Florida Journal of Educational Research
Fall 1993, Vol. 33,
No. 1, Pp. 48-70.

A Quality Function Deployment Analysis of School Customer Needs for Meeting the Goals of Blueprint 2000

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ABSTRACT. In providing leadership for Blueprint 2000 School Advisory Councils, school principals must employ group communication and decision-making skills. In this study a planning procedure called Quality Function Deployment (QFD) was modified for use with school administrators. Six cross-school teams of principals from Palm Beach County used QFD to generate the top priority needs of school customers (e.g., students, parents, teachers) for Blueprint 2000 goals 1 through 6. Burton and Merrill's taxonomy of needs sources and Kaufman's Organizational Elements Model (OEM) were used to classify and analyze the perceived needs identified by the principals. Results indicated that school leaders were adept at using the QFD process and that assuming the perspective of the customer enabled principals to identify needs beyond those typically identified for school improvement. Furthermore, several interesting patterns of needs were observed across the categories of both the Burton and Merrill and the Kaufman systems, suggesting that both analysis procedures can provide School Advisory Councils with valuable insights for their needs analysis and eventual needs assessment activities.

Along with persistent demands for rigorous academic standards, a recurring theme in current calls for educational reform is the need to involve local schools

and districts in planning for school improvement. A decade after the release of *A Nation At Risk*, Terrel H. Bell, former Education Secretary and co-author of the report, acknowledged that as a result of the ineffective top-down reform characteristics of the 1980s, "changes in decision-making authority have been sweeping the nation" (1993, p. 595). In fact, Bell is unaware of any major American school system that does not have a campaign underway to strengthen site-based management of schools. Site-based school management through participatory decision making is an international movement, with few educators questioning its merit (Etheridge, 1993).

In recognizing the need to decentralize decision making and give districts greater freedom to design programs that meet student needs, the Florida Legislature developed Blueprint 2000, a comprehensive plan to raise educational standards by providing citizens with the strong educational foundation needed to become productive adults in an economically and technologically changing society (Florida Commission on Educational Reform and Accountability, 1992). Approved on October 6, 1992, the plan contains seven goals intended to provide guidance and direction for achievement. The goals are: (1) readiness to start school, (2) graduation rate and readiness for postsecondary education and employment, (3) student performance, (4) learning environment, (5) school safety, (6) teachers and staff, and (7) adult literacy. Blueprint 2000 emphasizes high expectations, continual quality improvement, and educational accountability.

As the unit of educational accountability, each Florida school is required to establish a School Advisory Council composed of principals, teachers, students, educational support people, parents, business representatives, and other relevant stakeholders. A primary task of school councils is to prepare the School Improvement Plan, an annual comprehensive school-level plan that describes the specific subgoals and programs a school proposes in order to meet the seven legislated goals. School principals must provide leadership in defining local goals congruent with those of the State and implementing programs that will meet the needs of the students and community while ensuring that their school moves toward achieving the goals.

In 1991, school councils began the initial process of developing their school improvement plans. Each council conducted a needs assessment based on state goals, performance standards, and local and state data. Their initial plans, based on these identified needs, were submitted to local school boards in the spring of 1993. School boards negotiated and approved the plans for implementation during the 1993-94 school year. School plans for subsequent years are to be prepared using the same process. For each iteration, a new needs assessment must be conducted, and new goals and performance standards must be set.

The changes envisioned in Blueprint 2000 raise questions along two lines of inquiry that are the focus of this study. First, the need to alter traditional communication and decision-making patterns in schools is often cited as a necessary requisite for successful restructuring (Ramirez, Webb, & Guthrie, 1991). School Advisory Councils represent a change from an administrative to a participatory decision-making model. Participatory decision making promotes greater sharing of goals, improved motivation, efficient communication, and better-developed group process skills (Owens, 1987). As the number of communicators within a group increases, so does the number of potential message exchanges. Likewise, the number of occasions for miscommunication and the possibility of disagreement among group members may also increase (Kreps, 1986). If School Advisory Councils are to function successfully, school leaders must be skilled in group communication and decision-making procedures. Quality Function Deployment (QFD) is a group decision-making technique that has been successfully employed in many private sector environments (for examples see Cohen, 1988; Griffin & Hauser, 1992; Hauser & Clausing, 1988; Maddux, Amos, & Wyskida, 1991). One purpose of our study was to investigate the utility of QFD as an interactive decision-making process for use with school-based administrators.

In addition to the seven state-mandated goals, the Blueprint 2000 school improvement process relies on needs identified through local assessment activities. Because of the dependence on locally defined needs, a second line of inquiry of this study centered on the nature of needs voiced at the school level. A systematic process for characterizing these needs and priorities may help sharpen the focus of the formal needs assessment activities conducted annually to prepare School Improvement Plans. Thus, a second purpose of our study was to use needs analysis taxonomies recommended by Burton and Merrill (1991) and Kaufman (1992) to examine the needs generated by principals during the QFD process.

To address these areas of interest, school-based administrators from Palm Beach County were invited to participate in an interactive workshop on March 25, 1993. The purpose of the workshop was to involve school leaders in a simulated activity to promote cross-school collaboration, and to introduce them to a technique for needs identification focused on the needs of school customers rather than on administrative concerns. We envisioned that the administrators might be able to use these collaborative techniques with their own School Advisory Councils. Before discussing the workshop, background information is provided on QFD and strategies for needs analysis.

Quality Function Deployment

A major emphasis of the Blueprint 2000 system is the active involvement of the "stakeholders" in public education, analogous to the emphasis in business and industry on the interests of the customer. Indeed, the Japanese-inspired philosophy of total quality rests on "a system of means to produce goods or services economically that satisfy customer requirements" (Japan Industrial Standard Z8101-1981, cited in Eureka & Ryan, 1988, p. 8). Within a total quality system, the customer's perception or demonstration of what he or she needs in a product or service is the point from which the design of that product or service begins. QFD is a planning tool used in business and industrial applications to ensure that development, production, and delivery of products or services are driven by the needs of the customers. Because the QFD process has been so effective in ensuring a customer focus in private sector enterprises, and since the intent of Blueprint 2000 is to involve stakeholders in the school improvement process, a logical extension of QFD was to investigate the application of this process to school improvement planning (for a complete introduction to QFD see Eureka & Ryan, 1988).

QFD can be modified for use in any number of planning environments and is being used more and more in service industries and in social service agencies (ITEQ International, 1991). Although modified for service environments, the essence of QFD is still its focus on the needs of customers, both internal and external. In a school setting, customers could include students, faculty, staff, volunteers, parents, the community, business and industry, government, and various levels of post-secondary education and training. As in manufacturing applications, QFD is a lengthy process, and a complete analysis in a school setting would require a considerable amount of time. Because the Palm Beach County workshop was limited to a one-day session, we adapted the two most relevant QFD problem-solving tools from ITEQ International's *Quality Function Deployment for Service Organizations* (ITEQ International, 1991). The ITEQ model was used with participants in the workshop because it focuses attention on their customers' needs, an important consideration for demonstrating accountability in Blueprint 2000. The two QFD tools used in the workshop were the House of Quality and the affinity diagram.

The heart of the QFD process is a matrix analysis called the House of Quality. In manufacturing environments, the House of Quality matrix is used multiple times at a variety of levels during a single planning cycle. The purpose of the first House of Quality deployment is to force planners to examine the relationships among the needs expressed by customers, or the "voice of the customer" (VOC), and the qualities/functions designed into the product, thus ensuring that the design of the product will meet the needs of the customers. It is

the initial key focus on the voice of the customer that was of interest in the modified QFD process used in this study.

The affinity diagram is a technique for gathering unstructured ideas, systematically organizing ideas to reveal conceptual patterns, and negotiating key priorities from the set of ideas generated. Using the affinity diagram, participants provide ideas from their own perspective and examine similarities and differences in the ideas presented by other participants. In the ITEQ process, participants negotiate and reach consensus on the 20 key needs for their two most critical customer groups. These 20 key needs are used as the VOC component in the House of Quality. At this point the ITEQ model departs from a typical manufacturing application of QFD. Rather than listing the qualities and functions that would be required in a product to meet customers' needs, participants list efficient, valid methods for assessing the organization's progress toward meeting their customers' needs.

Needs Assessment and Analysis

Needs assessment is defined as the process through which goals are established, a school's current status in meeting the goals is measured, and gaps between desired levels and current status are described. A school's needs are the gaps between desired levels and current levels of performance. Using these gaps, priorities for program action are established. Burton and Merrill (1991) and Kaufman (1992) have proposed methods for classifying the types of needs generated by needs assessment teams.

Based on the work of Bradshaw (cited in Burton & Merrill, 1991), the taxonomy described by Burton and Merrill is used to examine the origin of the needs source. We speculated that Burton and Merrill's taxonomy could be used to classify the perceived customer needs (VOCs) identified by school principals using the modified QFD procedure. Classifying VOCs using this strategy might provide better insight into the nature of the needs, which should aid principals in their subsequent formal needs assessment studies. Burton and Merrill's taxonomy for analyzing educational needs includes the following:

1. *Normative needs* are those needs present in a school when an individual or group falls short of an established standard. A normative need may be based on lower student test scores than district, state, or national averages, lower graduation rates or higher dropout rates than other schools, or fewer students obtaining jobs or entering college than in other schools.

2. *Felt needs* are those that students, parents, community members, and educators say they want from schools. Examples of felt needs might be particular courses in the curriculum, extra-curricular activities, special equipment, paid inservice programs, etc. Burton and Merrill believe felt needs are affected by our perceptions of what is possible, socially acceptable, and available.

3. *Expressed or demand needs* are those apparent from people's behavior. Examples include having more students enroll in school than there are classrooms or teachers to accommodate them, more students electing a particular course than there are places in the course, more cars in the parking lot than there are parking spaces, or actual complaints about a policy, program, or teachers.

4. *Comparative needs* are those that occur when one group wants service or facilities currently provided to another group. For example, one school may have been designated a technology school and received equipment and staff training not provided to other schools in the district. Expressing a need to receive comparable equipment and training comprises a comparative need.

5. *Anticipated or future needs* are those proposed to meet future goals rather than current ones. Examples include more technology training for students, teachers, and administrators, or a differentiated teaching staff to meet future instructional configurations within and across schools.

6. *Critical incident needs* are rare, but have profound consequences when they are not met. Critical incident needs are typically identified after a crisis, such as a tragic accident, or a weapons or drug incident at the school, exposure to hazardous conditions, or a fire in the school, or an outbreak of communicable diseases.

Another scheme for examining needs is Kaufman's Organizational Elements Model (OEM), a comprehensive strategy that can be used to link identified needs to organizational elements. Using Kaufman's OEM model to analyze and classify the perceived customer VOCs identified by school principals helps sort the needs into means (inputs and processes) and ends (results). Sorting needs by organizational elements may provide additional insights for the formal needs assessment studies that School Advisory Councils must conduct each year. The OEM model contains the following five elements:

1. *Inputs* reflect all of a school's resources (e.g., financial, personnel, facilities, equipment, and community) for carrying out its mission as well as the values, policies, laws, and political realities that influence its mission and activity.

2. *Processes* include all methods, procedures, and activities employed by a school in carrying out its mission. The process element reflects managing, supervising, planning, teaching, assessing, evaluating, and so forth.

3. *Products* comprise interim program results, or results internal to the school, such as the percentage of students that pass each course, the number of credits earned in a timely manner toward graduation, the number of absences/truancies registered in a day, week, or term; the number of parents who attend open house and scheduled conferences, or seek information about the school, specific programs, or personnel; the number and type of inservice activities provided for teachers, or the number and nature of new courses developed or refined by teachers to meet new technologies or discipline advancements.

4. *Outputs* are immediate results delivered from the school to the community. They include factors such as the percentage of students who drop out, graduate, earn a GED, or gain admission to higher education or adult training programs. They also include the achievement levels (standardized test scores) of graduates on state exams, college admission tests, or placement tests for the military and business sector.

5. *Outcomes* reflect the impact of the school on the community, and they include such factors as self-sufficient graduates who are contributing members of society, who can communicate with peers, family, and employers in positive ways, obtain and hold a job, vote, volunteer for community improvement programs, avoid crime and prison, etc. In other words, the outcomes of a school are measured by the quality of life of the graduates in the community.

Evaluation Questions

There were two areas of interest in this study. We were interested in the effectiveness of using a modified version of QFD for facilitating cross-school communication among school-based administrators. The first three evaluation

questions address this line of inquiry. We were also interested in the nature of the needs identified. The last two questions address this line of inquiry. The specific questions are as follows:

1. Does the modified QFD procedure foster cross-school communication among school leaders who are completing their School Improvement Plans?

2. What target groups do school leaders perceive as priority school customers for each Blueprint 2000 goal?

3. What needs (VOCs) do cross-school teams believe their priority customers have in reaching each Blueprint 2000 goal, and how do the teams rank the needs in order of importance for reaching the goals?

4. Using Burton and Merrill's taxonomy of needs sources, what types of needs (VOCs) were generated by the principal teams?

5. Using Kaufman's OEM model, within which organizational elements do the needs (VOCs) identified by the principals fall?

Method

Participants

The 42 participants consisted primarily of principals and assistant principals, although a few participants were school leaders (i.e., classroom teachers or district support personnel) responsible for developing their school plans. There were 20 elementary, 3 middle, and 19 high school-level participants. Two district-level administrators, the Coordinator of Research and Evaluation and the Coordinator of Restructuring Initiatives, were participant observers. The workshop was conducted by two evaluation specialists from the University of South Florida.

Procedure

Based on their school level (i.e., elementary, middle, or secondary), participants formed teams and selected one of the goals of Blueprint 2000 as the focus of their workshop activities. Due to the manner in which participants organized their teams, only six teams were formed. The six teams chose goals 1 through 6; thus, goal 7 was not addressed during the workshop.

After each team identified the three top-priority customers for their chosen goal, individual team members brainstormed for 15 minutes to generate needs statements (VOCs) from the assumed viewpoint of their highest-priority customer. The VOCs were stated in language the school leaders believed their customers would use to express themselves, and they were expressed in behavioral, measurable terms. Each VOC was written on a separate card.

Using an affinity diagram process, each team worked together to classify the large number of VOC cards they had generated. By examining general content and concept areas, teams synthesized the customer statements by eliminating repetitious VOCs and by rewording unclear or vague statements. With the total group of VOC cards sorted by affinity groupings, team members individually voted on the VOCs they believed the designated customer would consider most critical for meeting the chosen Blueprint 2000 goal. From these rankings, a set of 15 to 20 highest-priority VOCs were identified by each team.

Finally, each team sorted their set of 15 to 20 most important VOCs into three groups, classifying one third as highest priority, one third as second highest priority, and one third as third-highest priority. Similar to the initial ranking process, this VOC ranking activity was undertaken by assuming the perspective of the customer. Each team coded their set of VOCs to indicate the priority designations, recorded the VOCS on a House of Quality matrix, and presented their matrix to the total group of participants.

This process was undertaken by each team for both their first- and second-highest-priority customers for the Blueprint 2000 goal. Readers should keep in mind that the priority VOCs generated for each customer reflect administrators' perceptions of what the customers would say they needed, rather than what the actual customers said. Furthermore, the VOCs are perceived needs, not necessarily actual discrepancies between current status and desired status on specific goals.

Analysis

The House of Quality charts produced by the participants and observations of participant interaction were used to analyze the utility of the modified QFD procedures for facilitating cross-school collaboration among administrators.

A two-dimensional matrix analysis technique was used to analyze the VOCs generated during the QFD process. The first matrix consisted of Blueprint 2000 goals with the first-priority customer for each goal along one dimension, and Burton and Merrill's taxonomy of needs sources along the other dimension. Administrators' perceptions of key customer's VOCs for each goal were classified

into one of the needs source categories, and these VOCs appear in the intersecting goal-by-source cell. The second matrix consisted of the Blueprint 2000 goals with the first-priority customer of each goal along one dimension, and Kaufman's organizational elements along the other dimension. Again, administrators' perceived VOCs were classified and placed in the intersecting cells.

Each author independently classified the VOCs using both Burton and Merrill's taxonomy and Kaufman's OEM model. The VOC classifications were compared across authors for similarities and differences. The inconsistent classifications were discussed, and when consensus was reached, the VOC was moved to the agreed upon category. Due to inadequate information about the administrators' intent, agreement could not be reached on three VOCs, so they were placed in each of the source categories identified.

Results and Discussion

Does the modified QFD foster cross-school collaboration?

None of the administrators who volunteered for the one-day workshop had prior training in QFD. Even so, they quickly formed teams, chose their goal, and set about following the directions in their packets. Four of the six teams completed the prescribed activities with no assistance from the facilitators. One team was slow to start, asked several questions, observed the lively interaction and debate in the four engaged teams, and soon became engrossed in the process and their own deliberations. One of the six teams, however, seemed to have more difficulty with the process. The difficulty did not seem attributable to lack of clarity in directions since each of the facilitators approached the group at different times to answer questions and demonstrate the process.

During the workshop each team presented their work to the entire group. Participants demonstrated the value they placed on each team's House of Quality charts by remaining after the workshop had concluded to receive copies of the charts, even though doing so caused them delay in returning to their respective schools for the closing of the day. Participants shared many positive comments, expressly stating that the QFD process was helpful and effective. Certainly a formal evaluation of the workshop would have provided more specific and detailed feedback. Nonetheless, we feel confident in concluding that a modified QFD procedure is an effective process for fostering cross-school collaboration among school leaders.

What groups are perceived as high priority school customers?

An examination of the House of Quality charts revealed that the cross-school teams of administrators identified students, parents, and teachers as primary customers of schools. Several other potential customers were identified but not ranked among the top three. School volunteers, school administrators, the school community, businesses, and government agencies were identified as customers for three or more of the state goals.

The identification of teachers as priority school customers warrants further discussion. All six teams independently ranked teachers as school customers in the quest for reaching state goals. Participants appeared to view classroom teachers as internal school customers relative to receiving the materials, equipment, facilities, professional support, and services they need to provide quality instruction. While serving the needs of students and parents was viewed as a priority for these administrators, they also appeared to view the notion of a school's customers as a complex, multifaceted, interdependent chain of internal and external customers and suppliers.

What are the perceived ranked needs (VOCs) of priority school customers?

During the course of the workshop, participants identified and ranked the top-priority VOCs for the two most important customers for their chosen goal. The VOCs for the top-priority customers are reported for goals 1 through 5. Goal 6, teachers and staff, includes not only the VOCs generated by the goal 6 team, but also the highest-priority teacher VOCs generated by teams 2 through 5. Each of these teams chose teachers as their second-priority customer. We felt that including all of the highest-priority teacher VOCs in our analysis provided a more comprehensive view of teacher needs. The complete list of ranked customers' VOCs is included in Tables 1 and 2, and an examination of these VOCs follows in the next two sections.

What types of VOCs were generated by the administrator teams?

The VOCs perceived by school leaders as priority needs for meeting Blueprint 2000 goals were examined using Burton and Merrill's taxonomy of needs sources. In our initial attempt to classify the VOCs, we found that three-fourths of the total 137 VOCs were felt needs. Burton and Merrill state that felt needs are typically identified by simply asking people what it is they need. While we were not surprised that asking principals to assume the voice of their customer would result in a large number of felt needs, we also wanted a more precise understanding of the nature of this large set of needs. Upon further examination of the felt VOCs,

we agreed that there were three underlying common themes, so we created three subcategories within Burton and Merrill's felt needs category. The three subcategories are titled: (1) personal/professional support (personal applies to students and professional applies to teachers), (2) learning support, and (3) administrative support (see Table 1).

We defined personal support VOCs for students (goals 2 through 5) as felt needs that describe an affective sense of well-being. Feeling safe at school, having a sense of self-esteem, and school pride are examples of personal VOCs. For teachers (goal 6), the title professional support more accurately described this subcategory of VOCs. Professional support VOCs are those felt needs that teachers require to perform their jobs skillfully, such as staff development and the support of staff and peers. We concluded that learning support VOCs were felt needs that described components of the instructional process, such as teachers, materials, and technology. The third subcategory, administrative support, included felt VOCs that are procedural in nature, such as scheduling, communicating information about school or district policies, and managing a safe physical plant.

In classifying the VOCs, we found it helpful to expand Burton and Merrill's critical incident needs to include those VOCs that described essential conditions for basic physical and emotional survival. Thus, we titled this category critical incident/survival VOCs.

An examination of Table 1 reveals several interesting patterns. For example, only one of the VOCs identified by school leaders was classified as normative, two VOCs were classified as future, and no VOCs were classified as comparative.

Even though school leaders were limited to identifying top-priority VOCs, it was notable that only one normative VOC was named. *The Blueprint 2000 Transition System*, a companion document to Blueprint 2000, contains a list of key data elements that school councils are required to use as assessment indicators in conducting their needs assessments (Florida Commission on Education Reform and Accountability, 1993). Since the predominant assessment methodology in the Transition System employs normative data, we thought participants might include more normative needs in their VOCs. The lack of normative and comparative needs is not necessarily an indication that school leaders, using the voice of their customers, perceived these types of needs to be unimportant or irrelevant. Rather, it is likely that by assuming the voice of the customer, principals were able to shift their thinking away from management-oriented concerns.

Table 1

Participants' Perceptions of their Customers' Needs (VOCs) Classified Using Burton and Merrill's Taxonomy of Needs

	NORMATIVE VOCs	FELT VOCs			EXPRESSED DEMAND VOCs	COMPARATIVE VOCs	FUTURE VOCs	CRITICAL INCIDENT (SURVIVAL) VOCs
		Personal Support Professional Support	Learning Support	Administrative Support				
GOAL 1 READINESS TO START SCHOOL As a parent, I need information about:				♦ School registration ♦ School services available ♦ Pre-K services available ♦ Medical requirements ♦ Curriculum ♦ Who answers questions * Pre-K evaluation * School schedule * Transportation * Class size ○ Daily routines ○ Discipline procedures ○ School supplies ○ Home school assignment				♦ Prerequisite skills
GOAL 2 GRADUATION RATE As a student, I need:		♦ Caring counselors ♦ Feel belonging in school * Value of school attendance * Help with peer relations ○ Joy of learning	♦ Good teachers ♦ Chance to pass ○ Tutoring (peer/other)	♦ # of credits to graduate * Chance to make-up credits * Post-graduation plans * Flex time so I can work ○ Career planning ○ Diverse college offerings			♦ Classes that help me later * Relevant future job skills	♦ Safety
GOAL 3 STUDENT PERFORMANCE As a student, I need:	* State/ district goals	♦ Feeling safe at school ♦ Positive reinforcement ♦ Stable home environment ♦ Family support ♦ Role models ○ Grades that show learning	* Skills to use technology ○ Individual attention ○ Learn from many people ○ Academic preparation ○ Skills to express thoughts ○ Study skills	* Information about CTBS (4)				♦ Food, clothing, shelter ♦ Physical/emotional fitness

Notes: ♦ = Highest priority, * = 2nd highest priority, ○ = 3rd highest priority; numbers in parentheses (3) indicate the frequency of response.

Table 1 (Continued)

	NORMATIVE VOCs	FELT VOCs			EXPRESSED DEMAND VOCs	COMPARATIVE VOCs	FUTURE VOCs	CRITICAL INCIDENT (SURVIVAL) VOCs
		Personal Support Professional Support	Learning Support	Administrative Support				
GOAL 4 LEARNING ENVIRONMENT As a student, I need:		♦ Belonging/acceptance ♦ Relevance to me ♦ Interaction ♦ Feeling that discipline is fair ♦ Understanding teachers * Post-graduate planning * Pride in my school * Fun/interesting teachers	♦ Instructional feedback ♦ Successful progression * Support services * Resources * Interesting classes ○ Personal learning time ○ Variety of choices ○ Work skills ○ One-on-one attention	○ Diploma ○ Know rules and standards				♦ Safe/secure school
GOAL 5 SCHOOL SAFETY As a student, I need:		♦ Respect from staff ♦ Self-esteem ♦ Treated fairly	* Health instruction ○ Conflict resolution training	* Adequate supervision * Counseling ○ Civil rights/fair treatment ○ Building safe from pests ○ Ceilings don't leak				♦ Eliminate weapons ♦ Weapons not permitted ♦ Safe from violence ♦ Treat emotional problems ♦ Physical plant safety * No drugs at school * Cared for when sick * Protected from disease * Equipment works safely ○ Emotional counseling ○ Asbestos free
GOAL 6 TEACHERS/ STAFF As a teacher, I need: These VOCs were generated by teams addressing goals 2-6		♦ Inservice/staff development (4) ♦ Professional library ♦ Salary raise ♦ Release time for peer interaction ♦ Release time for grade grouping ♦ Input in decision making ♦ Appreciation/recognition ♦ Support counseling ♦ Support of staff and peers ♦ No burnout	♦ Resources ♦ Supplies; equipment ♦ Interesting materials/text ♦ Technology in classroom ♦ Reasonable class size (2) ♦ Parents support instruction	♦ Administrative support ♦ Uninterrupted teaching time (2) ♦ Help w/discipline problems ♦ Less paperwork ♦ Adequate physical plant ♦ Functioning safe equipment ♦ Legal assistance ♦ Adequate insurance	♦ Planning time (5) ♦ Meeting time (3) ♦ Cross-grade collaboration			♦ Safety ♦ Safe from fire hazard ♦ Safe from weapons ♦ Safe from violence (3) ♦ Security officer present

Notes: ♦ = Highest priority, * = 2nd highest priority, ○ = 3rd highest priority; numbers in parentheses (3) indicate frequency of response.

To gain more insight into the nature of the VOCs, we found it helpful to group them by priority customer (parents, students, and teachers.)

Parent VOCs. Fifteen parent VOCs for goal 1, readiness to start school, were identified by school leaders. All but one of the VOCs were classified as felt needs in the administrative subcategory. The perspective taken by this team was that parents perceive schools as providing information about school entry requirements and procedures, rather than actually providing the preschool services.

Student VOCs. A total of 77 student VOCs were generated for goals 2 through 5. We classified 77% of these VOCs as felt needs and 19% as critical incident/survival needs. Within the felt needs category, 39% were personal, 35% were learning, and 30% were administrative. In contrast, only 3% of the student VOCS for goals 2 through 5 were classified as future needs and 1% as normative needs.

Given the Blueprint 2000 goals of ensuring a strong academic learning environment that prepares students to "compete at the highest levels nationally and internationally" as well as "to make well-reasoned, thoughtful and healthy lifelong decisions" (p. 27), it is interesting that more learning and future needs were not identified. This, too, may be the result of participants assuming a student rather than a parent or administrator perspective.

We think it is notable that 48% of the 77 student VOCs were classified as personal and critical incident/survival VOCs. While one can hardly disagree that schools have a responsibility to ensure a safe and drug-free learning environment, one must also recognize these VOCs as symptoms of broader social issues. In contrast, parental support, a stable home environment, and adequate food, clothing, and shelter are necessary prerequisites for learning, but schools are not typically viewed as the primary source for meeting these needs.

Teacher VOCs. Of the 45 priority teacher VOCs identified by school leaders, 64% were classified as felt needs, 20% as expressed needs, and 7% as critical incident/survival needs. Of the 29 felt needs, we agreed that 45% of the VOCS were professional, 24% were learning, and 31% were administrative. A topical analysis of the 45 teacher VOCS reveals that approximately one third of the VOCs are related to time issues (e.g., planning time, meeting time, uninterrupted teaching time, and less paperwork) and that 20% of the VOCs are related to issues of physical safety. This may indicate that administrators think that teachers feel limited in their ability to carry out their professional responsibilities due to constraints imposed by lack of time and concerns for their personal safety.

We observed that VOCs identified by school leaders who assumed the voice of teachers, were congruent with commonly held beliefs about the nature of teachers as professionals, such as continued training, collegial planning and decision making, support, and respect (Berry & Ginsberg, 1991; Darling-Hammond, 1990; Lieberman, 1990). In comparison, the perspective of teaching portrayed in the *Blueprint 2000 Transition System* is different from that provided by participants in the workshop. The Transition System identifies measures that are more administrative in orientation (e.g., the percent of teachers holding regular teaching certificates, district evaluations that address skills, and the racial/ethnic composition of school staffs) as the key data elements for goal 6.

One purpose of needs analysis is to differentiate between measured or "real" needs in a technical sense and the wants or desires of customers. Our analysis confirmed the utility of the Burton and Merrill model for making the distinction between discrepancy-based needs and felt needs. Indeed, 74% of the total 137 parent, student, and teacher VOCs generated by school leaders were felt needs. Felt needs must be subjected to assessment strategies for determining whether real discrepancies exist between current status and desired or ideal states. In a complete QFD industrial model, the next steps would include setting target levels for VOCs and taking measures to determine whether true needs actually exist. Discriminating between real and felt needs should be useful for School Advisory Councils as they complete the next iteration of their planning cycle.

Within which organizational elements of needs assessment do the VOCs generated by administrators fall?

We used Kaufman's Organizational Elements Model to provide another perspective of the VOCs generated by participants. While Burton and Merrill examine the origin of needs, in Kaufman's OEM model, education is viewed as a process, and needs are classified within the phases of that process.

Table 2 contains Kaufman's organizational elements with examples of each listed in columns across the top. Blueprint 2000 goals with the highest-priority customer for each goal are listed down the left column. Intersecting cells contain the VOCs generated by school leaders for the highest-priority customer. Each VOC is coded with a symbol to indicate how participants ranked its importance. The classification of the VOCs according to Kaufman's OEM model was a relatively simple task because nearly all of the VOCs fit exclusively into one best element. We agreed, however, that three VOCs crossed several elements. The cross-element VOCs may either be due to the unique nature of the VOCs or to the limitations of secondary data analysis. These cross-category VOCs appear in italics in Table 2.

Table 2

Participants' Perceptions of Their Customers' Needs (VOCs) Classified Using Kaufman's Organizational Elements Model

ORGANIZATIONAL LEVEL	INPUTS Resources; Ingredients	PROCESSES How-to's; Means; Methods; Procedures	PRODUCTS En route - building block; Results	OUTPUTS Total products of the system that are delivered or deliverable to society.	OUTCOMES Contributions of outputs in and for society and the community.
EXAMPLES	Existing personnel; identified needs, goals, objectives, policies, regulations, laws, money, values, and societal and community characteristics, teacher competencies, buildings, equipment, etc.	Total quality management-continuous improvement; teaching; learning; in-service training, managing, accelerated learning; site-based managing; accountability	Course completed; competency test passed; skill acquired; learner accomplishments; instructor accomplishments; etc.	Graduates; completers; dropouts; job placements; certified licensees; etc.	Self-sufficient, self reliant, productive individual who is socially competent and effective, contributing to self and others; no addiction to others or to substances; financially independent; continued funding of agency; etc.
GOAL 1 READINESS TO START SCHOOL As a parent, I need information about:		♦ School registration ♦ School services available ♦ Pre-K services available ♦ Medical requirements ♦ Curriculum ♦ Who answers my questions ♦ Prerequisite skills * Pre-K evaluation * School schedule * Transportation * Class size ○ Daily routines ○ Discipline procedures ○ School supplies ○ Home school assignment			
GOAL 2 GRADUATION RATE As a student, I need:	♦ Good teachers ♦ Caring counselors ♦ Safety	♦ Chance to pass ♦ Classes that help me later * Chance to make-up credits * Help with peer relations * Post-graduation plans * Flex time so I can work ○ Career planning ○ Tutoring (peer/other) ○ Diverse college offerings	♦ # of credits to graduate ♦ Feel belonging in school * Value school attendance * Relevant future job skills ○ Joy of learning		
GOAL 3 STUDENT PERFORMANCE As a student, I need:	♦ Food, clothing, shelter ♦ Physical/emotional fitness ♦ Stable home environment ♦ Family support	♦ Positive reinforcement ♦ Role models * Information about CTBS (4) ○ Individual attention ○ Learn from many people	♦ Feeling safe at school * Goals * Skills to use technology ○ Skills to express thoughts ○ Study skills ○ Academic preparation ○ Grades that show learning		

Notes: ♦ = Highest priority, * = 2nd priority need, ○ = 3rd priority; numbers in parentheses (3) indicate frequency of response.

Table 2 (Continued)

ORGANIZATIONAL LEVEL	INPUTS	PROCESSES	PRODUCTS	OUTPUTS	OUTCOMES
GOAL 4 LEARNING ENVIRONMENT As a student, I need	♦ Safe/secure school ♦ *Understanding teachers* ♦ Relevance to me ♦ Support services * Resources * Interesting classes * Fun/interesting teachers ○ Personal learning time ○ Variety of choices	♦ Interaction ♦ Instructional feedback ○ One-on-one attention	♦ Belonging/acceptance ♦ Successful progression ♦ Feeling that discipline is fair * Post-graduation planning * Pride in my school ○ Know rules and standards ○ Work skills	○ Diploma	
GOAL 5 SCHOOL SAFETY As a student, I need:	♦ Weapons not permitted ○ Asbestos free ○ ***Civil rights/fair treatment***	♦ Eliminate weapons ♦ Treat emotional problems ♦ Respect from staff ♦ Treated fairly * Cared for when sick * Protected from disease * Adequate supervision * Counseling ○ Emotional counseling ○ Conflict resolution training ○ ***Civil rights/fair treatment***	♦ Physical plant safety ♦ Safe from violence ♦ Self-esteem * No drugs at school * Health instruction * Equipment works safely ○ Building safe from pests ○ Ceilings don't leak ○ ***Civil rights/fair treatment***		
GOAL 6 TEACHERS/STAFF As a teacher, I need: These VOCs were generated by teams addressing goals 2-6	♦ Planning time (5) ♦ Meeting time (3) ♦ Uninterrupted teaching time (2) ♦ Release time for peer interaction ♦ Release time for grade grouping ♦ Supplies/equipment ♦ Resources ♦ Interesting materials/texts ♦ Technology in classroom ♦ Safe from violence (3) ♦ Safety ♦ Safe from fire hazard ♦ Safe from weapons ♦ Security officer present ♦ Reasonable class size (2) ♦ Less paperwork ♦ Parents support instruction ♦ Administrative support ♦ Appreciation/recognition ♦ Professional library ♦ Salary raise ♦ Legal assistance ♦ Adequate physical plant ♦ Functioning, safe equipment ♦ Adequate insurance ♦ ***Help w/discipline problems*** ♦ ***Support counseling***	♦ Inservice/staff development (4) ♦ Cross-grade collaboration ♦ Input in decision making ♦ Support of staff and peers ♦ ***Help w/discipline problems*** ♦ ***Support counseling***	♦ No burnout		

Notes: ♦ = Highest priority, * = 2nd priority need, ○ = 3rd priority; numbers in parentheses (3) indicate frequency of response; VOCs in italics were classified in more than one category.

Of the 141 total VOCs classified using the OEM model, 40% of the VOCs were classified as input, 39% as process, 21% as product, and less than 1% as output. No outcome VOCs were generated. It is notable that over three fourths of the VOCs are the "means" in the process of education and only one fourth are "ends." In subscribing to a systems approach to planning for school improvement, Kaufman cautions that a lack of clearly defined product, outcome, and output needs may indicate educators are focusing on solutions for ill-defined objectives and goals. As noted in the previous section, this pattern should be interpreted with caution because of the limitations of using VOCs as representations of measured needs.

Parent VOCs. All of the 15 parent VOCs for goal 1, readiness to start school, were classified as processes. While many of these VOCs are actually physical and policy inputs, the team that generated these VOCs perceived them to be points of information about school services and routines that should be relayed to parents. As such, we categorized these in the process column.

Student VOCs. The 79 student VOCs for goals 2 through 5 were more equally distributed between inputs, processes, and products: 24% of the VOCs were classified as inputs, 39% as process, and 35% as products. Only one student VOC could be classified as an output, and no outcome VOCs were generated. As with Burton and Merrill's future needs, this seems in contrast to Blueprint 2000 schools in which students learn the behaviors and skills needed for success in the 21st century. While parents, teachers, and administrators are more attentive to the long-range goals of schooling reflected in Blueprint 2000, administrators perceived that students are likely to voice more immediate concerns.

Teacher VOCs. Forty-seven high-priority teacher VOCs were generated by participants. We classified 79% as inputs, 19% as process, and 2% as products. No output or outcome VOCs were generated. If one subscribes to the notion of teachers as internal customers of schools, then teachers are viewed as a part of the process rather than an output of schooling. It would seem logical, therefore, that teacher VOCs would fall primarily into inputs and processes. If teacher professionalism becomes recognized as an essential objective of school improvement, then perhaps we will see teachers' VOCs as products and outcomes of effective schooling.

Implications

It is apparent that Quality Function Deployment can promote cross-school collaboration among school leaders responsible for developing School Improvement Plans. More unique, however, is the power found in the voice of the customer

perspective, the heart of the QFD process. By assuming the roles of their high-priority customers, administrators were able to view school improvement "from the other side of the desk." Although the VOCs generated by participants seem to provide a valuable and insightful perspective, the validity of these VOCs must be examined. Future research is needed to determine whether the VOCs expressed by workshop participants are congruent with those of actual members of key customer groups.

While the modified QFD process was effective with the participants in this study, it has yet to be determined how well QFD might work in actual School Improvement Councils. It may be that the success of QFD is due to the fact that school principals are already experienced in group processes and collaborative decision making. Further studies should be conducted to determine whether the power of the QFD process demonstrated in the present investigation was an artifact attributable to the participants and/or the modified process.

Systematically analyzing VOCs or measured needs appears to be a valuable way to gain insight into the nature of those needs. Both the Burton and Merrill and the Kaufman systems provided useful information along very different lines. Other schemes for categorizing needs may have more utility in a school setting. In addition, using analytical approaches to classify the needs or VOCs of actual School Improvement Plans may help to illuminate patterns among needs categories. While the results of our study indicate some areas of imbalance, research should be conducted to determine whether actual School Improvement Plans would yield a more balanced picture.

A critical step in needs analysis is to determine whether VOCs are actual, measurable discrepancies between current status and ideal state. In our study, using the voice of the customer resulted in the identification of a large number of felt needs VOCs. Felt needs, albeit sincere, may simply be a customer's optimistic expectations of schools. Furthermore, whether felt or measured, unmet customer needs may be problematic. The customer may conclude that the school is unresponsive and ineffective, thus increasing the likelihood that the customer becomes critical rather than supportive of the school.

Finally, an unanticipated outcome of this study was related to content rather than methodology. The emphasis on the personal needs of students and the professional needs of teachers seems to remind us that educators must attend to "first-things-first." The physiological, safety, and psychological VOCs generated for students are akin to Maslow's theory of social motivation in which these lower-level needs must be met before individuals can realize their full potential. The teacher VOCs in this study emphasized the need for professional support and

personal safety, and this emphasis seems to support the widely held belief that school improvement necessitates professional and effectual teachers (Berry & Ginsberg, 1991). Teachers hold a critical position in schools. Unlike students and administrators who are transient, teachers are more likely to remain in their classrooms and school buildings for successive years, and sometimes decades (Altenbaugh, 1989). "This strategic position guarantees that teachers will ultimately decide the relative success or failure of educational reform" (p. 173). It would seem, then, if School Improvement Plans are to be successfully implemented and educational goals realized, teacher VOCs should be considered with care. Administrators' selection of teachers as priority internal customers of schools for five of the six goals addressed in the study demonstrates their awareness of the key role teachers will play in meeting the goals of Blueprint 2000.

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