pre- and post-testing of measures of service quality and efficiency in non-instructional settings.

The full process also calls for quantifying and comparing the costs and value-added gains of multiple activities with the same KQI, but this is not shown in the diagram. Schematically, this quantification would appear as a second layer, or as additional separate layers, corresponding to different activities.

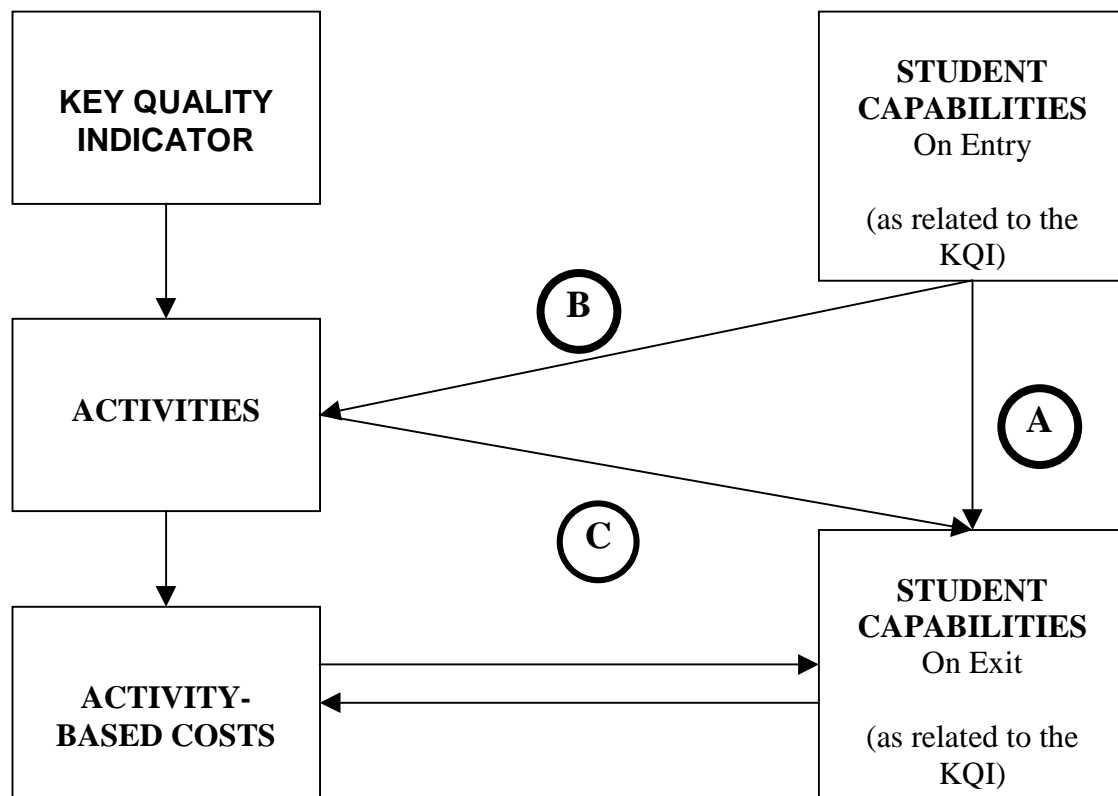
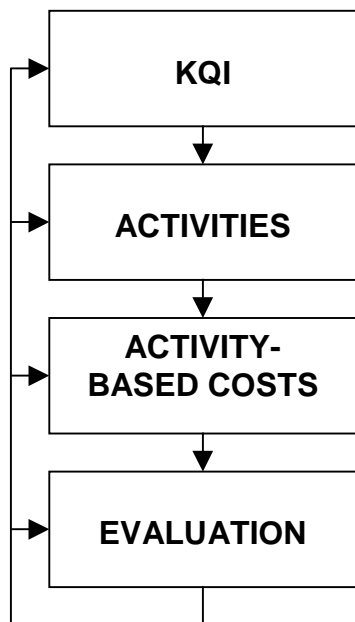


Figure 1

The process is unique in that it dynamically links all of the elements necessary for improvement in both effectiveness and efficiency. These linkages become more apparent when the diagram is displayed as a systems model:



The proposed timeframe for developing and pilot testing the Q/ABC Process covers two years. During the first year the Q/ABC Process will be developed, applied, and refined at Northwest Missouri State University in a limited number of settings. During the second year, a second iteration of the Q/ABC Process will take place at Northwest; plus, a selected number of other institutions in Missouri and across the nation will test the Q/ABC Process. Following another round of evaluation and revision, publications will be prepared and a general workshop conducted.

**Task One: Identifying Key Quality Indicators.** A “Key Quality Indicator” is defined as an essential attribute of a program that indicates quality as perceived by the student or stakeholder. (Stakeholders would encompass graduate schools, potential employers, professional organizations, subsequent courses in a program, other departments within the university, alumni, etc.) KQIs should be few and focused (“key”), address the attributes of excellence important to the student or stakeholder (“quality”), and be measurable (if necessary using multiple measures and indicators).

Several benefits flow from starting with a definition of quality. First, by focusing on key indicators, faculty and others are led to engage in a substantive discussion of what really matters, both to them and to their students and stakeholders. Second, as a result of such discussions, an appropriate context will be created for evaluating the costs (and prices) linked to the activities designed to achieve the KQIs. This allows

participants to focus their time and attention on genuine value-adding activities and away from non-value-adding work. Third, the process itself will move institutions away from the typical reliance on intuition and assertions of effectiveness toward fact-based evaluations of performance. Fourth, by participating in the first three tasks in the process, faculty will develop a refined and sophisticated understanding of the instructional process they contribute to; that is, they will become systems thinkers, a requisite for completing task four. Finally, by starting with the faculty and other process owners we seek to avoid the adversarial and defensive posturing that often accompanies discussions of costs in higher education.

Northwest has developed a Seven-Step Process for identifying KQIs that has gone through several cycles of implementation, evaluation, and improvement. All academic and support units on campus have followed this process for at least one cycle of planning. The seven steps are:

1. *Define Key Quality Indicators (KQIs)*

This step involves identifying customers/clients and understanding their needs and expectations. For academic programs potential employers, trade groups, accrediting bodies, and alumni are surveyed. (Alumni are routinely surveyed three years after graduation.) The purpose is to identify the attributes or characteristics students should possess when completing a program or course of study. For support services, internal or external users of the service are surveyed to identify their needs and expectations.

2. *Validate the KQIs*

This step was included to ensure that we not fall into the trap of assuming that we know what is best for the customer and therefore don't need to ask them. This step involves going back to the customer to confirm that the KQI(s) reflects their expectations.

3. *Establish Goals and Develop a Deployment Strategy*

This step has three sub-steps that will be critical to successfully developing the proposed process. The first requires that one or more "Critical Success Factors" be defined for each goal. A Critical Success Factor is an event or occurrence that must occur in order for you to conclude that success has been achieved. The second sub-step requires that a deployment strategy be developed that "describes where in your program the opportunity to develop and/or demonstrate achievement of the CSF exists." Finally, sub-step three requires that someone be assigned primary responsibility for ensuring that the opportunity for achievement occurs and for monitoring success and improvement.

4. *Formulate an Assessment Strategy to Track Performance*

Under this step we anticipate that most of the integration of Activity-Based Costing will occur. The objective is to seamlessly integrate discussions of quality and cost.

5. *Establish Baselines, Track Trends, and Do Competitive Comparisons*

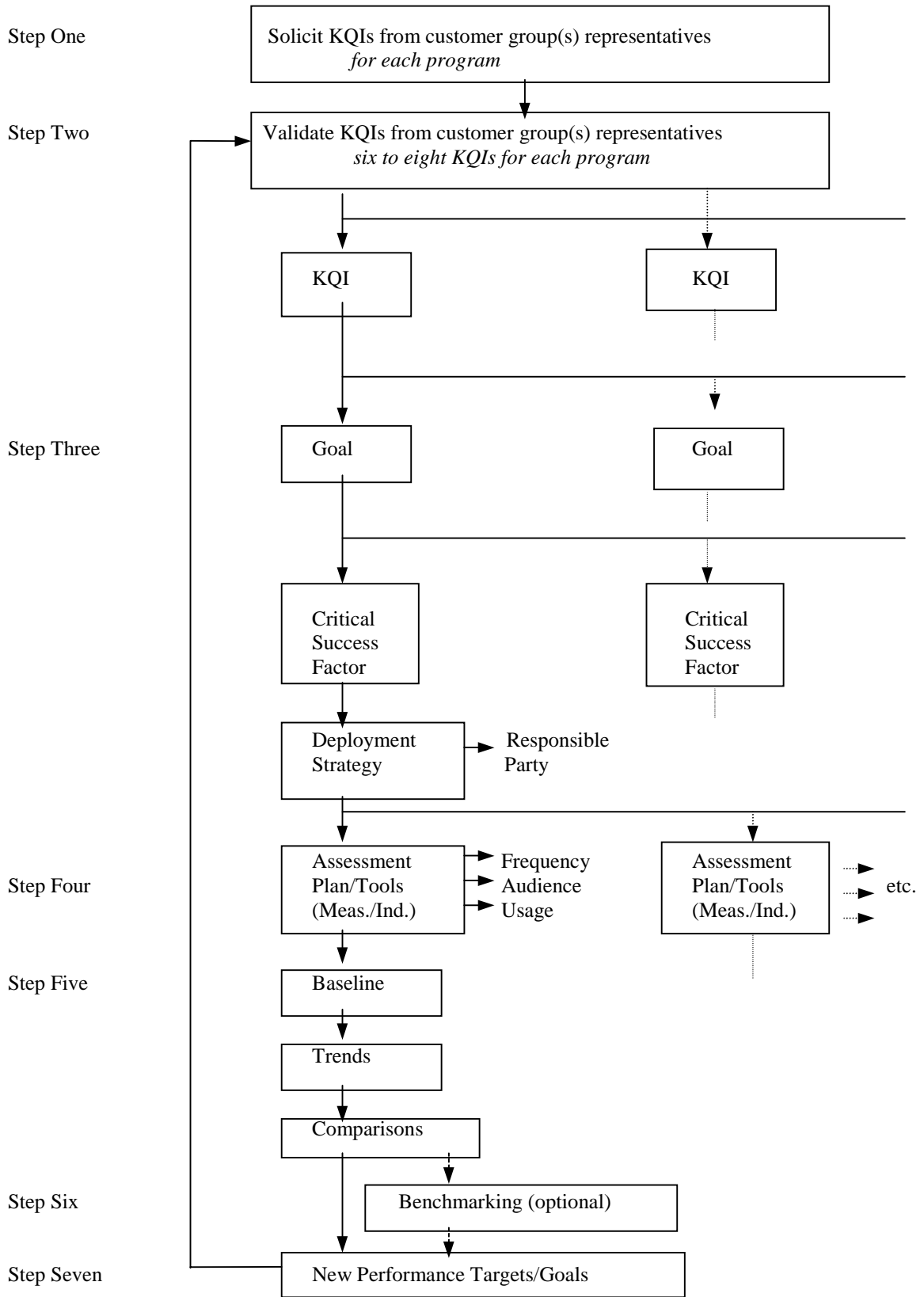
6. *Benchmarking*

7. *Set Performance Targets and/or Stretch Goals*

These becomes new KQIs as the process cycles.

A detailed manual, *Guidelines for the Implementation of the Seven-Step Planning Process*, has been developed to guide units on campus as they plan for continuous quality improvement. Figure 2 is taken from that manual.

### Seven-Step Planning Process



The Seven-Step Process was formally introduced on campus in 1995. The process was designed to be non-prescriptive; for example, it does not tell a department what their assessment strategy should be, just that they must have one. At first many faculty viewed the process as cumbersome, bureaucratic, and too time consuming. Fortunately, however, there were departments who saw value in using a common, structured approach to program development and renewal. Within two years a cadre of champions emerged who argued that the process: (1) provides a common language that facilitates cross-disciplinary cooperation; (2) is logical in its sequence of steps; (3) is an appropriate antidote for the thrashing around that often accompanies planning; and (4) results in measurable improvement. Today, all departments and units on campus follow this process.

Integrating activity-based costing into the process will require adjustments in all seven steps. For example, the Critical Success Factors that are derived from each KQI will need to be aligned with the activities used as a basis for ABC. Similar adjustments will be required throughout. The danger is that the faculty will see this as an unwarranted complication of a process that they have finally come to own. As part of the project, we plan to involve faculty in designing changes to the process. We also will carefully monitor and report on faculty reactions to changes.

**Task Two: Selecting Measures and Indicators.** It is axiomatic that an outcome that cannot be measured cannot be improved. Indeed, absent clear measures and indicators, even perceived improvements turn out to be mercurial and random. Further, even when an outcome can be measured, if baselines are not established and performance trends monitored, improvements will not likely occur. Thus, given higher education's antipathy to assessment, a major challenge will be to come up with acceptable measures and indicators that establish value-added. The term "measure" is used when performance can be gauged directly via a single metric, such as the percentage of students scoring above a certain target or the percentage of services delivered by a specified time. Two or more "indicators" are used to assess overall performance when results cannot be established by examining one type of measure. A cluster of indicators will usually include some measures. For example, to gauge the extent to which students are multicultural or appreciate the fine arts requires the

collection of a set of indicators and measures. The same would be true if the goal were to assess overall student satisfaction.

**Task Three: Activity-Based Costing.** Activity-based costing (ABC) was developed and has spread in industrial settings in response to dissatisfaction with traditional accounting structures, particularly when used for system improvement and planning purposes. Massy and Wilger summarize the differences:

ABC analyzes the processes used to produce a product or service and then estimates the cost of each process element. Traditional systems cannot accurately determine the costs of individual products or services in a multi-product environment, and it cannot provide useful information to management for making operating decisions.<sup>15</sup>

They go on to note that ABC is a bottoms-up method that produces actionable data by mapping how various expenses contribute to purposes. Such data provide a powerful supplement to traditional accounting reports. William Massy, Robert Zemsky and associates have field-tested a methodology for applying ABC to university teaching. As part of the process, they developed questionnaires, analytical techniques, and formats for the display of results. Their approach will be used in this study for analyzing courses and adapted for use in service environments.

Figure 3 displays data produced as a result of the Massy, Zemsky, et al ABC pilot study. Interpreting left to right, for example, Figure 3-A, "Inputs", Week 1, line 1: The activity is an IT ("Information Technology") lecture. The learning style is to "receive" the lecture in a synchronous mode. The facility is an IT-LT ("Information Technology-Lecture Theater"). The duration of the lecture is 2 hours and there are 80 in the class. The learners are in a group 2.00 hours and spend 0.00 time in individual work. The faculty member invests 2.00 contact hours with the students and 10.00 hours in preparation. There are no assistants although Support Staff invest 2.00 contact hours and 1.00 hours in preparation. The faculty member teaches 2 sections of this course that involves all the staff. Figure 3-B displays the results in dollars while Figure 3-C shows one method of analysis. It should be emphasized that these displays and methods of calibration were part of a pilot test and will be refined as part of this project. Furthermore, we will need to develop acceptable protocols for soliciting such data.

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<sup>15</sup> Massy and Wilger (1999).

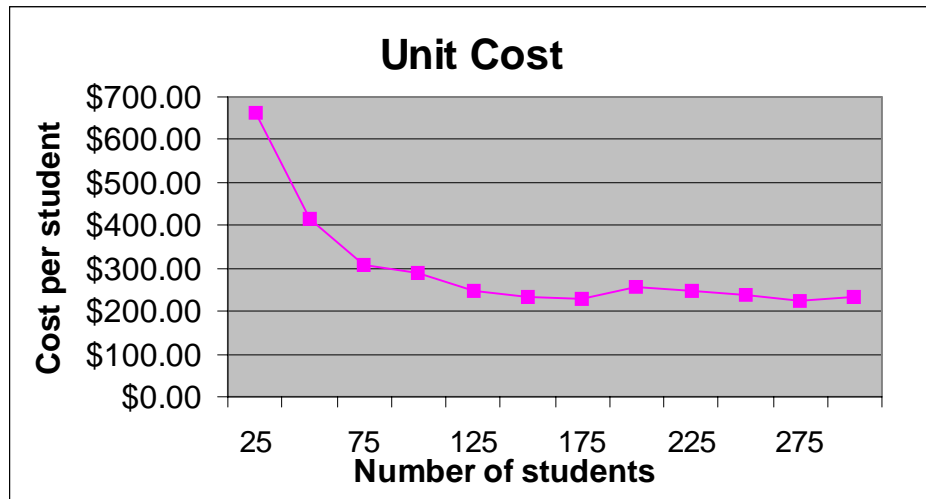
Figure 3-A

Learning Module Design							
ID number	Description of the activity	Precedence level	Learning:		For synch. only		Class or group size
			style	mode	Facility	Duration	
Week 1							
1	IT-enhanced lecture	1	Receive	Synch	IT-LT	2.00	80
2	Conventional lecture	2	Receive	Synch	LT	1.00	120
3	Not associated with a specific activity						
Week 2							
4	IT-enhanced lecture	2	Receive	Synch	IT-LT	1.00	80
5	Laboratory	3	Create	Synch	Lab	2.00	20
6	Virtual discussion	3	Explore	Asynch			20
7	Team Project		Create	Asynch			5
8	Not associated with a specific activity						
Week 3							
9	IT-enhanced lecture	4	Receive	Synch	IT-LT	1.00	80
10	Breakout discussion	5	Explore	Synch	SeRm	2.00	10
11	Simulation exercise	6	Create	Asynch			
12	Team Project		Create	Asynch			5
13	Not associated with a specific activity						

Figure 3-A (cont.)

ID number	Hours Utilized											Average sections/groups per person for:		
	Learners		Faculty			Assistants			Support staff			faculty	assistants	staff
	In groups	Individual	"contact"	preparation	per learner	"contact"	preparation	per learner	"contact"	preparation	per learner			
Week 1														
1	2.00		2.00	10.00					2.00	1.00		2		all
2	1.00	2.00	1.00	5.00								2		
3		0.50	3.00		0.025	2.00		0.030						
Week 2														
4	1.00	2.00	1.00	5.00					1.00	1.00		2		all
5	2.00	1.00				2.00	1.00	.		0.50			3	all
6	2.00		1.00	5.00		2.00	2.00					2	3	
7	2.00							0.025						
8		1.00	3.00		0.025	2.00		0.030						
Week 3														
9	1.00	2.00	1.00	5.00					1.00	1.00		2		all
10	2.00	1.00				2.00	2.00						3	
11		1.00		1.00	0.011		2.00	0.020		3.00	0.010	2	3	all
12	2.00					2.00		0.030						
13		1.00	3.00		0.025	2.00		0.030						

Figure 3-C



No. of students	Cost/ Student
25	\$662.13
50	\$417.58
75	\$305.69
100	\$287.12
125	\$247.99
150	\$235.66
175	\$228.45
200	\$257.14
225	\$245.67
250	\$238.71
275	\$224.18
300	\$233.36

**Task Four: Identifying Best Practices.** As part of this proposal, benchmarking is the critical final step designed to ensure that concrete improvements result from implementing the process. As with the other three tasks that make up the process, faculty are key players.

The dictionary definition of a benchmark is “a point of reference from which measurements of any sort may be made.”<sup>16</sup> Since the advent of the Baldrige Criteria that definition has become more specialized and a methodology has evolved for using benchmarking to drive continuous improvement in organizations. In his book, *Benchmarking*, Robert Camp defines benchmarking as the “continuous search for best practices.”<sup>17</sup> The first step involves comparing results in order to identify potentially superior processes for detailed analysis. The goal is to identify process changes that will result in sustainable improvements in effectiveness and/or efficiency. Comparisons are made to organizations using similar processes that appear—on the surface, at least—to be producing superior results. Such target organization need not be in the same business to have similar processes; indeed, sometimes breakthrough ideas come from “getting outside the box.” However, while benchmarking partners are usually outside organizations, internal benchmarking can also be beneficial, particularly in complex organizations such as universities. Obviously, if an organization were to benchmark enough leaders in their field and incorporate all of the best practices identified into their own processes, that organization should become the leader.

The benefits that accrue from benchmarking generally are proportional to the understanding those conducting the process have of their own processes. Without a clear and detailed understanding of the processes and related activities used in one’s own institution, it is easy for the entire exercise to degenerate into “industrial tourism.” The first three tasks of the proposed process will provide participants with an uncommonly nuanced understanding of their own processes. Northwest has observed additional benefits of the benchmarking process: 1) participants develop a settled conviction that we can do better (not a trivial cultural shift!) 2) performance targets are set higher than they would be otherwise; 3) participants adopt an outward looking attitude; and 4), participants are more willing to be held accountable for superior results.

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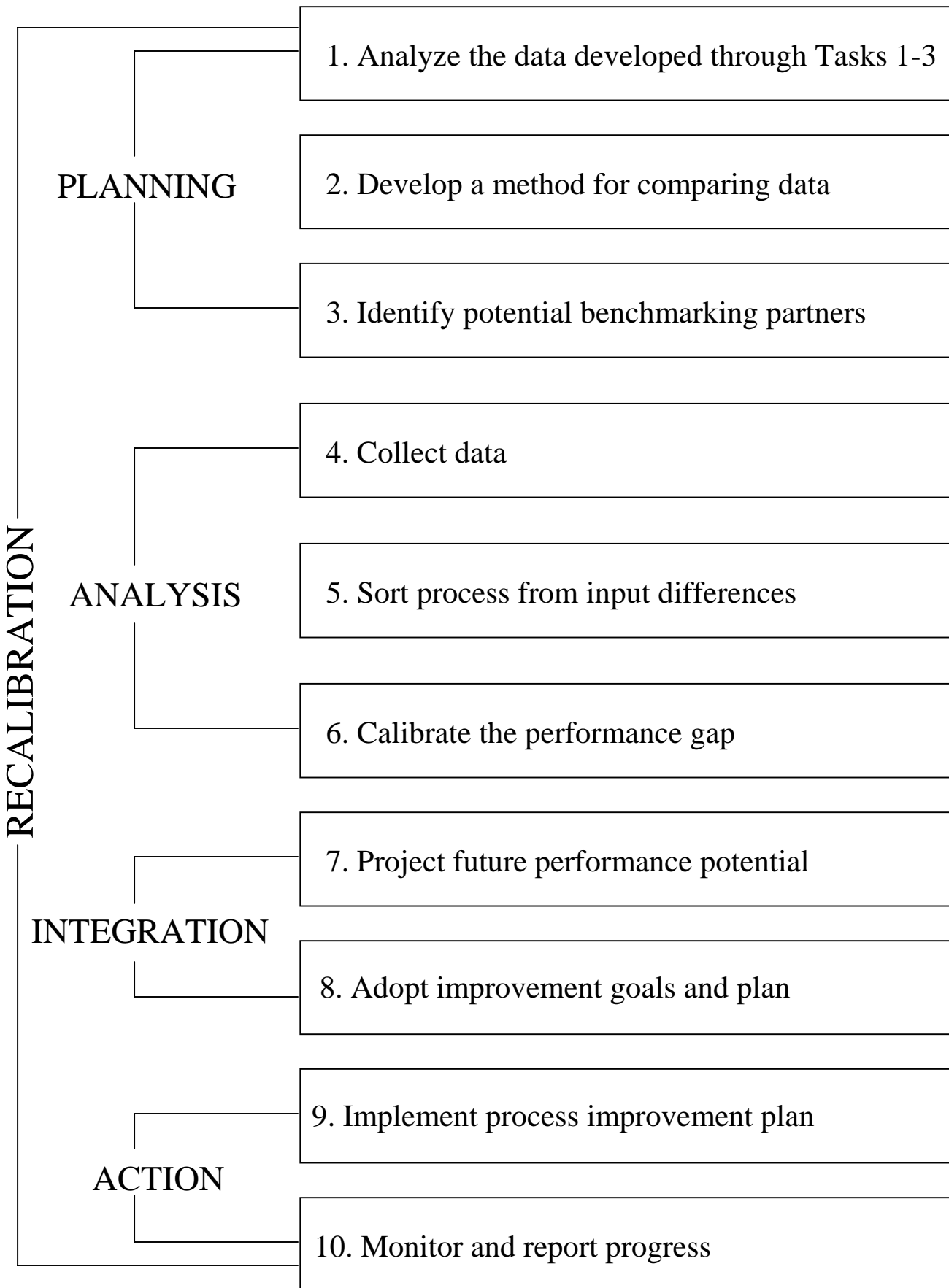
<sup>16</sup> Webster’s Third New International Dictionary.

In 1995, Northwest sent an administrative team to a benchmarking workshop conducted by The DuPont Company. Subsequently, a manual for benchmarking at Northwest was developed and distributed. The concepts and steps outlined in that manual will be adapted for inclusion in the process. Since it is unlikely that other institutions will utilize the same assessment strategies that Northwest faculty will develop as part of Task Two, we will rely on third parties to help us identify potential benchmarking partners. Possible sources include foundations such as Sloan that have funded process improvement projects, EduCause, the Delaware Study of Instructional Costs and Productivity, the National Center for Post-secondary Improvement, and related literature.

The following model has been adapted from *A Guide to Benchmarking in Xerox*.

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<sup>17</sup> Robert C. Camp, *Benchmarking: The Search for Industry Best Practices that Lead to Superior Performance*, American Society for Quality, Milwaukee: 1989.



**NORTHWEST BENCHMARKING PROCESS**

We believe Northwest Missouri State University provides an ideal setting for developing and testing the proposed Q/ABC Process. In 1984, the University pioneered in applying to education concepts of quality management being developed in industrial settings. In 1991, the criteria used for the Malcolm Baldrige National Quality Award were adopted as a conceptual framework for thinking about quality and as a process for planning. In recognition of the extent to which these concepts have actually been applied throughout the institution, in 1996 the University was awarded first place in the NACUBO Higher Education Awards Program, and in 1997 received the Missouri Quality Award, which utilizes the Baldrige Criteria and scoring process. Defining, measuring, and tracking quality indicators has become the accepted way of doing business at Northwest. While we have not attempted to determine the cost or relative efficiency of any of the strategies or assessment tools, we do have the requisite tools and metrics for integration into a quality/efficiency costing process.

Specifically, using a delphi process involving the CEOs of several major corporations (e.g., Motorola, McDonnell-Douglas, Eveready, Nation's Bank), in 1991 Northwest defined a set of nine "Instructional Key Quality Indicators" (Figure 5). Additionally, seven "Service Key Quality Indicators" were developed by a student/faculty/staff team to provide a context for managing the delivery of services (Figure 6). Each academic department has developed its own major-specific KQIs. For each KQI, one or more "Critical Success Factors" are defined, measured, and tracked. These KQIs will provide the starting point for implementing the Q/ABC Process. During the first iteration of the Q/ABC Process Instructional KQIs numbers 1 ("Communications Competencies"--writing) and 3 ("Computer Competencies") will be used to develop the Q/ABC Process in selected general education courses. Similarly, Service KQIs numbers 3 "Communicating clearly and courteously..." and 5 (cycle time) will be used to develop the Q/ABC Process.

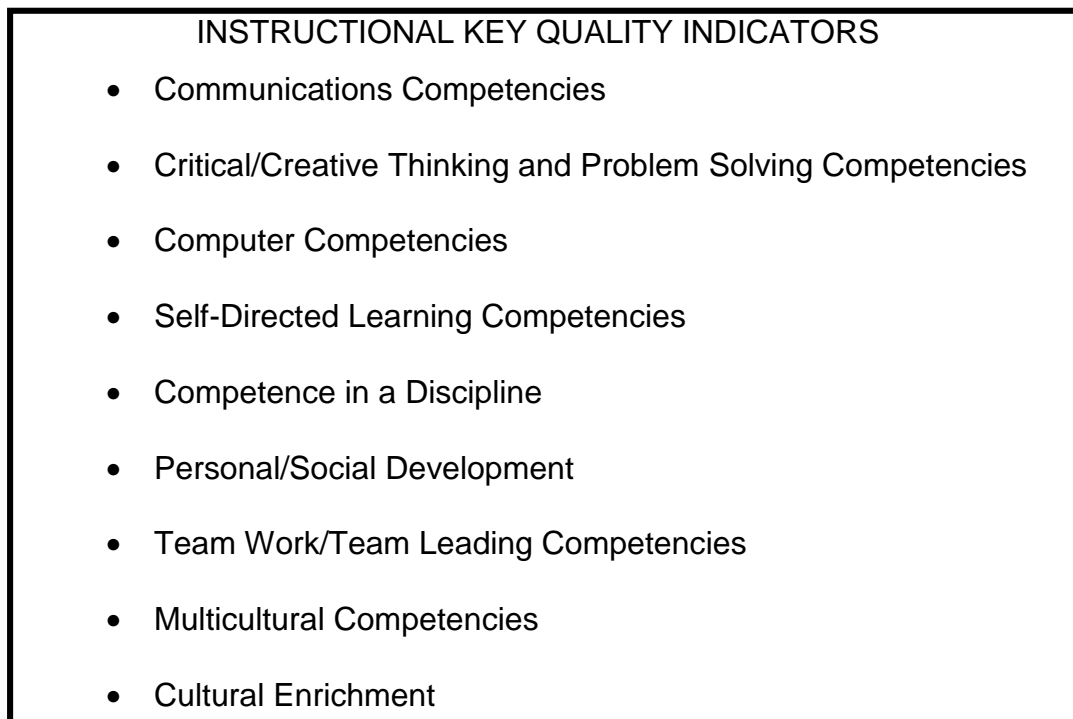


Figure 5



Figure 6

## **PROPOSED ACTION PLAN**

Following are the major activities that will be scheduled as the project unfolds.

### **FALL TRIMESTER 1999**

1. Recruit three academic departments and the general education steering committee to participate in developing the process. (Preliminary commitments have already been secured. Two general education KQIs have been selected (writing and computing). One or more KQI's will also be selected for each participating department.
2. Recruit student service area for participation in developing the process. (Done)
3. Recruit three service areas for participation in developing the process. (Done: Computing Support, Provost's Office, President's Office. The two Service KQIs relating to competence and the reduction of cycle time will be tested using the process.)
4. Conduct briefings for each participating department/unit.
5. Finalize the selection, review, and/or refinement of the KQIs to be tested.
6. Develop a pre- and post- value added assessment strategy.
7. Refine the ABC activity identification questionnaire.
8. Conduct pre-tests as appropriate.
9. Develop and deploy a Website.

### **SPRING TRIMESTER 2000**

1. Pretest
2. Collect cost data
3. Post test
4. Refine the process elements
5. Begin to adapt computer software for Lawson, Inc., to support the process.

### **SUMMER TRIMESTER 2000**

1. Interpret the data gathered.

2. Begin benchmarking with those departments that used the process.
3. Identify alternative strategies for accomplishing the KQIs.
4. Recruit additional departments/units for the second iteration of the process.
5. Convene the Advisory Council to review progress to date and suggest improvements.
6. Develop and publish expanded manuals/documents for using the process.
7. Begin to recruit other institutions to test the process.

#### **FALL TRIMESTER 2000**

1. Implement the revised process/approaches.
2. Continue 1-3 from the previous trimester.
3. Collect data for the second round baseline.
4. Continue discussions with other institutions in Missouri with possible help from the Pew Roundtable.

#### **SPRING TRIMESTER 2001**

1. Continue implementation.
2. Add departments/units.
3. Begin implementation in other Missouri (or out-of-state) institutions.

#### **SUMMER TRIMESTER 2001**

1. Prepare final report and manuscript.

**PROPOSED BUDGET**

By developing a costing process that begins with defining quality, we can begin the discussion of how simultaneously to improve quality and reduce costs. In order to accomplish this, we seek \$300,000 support from the Sloan Foundation to design, test, and refine the above process.