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ABSTRACT

In providing leadership for school improvement teams, 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-based administrators. Teams of school leaders used QFD to generate the top priority needs of school customers (students, parents, and teachers) for school improvement goals. Burton and Merrill's taxonomy of needs sources and Kaufman's Organizational Elements Model 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 customer's perspective enabled principals to identify needs beyond those typically identified for school improvement. Several patterns of needs were observed across the categories of the Burton and Merrill and the Kaufman systems, suggesting that both analysis procedures can provide school improvement teams with valuable insights for their needs analysis and eventual needs assessment activities. The emphasis on students' personal needs and teachers' professional needs serves to remind educators of their highest priorities. Contains 28 references and 2 tables summarizing participants' perceptions of their customers' needs. (Author/MLH)

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ED 374 510

A Quality Function Deployment Analysis of Customer Needs for Meeting School Improvement Goals: The Voice of the School Principal

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"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
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ABSTRACT: In providing leadership for school improvement teams, 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-based administrators. Teams of school leaders used QFD to generate the top priority needs of school customers (e.g., students, parents, teachers) for school improvement goals. 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 improvement teams 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. Although the extent to which site-based management is implemented varies from district to district, it is apparent that the trend toward local governance of schools is redefining the roles and responsibilities of teachers, parents, administrators, and other members of the local school community. One of the more significant changes endemic to site-based management (SBM) models is the changing role and function of the school principal (Bailey, 1991; Chapman, 1990; Raywid, 1991).

Historically, principals have assumed various roles within school system structures. Schlechty (1990) described the role of the common school principal as that of a tribal leader. Since then, principals have been characterized as industrial managers, social engineers, chiefs-of-staff, and business executives (Callahan, 1962; Schlechty, 1990; Tyak & Hansot, 1982). Often, the school principal was perceived as holding a position of power and authority. Decision-making and communication within schools followed a bureaucratic or top-down model in which information flowed from positions of higher authority, such as the principal or other administrator, to those in lower positions, such as teachers, staff, and parents (Chapman, 1990; Owens, 1991; Wynn & Guditus, 1984). In recent years, the need to alter traditional communication and decision-making patterns in schools has been cited as a necessary requisite for successful school restructuring. Thus, a fundamental element in many SBM models is the establishment of one or several strata of school-level governing bodies, such as school councils or committees. School councils are comprised of "stakeholders" in

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the schooling process and typically include administrators, teachers, and parents. Frequently, the school principal assumes a prominent role on the school council (Bailey, 1991; Chapman, 1991; Raywid, 1990; Ramirez, Webb, & Guthrie, 1991).

Behind the thrust for school councils is the principle of participatory democracy. Theoretically, greater participation in decision-making helps build consensus for reform and change and ensures that school improvement initiatives reflect the judgements and expertise of those directly involved in the teaching-learning process. Although participatory decision-making promotes greater sharing of goals, improved motivation, efficient communication, and better-developed group process skills, shared decision-making can be problematic (Owens, 1991). As the number of communicators within a group increases, so do the number of message exchanges. Likewise, the number of occasions for miscommunication and the possibility of disagreement among group members may also increase (Kreps, 1986). As schools adopt participatory decision-making models, principals and other school-based administrators will need to develop skills and techniques that promote effective group communication, consensus building, and problem solving as they assume their new role as team leaders, rather than supervisors and managers (Bailey, 1991; Chapman, 1990; Gresso & Robertson, 1992; Hetzel, 1992; Rothberg & Pawlas, 1992; Schlechty, 1990).

The first purpose of our study was to investigate the utility of a group decision-making process called Quality Function Deployment (QFD) for use with school-based administrators. QFD has been successfully employed in many private sector environments, and we speculated that it would be a useful procedure for school leaders. (For examples see Cohen, 1988; Griffin & Hauser, 1992; Hauser & Clausing, 1988; Maddux, Amos, & Wyskida, 1991). We thought that QFD would be especially useful for school leaders in their needs assessment activities since the focus of QFD is on the "voice of the customer". A key element in many school improvement initiatives is the dependence on the locally-defined needs of "school customers". Therefore, the 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. A systematic process for characterizing these needs and priorities may help sharpen the focus of more formal needs assessment activities.

To address these areas of interest, school-based administrators from a large Florida school district were invited to participate in an interactive workshop in the spring of 1993. The purpose of the workshop was to introduce district school leaders to the QFD process by engaging them in a simulated needs identification activity. As a prescribed in Blueprint 2000, Florida's school improvement legislation, each Florida school is required to establish and maintain a School Advisory Council (Florida Commission on Education Reform and Accountability, 1992). Under the leadership of the principal, the Council must prepare a school improvement plan that describes the subgoals and programs a school proposes in order to meet seven state-level school improvement goals that are modeled after the National Education Goals. We envisioned that school-based administrators might be able to use the QFD process with their School Councils for various school improvement planning activities. Before proceeding with a discussion of the workshop, background information is provided on QFD and strategies for needs analysis.

Quality Function Deployment

One of the major emphases of school-based management models is the active involvement of the "stakeholders" in public education. This emphasis on the interests of all stakeholders in schools is 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 the 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, 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 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 school improvement planning. 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 customer's 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 and 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 eventual, 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 student test scores that are lower than district, state,

or national averages, lower graduation rates or higher dropout rates than those observed in 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 and so forth. Burton and Merrill believe that 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 that are currently provided to another group. For example, one school may have been designated as a technology school and received equipment and staff training not provided for 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 those that while rare, 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 such as tuberculosis, measles, or mononucleosis.

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, 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, 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 dropout, 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; can communicate with peers, family, and employers in positive ways; can obtain and hold a job; vote; volunteer for community improvement programs; avoid crime and prison; and so forth. 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 identifying school improvement needs. The first three evaluation questions address this line of inquiry. Second, we were 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 effective communication and decision-making among school leaders who are engaged in school improvement planning?

2. What target groups do school-based administrators perceive as priority school customers?

3. What needs (VOCs) do school leaders believe their priority customers have and how do they rank the needs in order of importance?

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

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

METHOD

Participants

The forty-two 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 improvement 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 seven state-level improvement goals as the focus of their workshop activities. The seven Blueprint 2000 goals include: 1) Readiness to Start School, 2) Graduation Rate, 3) Student Performance, 4) Learning Environment, 5) School Safety, 6) Teachers and Staff, and 7) Adult Literacy. 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 fifteen 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. 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 communication and decision-making among administrators.

A two-dimensional matrix analysis technique was used to analyze the VOCs generated during the QFD process. The first matrix consisted of the 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 collaboration and decision-making?

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 teams' 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 collaboration among school leaders.

What groups are perceived as high priority school customers?

An examination of the House of Quality charts revealed that the 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 customers identified 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. School administrators appeared to view classroom teachers as internal school customers relative to receiving the materials, equipment, facilities, professional support, and services they need in order 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, school-based administrators 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. Including all of the highest priority teacher VOCs in the 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 school improvement goals were examined using Burton and Merrill's taxonomy of needs sources. In our initial attempt to classify the VOCs, we found that three-quarters 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, and 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.

(Insert Table 1 About Here)

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. 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. Granted, school leaders were limited to identifying top priority VOCs; yet it seems likely that by assuming the voice of the customer, principals were able to shift their thinking away from management-oriented concerns. To gain further 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 2-5. 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 2-5 were classified as future needs and 1% as normative needs.

Given the Blueprint 2000 emphasis on providing 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 argue 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 institution that has the primary responsibility for meeting these types of 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, less paperwork) and that 20% of the VOCs are related to issues of physical safety. This may indicate that administrators perceive 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).

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 is an important step in school improvement planning.

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

Kaufman's Organizational Elements Model was used 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.

(Insert Table 2 About Here)

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 bold type in Table 2.

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-quarters of the VOCs are the "means" in the process of education and only one-quarter 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 that 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 2-5 were more equally distributed between inputs, processes, and products. Twenty-four percent 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 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, 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 promotes communication and collaboration among school leaders. More unique, however, is the power found in the voice of the customer perspective, the heart of the QFD process. In this simulated needs identification activity, school-based administrators assumed the roles of their high priority customers and were able to view school improvement "from the other side of the desk", thus providing a unique and insightful perspective. Undoubtedly, 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.

The school leaders in this study identified *themselves* as important school customers; albeit somewhat less significant than teachers, students, or parents. Due to the time constraints of the workshop, however, administrators' needs for meeting school improvement goals were not addressed. In subsequent studies it would be prudent to consider the "voice" of the principal. Principals hold a unique position in the school improvement process. Crow (1994) acknowledged that in site-based management models, principals are typically seen as service providers to teachers, students, and parents. Yet, "since schools are nested in districts and influenced by federal, state, and community regulations and values," the contextual nature of the principal's role must also be considered (p. 33). In a sense, school-based administrators are "customers" of school boards, yet at the same time, they are held accountable for their school's success or lack of success in acheiving school improvement goals.

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 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, (i.e. to determine whether real needs exist.) 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; an actual need may or may not exist.

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 seem 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 planning is 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 school improvement goals.

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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 o Daily routines o Discipline procedures o School supplies o 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 o Joy of learning	♦ Good teachers ♦ Chance to pass o Tutoring (peer/other)	♦ # of credits to graduate * Chance to make-up credits * Post-graduation plans * Flex time so I can work o Career planning o 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 o Grades that show learning	* Skills to use technology o Individual attention o Learn from many people o Academic preparation o Skills to express thoughts o Study skills	* Information about CTBS (4)				♦ Food, clothing, shelter ♦ Physical/emotional fitness

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

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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 o Personal learning time o Variety of choices o Work skills o One-on-one attention	o Diploma o 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 o Conflict resolution training	* Adequate supervision * Counseling o Civil rights/fair treatment o Building safe from pests o 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 o Emotional counseling o 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, o = 3rd highest priority; Numbers in parentheses (3) indicate frequency of response.

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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.

le 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 bold type were classified in more than one category.

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